

# Bowral Town Centre – Microsimulation Model: Scenario Testing Final Report

Prepared for Wingecarribee Shire Council  
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**PREPARED BY HIGH RANGE ANALYTICS PTY LTD**

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THIS REPORT HAS BEEN PREPARED BY:

HIGH RANGE ANALYTICS PTY LTD (ABN 69 134 924 637)  
TRAFFIC AND TRANSPORT CONSULTANTS  
PO Box 1220  
MITTAGONG NSW 2575

PHONE 0448 039 339  
INFO@HIGHRANGEANALYTICS.COM.AU  
[WWW.HIGHRANGEANALYTICS.COM.AU](http://WWW.HIGHRANGEANALYTICS.COM.AU)  
CONTACT: TOM LONGWORTH

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# Bowral Town Centre – Scenario Testing Report

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Prepared for Wingecarribee Shire Council

## 1.0 Introduction

Wingecarribee Shire Council commissioned High Range Analytics to prepare a traffic microsimulation model of the Bowral Town Centre. The project was undertaken in two stages. The first stage included data collection, analysis and preparation of a base model. The second stage involved the testing of client-specified scenarios of future potential development in and around the town centre. This report describes the scenario tests undertaken and presents the results, as well as discussing the implications of these results for future traffic planning in Bowral Town Centre.

The microsimulation model of Bowral Town Centre was developed using the standard methodology of building a base model to represent existing traffic conditions during a period of critical network performance, followed by modifications to test potential changes to networks (e.g., road works, different traffic management measures) and changes to traffic demands (e.g., due to background traffic growth and proposed or likely development). The Base Model was built to represent the Friday afternoon school peak, using field data from April 2010. Scenarios were tested combining a range of potential traffic network and demand changes that Council staff considered to be appropriate for testing.

This report provides an overview of the study objectives in Chapter 2, a summary description of the Base Model in Chapter 3, and in Chapter 4, an overview of the Scenarios to be tested is provided. Subsequent chapters describe the tests undertaken for each of these scenarios and their results and a discussion of the results. Chapter 11 provides a discussion of the modelling's findings and draws conclusions.

It is anticipated that this work would be used as one of the inputs to shaping future traffic management within the Town Centre.

## 2.0 Overview of Study

Bowral is a vibrant town centre in the Southern Highlands located about an hour and a half south west of Sydney. The traffic network in Bowral, during periods of peak demand, is under considerable load, exhibiting queuing and delays in parts. A traffic model, which could deal with the factors that determine operational traffic function in town centres, where queuing is experienced, was required in order to assess existing conditions and to test the operational performance of potential amendments to town centre traffic arrangements and land use.

The application of microsimulation traffic modelling in Bowral is considered a useful step in assisting to assess current traffic system performance and then to analyse changes to the traffic system, primarily because it represents operational behaviour in the traffic network, including the effects of friction and queuing, as well as re-routing by drivers as network costs change. This is expected to better describe changes in operations of the amendments to be tested.

The model is built to analyse the afternoon school peak, nominally from 3pm to 4pm. Based on counts and information from the RTA's traffic signal control system (SCATS), this is considered to be the critical period for network performance. The model is based on the collection of a large dataset of existing traffic behaviour, including traffic volumes, turning movements at most town centre intersections and car parks, travel times, pedestrian crossing and traffic signal operations and queuing. Features built into the model include the effect of friction due to on-street car parking and operation of marked pedestrian foot crossings, traffic signal operations reflecting those on the survey day, traffic demands that represent those observed on the survey day, as well as a spatially accurate representation of the road network.

With this level of detail, the model can better represent the effective capacity of the overall town centre network, by capturing effects such as the interaction between adjoining traffic facilities, queue discharge at intersections and friction due to pedestrians and parking. With this capability, the model provides a useful tool to test a number of different scenarios; the results of these tests provide a reasonable indication of their likely traffic effects.

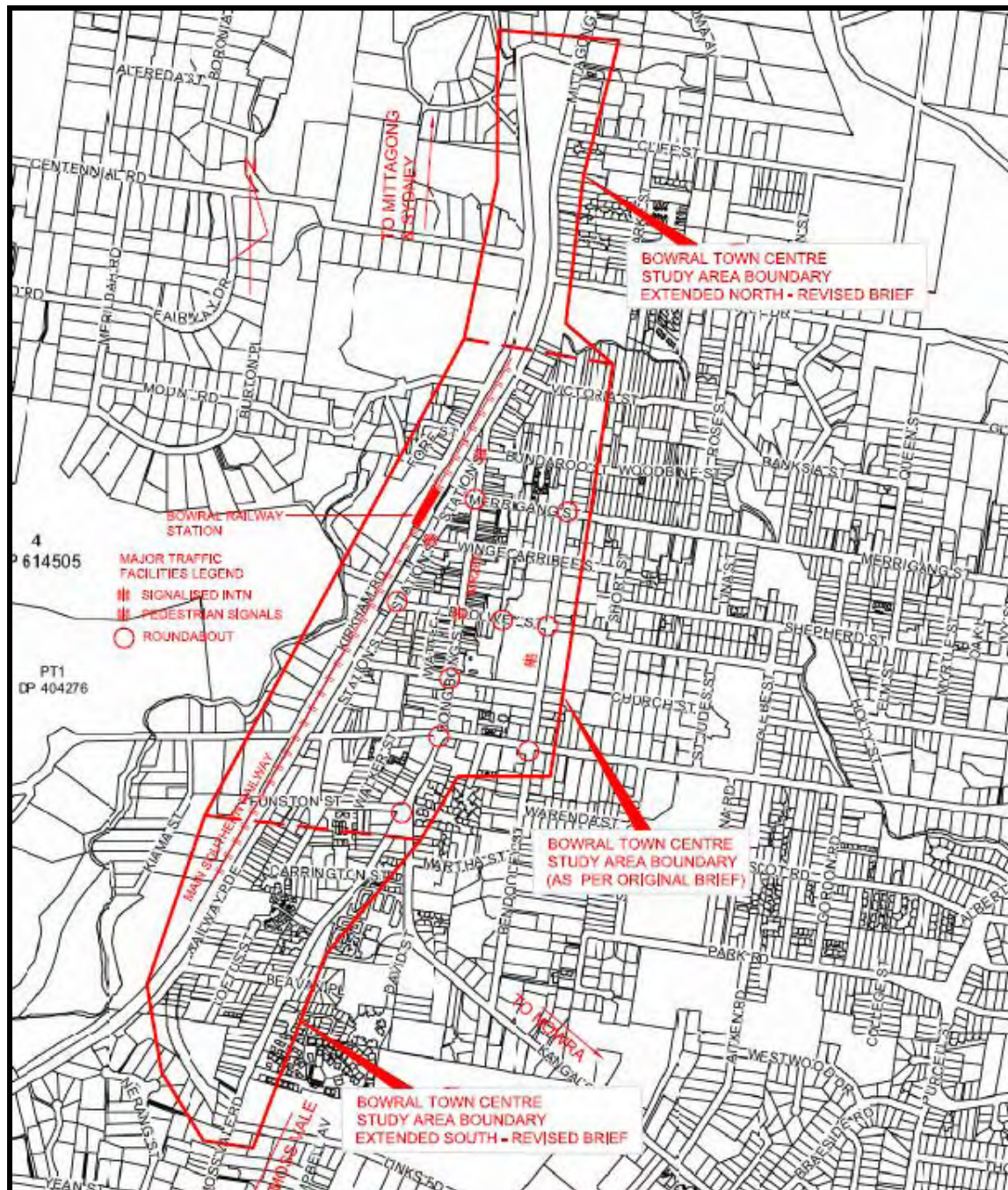


## 3.0 Base Model

### General

This chapter describes the process used to develop the Base Model of Bowral Town Centre. A more complete description is provided in Bowral Town Centre – *Microsimulation Model: Model Development & Validation Report*. The study area for the model is Bowral Town Centre as shown on Figure 1, which is an excerpt from the amended brief.

Figure 1 – Study area



### Model Development

The model was developed in accordance with the brief using Quadstone Paramics. Version 5.2 of this application was used, in conjunction with supplementary software (plug-ins) developed by Azalient for the NSW RTA. The plug-ins extend the functionality of the core software and were developed for the RTA. Model development has been largely guided by the RTA's *Paramics Microsimulation Modelling Manual* (version 1.0).

These steps were followed in model development:

- Conduct field data collection – including turning movement counts, queue length surveys, travel time surveys, signal timings and pedestrian activity
- Use cadastral and aerial photography bases provided by Council to develop the road network within Paramics, with sample field measurements to ensure scale is accurate
- From site visits and consideration of the field collected data, a zone system was established to endeavour to account for traffic loading to and unloading from the network, in spatially representative locations
- Reduction and analysis of field data, and supplementary collection, both from video taken on the survey day and from subsequent spot counts, and from this, further refinement of zone system
- Site visits to check and confirm traffic control arrangements at intersections, including mode of control, approach and departure lanes and their length, and local traffic behaviour in terms of lane discipline, and pedestrian and parking friction
- Refine the road network, including signal timings, pedestrian activity at the marked crossings and car parking friction and test the network
- Develop representative estimates of traffic flows from surveys, SCATS detector counts and spot counts, including turning movements and estimates of traffic generation
- Use a sub-area matrix cut from Wingecarribee Shire Council's strategic model (TRACKS), plus counts and routing information from the network, to develop a prior matrix
- Use the prior matrix and the model's road network to calibrate the demand matrix to reasonably match the observed counts on the survey day
- Validate the model against RTA criteria.

## 4.0 Test Scenarios

### General

The overall purpose of the traffic model is to permit the testing and analysis of potential changes to the traffic arrangements within the town centre, as well as changes to likely levels of traffic generation. The *Bowral Town Centre – Microsimulation Model: Scenario Development Working Paper* provides a detailed description of the scenario specifications for testing.

Initially three scenarios were specified, which, upon reflection, were refined to permit the testing of some of the key individual component of the scenarios.

Prior to undertaking the specified initial scenario tests, there was a requirement to apply the model to investigate the traffic effects of a proposed land use development at the northern end of the Town Centre. This entailed extraction and testing of the following elements of Scenario 1:

- Signals at Mittagong Road and Victoria Street, and
- Additional traffic to be generated by proposed developments at the north-east and south-east corners of this intersection.

This testing identified issues with the operation of the traffic sub-system at the northern end of the town centre. The base model had indicated a degree of fragility associated with the operation of the traffic sub-system which includes Bong Bong Street and Station Street signals and the Bong Bong Street and Merrigang Street roundabout. In the school peak period there is a substantial westbound queue on Merrigang Street from Bong Bong Street back towards Bendooley Street. On occasion this queue extends onto Bendooley Street. Also, on the southern approach to this roundabout at Merrigang Street (i.e., northbound along Bong Bong Street), as well as its southern departure (i.e., southbound along Bong Bong Street), there are extensive interruptions to traffic flow caused by a combination and interaction of:

- parking friction;
- pedestrian crossing activity at the marked crossing of Bong Bong Street south of Wingecarribee Street;
- vehicles turning from Bong Bong Street to Wingecarribee Street; and,
- transient queues from the Bong Bong Street and Boolwey Street signals.

Several features of the town centre's road network and traffic operations interact to make the network sensitive to small increases in demand. Almost every road has a single lane in each direction and most intersection approaches are also single lane. The town centre is compact, which, when combined with single lane roads, means it can only store small volumes of traffic. With heavy traffic conditions, small increases in demand can result in rapidly escalating delays and queues can extend quickly. An example is where a slightly higher level of demand can result in a turning bay overflowing and the resultant baulking of through vehicles by queued turning vehicles, and this can occur due to such small change in demand as a single additional vehicle. Examples of these locations are Wingecarribee Street and Bendooley Street, Station Street and Merrigang Street. As soon as this blocking occurs, vehicles start to store on the network in queues and in higher traffic density. Due to the single lane roads and already relatively high traffic density, small interruptions, as described above, can quickly lead to queues which start to impact the operation of other traffic facilities. This can be observed from time to time on the real network within the town centre, where this effect can be transient, lasting a matter of a few minutes, or it can be more protracted.

The investigation indicated that the introduction of signals at Victoria Street would result in bunching up of southbound traffic along Mittagong Road on their approach to the Bong Bong Street and Merrigang Street roundabout, which would lead to problems with the operation and capacity of this sub-system. Bearing in mind

the modest size of the additional traffic generation by the proposed developments in Victoria Street, this outcome highlighted the fragile nature of the traffic sub-system at the northern end of Bowral Town Centre and how sensitive its smooth operation is to small changes in approach traffic arrival patterns.

A number of alternatives were tested in order to identify a workable solution in terms of traffic function. This investigation identified (after exploring several alternatives<sup>1</sup>) as a potential solution a re-configuration of the Station Street, Bong Bong Street and Bundaroo Street intersection involving:

- Opening Bundaroo Street to permit right turns to the north (currently left in left out only), and
- Re-configuring the signals and adjusting signal timings at this intersection.

As a consequence of opening up this third northbound exit from the town centre (i.e., Bundaroo Street right turn to the north<sup>2</sup>), a proportion of traffic re-routes within the model from the Merrigang Street and Bong Bong Street route across to a route along Bendooley Street and Bundaroo Street, turning right to the north at Bong Bong Street/Mittagong Road, reducing current westbound queuing along Merrigang Street, thereby reducing the traffic volumes using the Bong Bong Street and Merrigang Street roundabout.

The main benefit of the proposed Bundaroo Street approach at the signals is that it provides an efficient approach with few interruptions to traffic flow. This is in contrast with Bong Bong Street's approach to its intersection with Station Street, where a small quantity of parking along Bong Bong Street causes friction, although the main problem is the interaction with the Bong Bong Street and Merrigang Street roundabout, which intermittently severely restricts the ability of traffic to consistently get to the signal's stop line. This results in unused green time at the signals.

In the following scenarios this proposed adjustment to Bong Bong Street and Bundaroo Street intersection is generally included in the tests, unless identified otherwise.

### Scenario development approach

Scenarios for testing were developed in the following manner:

- The study brief identified scenarios and their specific elements
- These were described in further detail by High Range Analytics, including quantification of likely traffic generation (some of which was sourced from Council and traffic submissions as part of planning for individual sites)
- A scenario development working paper was then submitted to Council for consideration
- A workshop was held with Council staff to discuss the scenarios and their elements
- Refinements were made to scenario descriptions, including the disaggregation of several scenarios into sub-scenarios to permit isolation of specific traffic effects, and full specification of the scenario tests
- The scenarios were then tested by modifying the Base Model to reflect the likely changes in each scenario and to amend, where necessary, existing arrangements, such as bus routes.

The elements of each of the scenarios are outlined below, with results reported in subsequent chapters.

### Reconfigured Bong Bong and Bundaroo Street intersection

As described in the previous chapter this network amendment was identified as being required to ensure robust operation of the traffic sub-system at the northern end of Bowral Town Centre. It entailed amending the current

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<sup>1</sup> These included development of a second northbound lane along Station Street north from Merrigang Street; and the development of a second northbound lane on Bong Bong Street from Merrigang Street.

<sup>2</sup> The others being Station Street northbound and Bong Bong Street northbound



arrangement at Station Street, Bong Bong Street, Bundaroo Street and Mittagong Road so that a single four-legged intersection would be formed. The movements permitted would be:

- All movements from Bundaroo Street and Mittagong Road north;
- Bong Bong Street movement through to Mittagong Road only;
- Station Street movement through to Mittagong Road only.

Traffic signal timing was retained from Base Case, with green time on Bong Bong Street's approach divided equally between Bong Bong Street and Bundaroo Street.

## Scenario 1 Group

### Scenario 1

This comprised the following elements:

1. Provision of 250 additional parking spaces in Oxley Mall Car Park (multi-deck), located in the area bounded by Bong Bong Street, Boolwey Street, Bendooley Street and Wingecarribee Street
2. Variation of signal phases at the intersection of Bong Bong Street and Boolwey Street
3. Provision of traffic signals at the intersection of Mittagong Road and Victoria Street
4. Creation of a co-ordinated traffic signal system, including signals at Bong Bong Street/Station Street, Station Street/Wingecarribee Street and signals at the intersection of Mittagong Road and Victoria Street
5. Inclusion of changed landuse at the north east and south east corner of the Mittagong Road and Victoria Street intersection
6. Modifications at Station Street, Bong Bong Street and Bundaroo Street intersection included

### Scenario 1A

This scenario is the same as Scenario 1 with the following difference:

- There is additional retail floorspace included for Oxley Mall, assuming redevelopment of all or part of this shopping centre.

It is assumed that an additional 3,000sqm of retail floorspace would be added, comprising:

- An expansion of the food store size by 1,000sqm
- The remaining 2,000sqm would cover a discount department store and possibly a limited number of additional specialty stores

The additional floorspace would have car parking requirements and traffic generation based on RTA guidelines and Council planning instruments.

### Scenario 1B

As for Scenario 1, with the following amendments:

- additional public spaces at Oxley Mall reduced from 250 to 100 spaces
- additional retail in Oxley Mall plus associated parking (as in Scenario 1B)
- 150 additional public spaces provided at the Merrigang Street car park (on west side of the Fire Station)

This was to start with 150 additional public parking spaces in Merrigang Street and then this level of parking was to be varied to identify a threshold at which the level of additional parking could be supported.

The purpose of this scenario is to primarily test the traffic effects of spreading the potential additional public parking spaces and their demand across different road links in the northern part of the town centre. There was a sense that a more distributed parking arrangement could permit, at the margin, more public parking to be supported.

## Scenario 2 Group

### Scenario 2

This comprised the following elements:

1. Provision of an additional two lane wide railway overbridge parallel to the existing bridge in Wingecarribee Street (concept plan included in Attachment A)
2. Provision of 250 additional parking spaces west of the Wingecarribee Street/Kirkham Road intersection, with access into the carpark from a fourth leg of the intersection, including the additional railway overbridge outlined above
3. Provision of traffic signals (associated with the additional bridge and carpark access) at the intersection of Wingecarribee Street and Kirkham Road
4. Modification of the existing signals (associated with the additional bridge and carpark access) at the intersection of Wingecarribee Street and Kirkham Road
5. Modification of the existing signals at the intersection of Wingecarribee Street and Station Street (incorporating the new bridge)
6. Creation of a co-ordinated traffic signal system, including the signals at Bong Bong Street/Station Street, Station Street/Wingecarribee Street and possible signals at the intersection of Wingecarribee Street and Kirkham Road
7. Inclusion of increased commercial land use associated with the 250 space carpark outlined above in Sherwood Village
8. Inclusion of changed landuse north west of the Kirkham Road/Mount Road intersection (known here as OLSH)
9. Inclusion of heavy vehicles running on a fixed route into brick works from Mittagong Road
10. Adjustment of Bundaroo Street and Bong Bong Street included

The assumed test level of traffic generation from the additional retail space would be 375 vehicles per hour.

The proposal was also tested in Council's strategic traffic model (TRACKS) to identify potential effects on traffic patterns in the broader area around Bowral Town Centre. This was to ensure that the likely assignment effects of this option could be addressed by the microsimulation model.

### Scenario 2A

This would test Element 8 from the above Scenario 2 and the Station Street, Bong Bong Street and Bundaroo Street intersection would remain as it currently is.

1. Inclusion of changed landuse north west of the Kirkham Road/Mount Road intersection

This was to test the effects of this element, in the event that the modifications at the Station Street, Bong Bong Street and Bundaroo Street intersection were not complete when this development commenced operation.

### Scenario 2B

This scenario would be the same as Scenario 2, but would exclude the additional land use development at Sherwood Village and includes the proposed 250 space car park within that site and the traffic generation associated with those additional car spaces for public car parking.

### Scenario 3

This comprised the following elements:

1. Inclusion of all the changes outlined in Scenario 2 (with the exception of the signals at Bong Bong Street and Station Street which will be changed to a roundabout as outlined below)
2. Provision of four travel lanes on Station Street between Bowral Street and Bong Bong Street, including provision of a two lane roundabout (removal of existing traffic signals) at the intersection of Station Street and Bong Bong Street (see concept plan)
3. Provision of two lanes following the eastern side of the railway between Bowral Street (a roundabout has been detailed) and Funston Street, then following Railway Parade (which will be widened) to Loftus Street, then following a road reserve between Loftus Street and Moss Vale Road, forming a roundabout at Links Road.

An objective of this scenario is to identify the likely use (and, hence, potential benefit to town centre traffic operations) of a higher capacity traffic route down the western side of the town centre (i.e., Station Street) with a more direct connection to Moss Vale Road at Links Avenue, without conflicts with Kangaloon Road traffic (currently, the Moss Vale Road traffic and Kangaloon Road traffic share the roundabout at Funston Street).

## 5.0 Amended Station Street, Bong Bong Street and Bundaroo Street Intersection

### General

As previously noted this network amendment would entail amending the current arrangement at Station Street, Bong Bong Street, Bundaroo Street and Mittagong Road so that a single four-legged intersection would be formed. The movements permitted would be:

- All movements from Bundaroo Street and Mittagong Road north;
- Bong Bong Street movement through to Mittagong Road only;
- Station Street movement through to Mittagong Road only.

Traffic signal timing was retained from Base Case, with green time on Bong Bong Street's approach divided equally between Bong Bong Street and Bundaroo Street. Allowance was made in the signal timings for limited pedestrian crossing activity and Bundaroo Street's approach to Bong Bong Street was modelled as a single lane.

This test includes proposed signals at Mittagong Road and Victoria Street, as well as the proposed associated land use development north east and south east of the intersection.

The analysis case is designated 'Reconfigured Bong Bong and Bundaroo Street'.

As a result of this change, traffic heading north from the town centre, seeking to gain access to Mittagong Road, would be provided with a third alternative, namely a right turn from Bundaroo Street. This would permit some vehicles which might use Bendooley Street-Merrigang Street-Bong Bong Street in the base case to re-route via Bendooley Street-Bundaroo Street. This would lead to additional traffic through the Bundaroo Street and Bendooley Street intersection. A sub-option was tested that introduced a mini-roundabout at the Bundaroo Street and Bendooley Street intersection to provide additional traffic management at this intersection (designated 'Reconfigured Bong Bong and Bundaroo Street plus RAB at Bendooley Street').

### Results - Reconfigured Bong Bong and Bundaroo Street

This analysis case showed good traffic operation with diversion of some of the westbound traffic from Merrigang Street to Bundaroo Street. The main impression of the model's operation is that the constant knot of traffic evident in the Base Model at the Merrigang Street and Bong Bong Street roundabout and the westbound queue along Merrigang Street has dissipated.

A table of turning movements in this analysis case is provided in Attachment E – these turning movements are for the analysis hour of 15:00 to 16:00.

The following table compares network statistics for the analysis hour for the Base Model and the current scenario.



*Table 5-1 – Comparison of network statistics for Scenario 1 and Base Model – trips, vehicle hours of travel, free flow and delay time, vehicle kilometres of travel and average measures*

Case		Count	Distance (km)	Time (h:m:s)	Speed (km/h)	Stops	Free Flow Time (h:m:s)	Delay (h:m:s)
<b>Base Model</b>								
Complete Trips	Total	6,519	10,358	368.1		28,390	210.3	157.8
	Average		1.59	0:03:23	28.14	4.4	0:01:56	0:01:27
	Std Dev		1.02	0:02:22		3.7	0:01:03	0:01:43
All Trips	Total	6,519	10,358	368.1		28,390	210.3	157.8
	Average		1.59	0:03:23	28.14	4.4	0:01:56	0:01:27
	Std Dev		1.02	0:02:22		3.7	0:01:03	0:01:43
All (Normalised)	Total	1,000	1,589	56.5	28.14	4,355	32.3	24.2
<b>Scenario Model</b>								
Complete Trips	Total	6,559	10,514	367.3		27,254	213.6	153.6
	Average		1.60	0:03:22	28.63	4.2	0:01:57	0:01:24
	Std Dev		1.01	0:02:17		3.3	0:01:03	0:01:35
All Trips	Total	6,559	10,514	367		27,254	213.6	153.6
	Average		1.60	0:03:22	28.63	4.2	0:01:57	0:01:24
	Std Dev		1.01	0:02:17		3.3	0:01:03	0:01:35
All (Normalised)	Total	1,000	1,603	56.0	28.63	4,155	32.6	23.4

The top panel of the above table is for the Base Model and the lower panel is for the scenario model. Salient features of the comparison are:

- additional trips in the scenario model reflecting additional traffic generated by land use development at the corner of Mittagong Road and Victoria Street
- a marginally higher average speed in the scenario model, even with the additional traffic generated by the proposed developments at Mittagong Road and Victoria Street, signalisation of Mittagong Road and Victoria Street and Bong Bong Street and Bundaroo Street
- marginally reduced travel time in the scenario model, with slightly higher free flow time and slightly lower delay in the scenario model
- slightly higher average travel distance
- reduced total number of stops incurred by traffic in the scenario model when compared with the Base Model.

The following table presents a summary modelled intersection delays.

**Table 5-2 – Summary of intersection delays for Scenario Model – average intersection delay, critical delay, and level of service (LOS)**

Intersection	Avg delay	Mode of Control	Critical delay	LOS	Critical approach
Mittagong Road & Victoria Street	10	TCS	10	A	intersection average
Mittagong Road, BongBong Street & Station Street	36	TCS	36	C	intersection average
Bendooley Street & Bundaroo Street	8	P	7	A	west approach
BongBong Street & Merrigang Street	32	RAB	32	C	intersection average
Station Street & Wingecarribee Street	45	TCS	45	D	intersection average
Kirkham Road & Wingecarribee Street	39	P	89	F	south approach
Bendooley Street & Wingecarribee Street	10	P	10	A	south to east
Boolwey Street, Oxley Mall & Woolworths	5	RAB	5	A	intersection average
BongBong Street & Boolwey Street	30	TCS	30	C	intersection average
BongBong Street & Banyette Street	45	RAB	45	D	intersection average
Bendooley Street & Bowral Street	9	RAB	9	A	intersection average
MossVale Road & Kangaloon Road	35	RAB	35	C	intersection average
MossVale Road & Links Road	1	P	11	A	east approach

*Note – these are prepared using the LOS plug-in and are indicative of the delays encountered at the intersections in the model; average delay is the delay across all movements in the intersection; critical delay is the same as average delay for TCS and RAB, but is highest movement delay for priority intersections.*

The proposed amended intersection in the modelled scenario reduces average delay at the Bong Bong Street and Merrigang Street roundabout from 65 sec (LOS E) in the Base Model to 32 sec (LOS C) as indicated above. Average delays at the Bong Bong Street and Station Street intersection increase from 25 sec (LOS B) in the Base Model to 36 sec (LOS C) in the scenario – when considering this increase it should be noted that the scenario test brings all movements under signal control at this location.

Delays at the intersection of Wingecarribee Street and Kirkham Street, especially for the critical movement from south to east, are sensitive to the amount of traffic heading south along Kirkham Road to either turn left to Wingecarribee or move ahead to Kirkham Road south. Due to this sensitivity it is likely that the model is slightly over-stating future delays at this intersection.

The following table compares travel times from field surveys with base model and scenario model travel times.

**Table 5-3 – Summary of travel times along selected town centre routes for survey, Base Model and Scenario Model – travel time (seconds)**

Direction	Route	Survey	Base Model TT	Scenario Model TT
North to South	Kirkham Road to Links Road via Bong Bong Street	366	400	390
South to North	Links Road to Kirkham Road via Bong Bong Street	439	390	370
North to South	Kirkham Road to Links Road via Station Street	355	310	330
South to North	Links Road to Kirkham Road via Station Street	325	300	320
North to South	Kirkham Road to Links Road via Bendooley Street	351	300	340
South to North	Links Road to Kirkham Road via Bendooley Street	438	440	n.d.
South to North	Links Road to Bowral Street/Bendooley Street	139	110	110
South to North	Bowral Street to Kirkham Road via Bendooley Street*	299	460	230
East to West	Bendooley Street to Station Street via Boolwey Street	160	110	92
West to East	Station Street to Bendooley Street via Boolwey Street	84	83	84

*Note - \* the field survey and base model travel times are via Bendooley Street, Merrigang Street and Bong Bong Street; the scenario travel times are via Bendooley Street and Bundaroo Street, making use of the amended intersection.*

*n.d. – no data, as no vehicle in the model completed the full length of the travel time trail.*

The travel times between the three cases presented in the above table generally show small changes, with some increases and some decreases. This is broadly consistent with the network wide statistics reported above. Of interest is the northbound travel time from Bowral Street, via Bendooley Street to Mittagong Road and Kirkham Road, which shows a substantial reduction.

## Results - Reconfigured Bong Bong and Bundaroo Street plus RAB at Bendooley Street

The introduction of a mini-roundabout at Bendooley Street and Bundaroo Street makes only a small appreciable difference to the model's traffic operation when compared with the previous scenario when it is watched. Hence similar observations can be made:

- analysis case showed good traffic operation with diversion of some of the westbound traffic from Merrigang Street to Bundaroo Street; and
- the main impression of the model's operation is that the constant knot of traffic evident in the Base Model at the Merrigang Street and Bong Bong Street roundabout and the westbound queue along Merrigang Street has dissipated.

A table of turning movements in this analysis case is provided in Attachment E – these turning movements are for the analysis hour of 15:00 to 16:00. They show only small changes from the previous scenario's turning movements; of interest are the modest changes to traffic volumes along Bundaroo Street and Merrigang Street – these differences are summarised in the table below.

**Table 5-4 – Changes in modelled traffic volumes on Bundaroo Street and Merrigang Street east of Bong Bong Street**

Street	Reconfigured Bong Bong Street and Bundaroo Street		Reconfigured Bong Bong Street and Bundaroo Street plus RAB at Bendooley Street	
	EB	WB	EB	WB
Bundaroo Street – east of Bong Bong Street	190	245	126	231
Merrigang Street – east of Bong Bong Street	266	173	307	153

The following table compares network statistics for the analysis hour for the Base Model and the current scenario.

*Table 5-5 – Comparison of network statistics for Base Model and Scenario Model – trips, vehicle hours of travel, free flow and delay time, vehicle kilometres of travel and average measures*

Case		Count	Distance (km)	Time (h:m:s)	Speed (km/h)	Stops	Free Flow Time (h:m:s)	Delay (h:m:s)
<b>Base Model</b>								
Complete Trips	Total	6,519	10,358	368.1		28,390	210.3	157.8
	Average		1.59	0:03:23	28.14	4.4	0:01:56	0:01:27
	Std Dev		1.02	0:02:22		3.7	0:01:03	0:01:43
All Trips	Total	6,519	10,358	368.1		28,390	210.3	157.8
	Average		1.59	0:03:23	28.14	4.4	0:01:56	0:01:27
	Std Dev		1.02	0:02:22		3.7	0:01:03	0:01:43
All (Normalised)	Total	1,000	1,589	56.5	28.14	4,355	32.3	24.2
<b>Scenario Model</b>								
Complete Trips	Total	6,528	10,357	356.3		26,336	211.2	145.1
	Average		1.59	0:03:16	29.07	4.0	0:01:56	0:01:20
	Std Dev		1.01	0:02:13		3.5	0:01:03	0:01:31
All Trips	Total	6,528	10,357	356		26,336	211.2	145.1
	Average		1.59	0:03:16	29.07	4.0	0:01:56	0:01:20
	Std Dev		1.01	0:02:13		3.5	0:01:03	0:01:31
All (Normalised)	Total	1,000	1,587	54.6	29.07	4,034	32.4	22.2

The top panel of the above table is for the Base Model and the lower panel is for the scenario model. Salient features of the comparison are very similar to the previous comparison with the Base Model (in Table 5-1 above):

- additional trips in the scenario model reflecting additional traffic generated by land use development at the corner of Mittagong Road and Victoria Street
- higher average speed in the scenario model, even with the additional traffic, signalisation of Mittagong Road and Victoria Street and Bong Bong Street and Bundaroo Street
- marginally reduced travel time in the scenario model, with the same average free flow time per vehicle and slightly lower average delay per vehicle in the scenario model
- reduced total number of stops incurred by traffic in the scenario model when compared with the Base Model.

The overall network wide average speed is marginally higher than the previous scenario (29.07km/hr compared with 28.63km/hr), this is likely to be caused by stochastic demands and other modelling effects rather than due to the mini-roundabout.

The following table presents a summary modelled intersection delays.

**Table 5-6 – Summary of intersection delays for Scenario Model – average intersection delay, critical delay, and level of service (LOS)**

Intersection	Avg delay	Mode of Control	Critical delay	LOS	Critical approach
Mittagong Road & Victoria Street	13	TCS	13	A	intersection average
Mittagong Road, BongBong Street & Station Street	41	TCS	41	C	intersection average
Bendooley Street & Bundaroo Street	7	RAB	7	A	intersection average
BongBong Street & Merrigang Street	39	RAB	39	C	intersection average
Station Street & Wingecarribee Street	34	TCS	34	C	intersection average
Kirkham Road & Wingecarribee Street	40	P	73	F	south approach
Bendooley Street & Wingecarribee Street	9	P	9	A	south to east
Boolwey Street, Oxley Mall & Woolworths	4	RAB	4	A	intersection average
BongBong Street & Boolwey Street	31	TCS	31	C	intersection average
BongBong Street & Banyette Street	45	RAB	45	D	intersection average
Bendooley Street & Bowral Street	9	RAB	9	A	intersection average
MossVale Road & Kangaloon Road	31	RAB	31	C	intersection average
MossVale Road & Links Road	1	P	11	A	east approach

*Note – these are prepared using the LOS plug-in and are indicative of the delays encountered at the intersections in the model; average delay is the delay across all movements in the intersection; critical delay is the same as average delay for TCS and RAB, but is highest movement delay for priority intersections.*

The proposed amended intersection in the modelled scenario reduces average delay at the Bong Bong Street and Merrigang Street roundabout from 65 sec (LOS E) in the Base Model to 39 sec (LOS C) as indicated above. Average delays at the Bong Bong Street and Station Street intersection increase from 25 sec (LOS B) in the Base Model to 41 sec (LOS C) in the scenario – when considering this increase it should be noted that the scenario test brings all movements under signal control at this location. The proposed mini-roundabout at Bendooley Street and Bundaroo Street would operate satisfactorily from an average delay perspective.

Delays at the intersection of Wingecarribee Street and Kirkham Street, especially for the critical movement from south to east, are sensitive to the amount of traffic heading south along Kirkham Road to either turn left to Wingecarribee or move ahead to Kirkham Road south. Due to this sensitivity it is likely that the model is slightly over-stating future delays at this intersection.

The following table compares travel times from field surveys with base model and scenario model travel times.

**Table 5-7 – Summary of travel times along selected town centre routes for survey, Base Model and Scenario Model – travel time (seconds)**

Direction	Route	Survey	Base Model TT	Scenario Model TT
North to South	Kirkham Road to Links Road via Bong Bong Street	366	400	450
South to North	Links Road to Kirkham Road via Bong Bong Street	439	390	350
North to South	Kirkham Road to Links Road via Station Street	355	310	320
South to North	Links Road to Kirkham Road via Station Street	325	300	300
North to South	Kirkham Road to Links Road via Bendooley Street	351	300	n.d.
South to North	Links Road to Kirkham Road via Bendooley Street	438	440	n.d.
South to North	Links Road to Bowral Street/Bendooley Street	139	110	110
South to North	Bowral Street to Kirkham Road via Bendooley Street*	299	460	270
East to West	Bendooley Street to Station Street via Boolwey Street	160	110	91
West to East	Station Street to Bendooley Street via Boolwey Street	84	83	78

*Note - \* the field survey and base model travel times are via Bendooley Street, Merrigang Street and Bong Bong Street; the scenario travel times are via Bendooley Street and Bundaroo Street, making use of the amended intersection.*

*n.d. – no data, as no vehicle in the model completed the full length of the travel time trail.*

The travel times between the three cases presented in the above table generally show small changes, with some increases and some decreases. This is broadly consistent with the network wide statistics reported above and is consistent with the previous scenario. Of interest is the northbound travel time from Bowral Street, via Bendooley Street to Mittagong Road and Kirkham Road, which shows a reduction, albeit smaller than that indicated in the previous scenario (refer to Table 5-3).

## Discussion

The proposed amendment of the intersection of Bong Bong Street, Bundaroo Street and Station Street shows an improvement to traffic operations when compared with the Base Model and this is generally supported by the model outputs.

The proposed mini-roundabout at the intersection of Bendooley Street and Bundaroo Street has little impact on the model results, but is expected to provide the following traffic management benefits for the town centre:

- Assist in delineation of traffic movements at the intersection
- Manage speed at the intersection
- Better distribute delay (albeit, minor) around the approaches to the intersection.

During detailed design there will be a need to consider swept paths of buses that pass through this location, especially school services and dead running movements to the Boolwey Street bus interchange (outside Bowral Public School). Allowance will be required in the design for heavy vehicles accessing and egressing premises along Bundaroo Street.

## 6.0 Scenario 1

### General

This chapter describes in detail the modelling of the elements of Scenario 1, including the manner in which each element was included in the model, as well as providing a discussion of the traffic effects of this scenario.

This comprised the following elements:

1. Provision of 250 additional parking spaces in Oxley Mall Car Park (multi-deck), located in the area bounded by Bong Bong Street, Boolwey Street, Bendooley Street and Wingecarribee Street
2. Variation of signal phases at the intersection of Bong Bong Street and Boolwey Street
3. Provision of traffic signals at the intersection of Mittagong Road and Victoria Street
4. Creation of a co-ordinated traffic signal system, including signals at Bong Bong Street/Station Street, Station Street/Wingecarribee Street and possible signals at the intersection of Mittagong Road and Victoria Street
5. Inclusion of changed landuse at the north east and south east corner of the Mittagong Road and Victoria Street intersection
6. Modifications at Station Street, Bong Bong Street and Bundaroo Street intersection included

### Element Definition

Further information about selected elements is listed below.

#### Element 1 – additional parking spaces in Oxley Mall

Assumptions:

- Current access arrangements would remain as they are, with three access points: two off Wingecarribee Street and one off Boolwey Street.
- Approximately 85% of the proposed additional parking spaces would be utilised during the modelled period.
- Traffic generation would increase as a result of additional parking spaces through application of the current rate of turnover per space for Oxley Mall to the 85% of new spaces assumed to be used (refer above). This implies that regulation of these additional spaces would be the same as the current spaces (i.e., same time limits and the spaces would be free of charges).
  - i) Current spaces 246
  - ii) Ins 450 vehicles Outs 465 vehicles
  - iii) New spaces 250 at 85% - 212 spaces
  - iv) Additional Ins:  $450 \times 212 / 246 = 388$  vehicles per hour
  - v) Additional Outs:  $465 \times 212 / 246 = 400$  vehicles per hour
- Additional traffic generated by this extra parking would have the same trip distribution as existing Oxley Mall parkers and would be applied as a net increase in the overall traffic activity of the town centre.

It is suggested that a sensitivity test is run to test an assumed 100% utilisation of this additional parking (i.e., more than the 85% identified above) to provide Council with an indication of the robustness of the findings.

This scenario reflects 'catch-up' provision of additional car parking and does not represent the re-development or enlargement of retail floor space in the general area.

#### Element 3 – provision of traffic signals at the intersection of Mittagong Road and Victoria Street

- Code this T-intersection as three phase signals with pedestrian crossing facilities across Victoria Street. Pedestrian crossing facilities will be coded across Mittagong Road, however, due to the lack of land use on the western side of Mittagong Road it is unlikely that they would be called. Consequently, it will be modelled with a call every tenth cycle.
- Signal timings adjusted so that they reflect cycle times at Bong Bong Street and Station Street and phase splits would be adjusted to provide as much green time to Mittagong Road, without causing undue queues in Victoria Street.
- This will be investigated with both a single lane each way in Victoria Street and with one eastbound lane and two westbound lanes, with an assessment of the benefits of the additional westbound lane

#### **Element 4 – creation of a co-ordinated traffic signal system**

- Traffic signal timings adjusted to a common cycle time and offsets would be adjusted to endeavour to co-ordinate progression of traffic platoons.
- The priority will be given to northbound movement along the Station Street corridor during the modelled period.
- This process will be iterative, starting from the observed signal operation characteristics.
- We have tested northbound and southbound progression and to date found southbound progression to be more beneficial – this will be re-tested once the arrangement at Victoria Street and Bundaroo Street are optimised, as it may be that northbound optimisation will permit Station Street to attract and process more traffic.

#### **Element 5 – inclusion of land use at the north east and south east corners of Mittagong Road and Victoria Street intersection**

Information regarding land use and traffic generation is sourced from Council.

- Proposed land use at north east corner:
  - a) Proposal to construct 40 x 3 bed units plus 300 m2 retail.
- Traffic generation at north east corner:
  - a) Current generation is zero – vacant site.
  - b) Assumed residential traffic generation rate: 0.65 vph per unit (medium density housing rate as per RTA GTTGD) for residential
  - c) Assumed retail traffic generation rate: 56 vph per 1000m2 GFA (Speciality Shops rate from RTA GTTGD)

40 x 3 bed units @ 0.65 vph per unit = 26 vph

300m2 retail = 56 x 300/1000 = 17 vph

Total = 43 vph North/Eastern corner Victoria Street - all access off Victoria Street

- Proposed land use at south east corner:
  - a) Combined residential/work from home land use plus retail.
  - b) In absence of specific traffic generation rates for home offices, assume 2 bed plus home office are deemed to be 3 bed (for the purposes of calculating traffic generation) and the 1 bed plus home office are deemed to be 2 bed units.
- Traffic generation at south east corner:
  - a) The existing houses unoccupied and will be removed – current generation is zero.



b) Proposal:

30 x 3 bed units @ 0.65 vph per unit = 20 vph

12 x 2 bed units @ 0.5 vph per unit = 6 vph

700m<sup>2</sup> retail = 56 x 700/1000 = 39 vph

Total = 65 vph South/Eastern corner Victoria Street/Mittagong Road - all access off Victoria Street

- For both proposals the residential trip component is assumed to be new/net additional trips.
- These estimates of peak generation will be applied during the model's analysis hour of 3pm to 4pm.
- A proportion of the retail trips will be pass-by (i.e., they will be modelled by taking existing trips on the network and breaking them at this development. The actual proportion of pass-by trips will depend on the type of retail, we have assumed 20% pass-by (these trips will be taken from demand between Mittagong Road north (zone 1) and south of Victoria Street.
- Traffic distribution – residential will reflect the average traffic distribution of Oxley Drive and Cliff Street, and retail will reflect the distribution of current internal zones associated with the northern half of the town centre.
- Access for both developments will be from Victoria Street set back at the eastern extent of the properties:
  - a) North east – mode of control: priority with all movements allowed
  - b) South east – mode of control: priority with all movements allowed

Victoria Street's current two-way traffic 133 vph: compared with traffic generated by north east corner site of 43 vph extra and south east corner site 65 vph.

## Results

A table of turning movements in this analysis case is provided in Attachment E – these turning movements are for the analysis hour of 15:00 to 16:00.

The following table compares network statistics for the analysis hour for the Base Model and the current scenario.

*Table 6-1 – Comparison of network statistics for Scenario 1 and Base Model – trips, vehicle hours of travel, free flow and delay time, vehicle kilometres of travel and average measures*

Case		Count	Distance (km)	Time (h:m:s)	Speed (km/h)	Stops	Free Flow Time (h:m:s)	Delay (h:m:s)
<b>Base Model</b>								
Complete Trips	Total	6,519	10,358	368.1		28,390	210.3	157.8
	Average		1.59	0:03:23	28.14	4.4	0:01:56	0:01:27
	Std Dev		1.02	0:02:22		3.7	0:01:03	0:01:43
All Trips	Total	6,519	10,358	368.1		28,390	210.3	157.8
	Average		1.59	0:03:23	28.14	4.4	0:01:56	0:01:27
	Std Dev		1.02	0:02:22		3.7	0:01:03	0:01:43
All (Normalised)	Total	1,000	1,589	56.5	28.14	4,355	32.3	24.2
<b>Scenario Model</b>								
Complete Trips	Total	7,243	11,037	422.5		31,970	226.5	196.0
	Average		1.52	0:03:30	26.12	4.4	0:01:53	0:01:37
	Std Dev		0.99	0:02:42		3.6	0:01:02	0:02:13
All Trips	Total	7,282	11,072	430		32,148	227.3	202.3
	Average		1.52	0:03:32	25.77	4.4	0:01:52	0:01:40
	Std Dev		0.99	0:02:52		3.6	0:01:02	0:02:26
All (Normalised)	Total	1,000	1,520	59.0	25.77	4,415	31.2	27.8

The top panel of the above table is for the Base Model and the lower panel contains results from the scenario model. Salient features of the comparison are very similar to the previous comparison with the Base Model:

- additional trips in the scenario model reflecting additional traffic generated by land use development at the corner of Mittagong Road and Victoria Street as well as the additional traffic generation by the additional public car parking spaces proposed at Oxley Mall
- lower average speed in the scenario model, reflecting additional traffic, signalisation of Mittagong Road and Victoria Street and Bong Bong Street and Bundaroo Street
- higher average travel time in the scenario model, with slightly lower free flow time and higher average delay in the scenario model
- slightly lower average travel distance, reflecting the distribution of the additional trips
- additional total number of stops incurred by traffic in the scenario model when compared with the Base Model, although the average number of stops per vehicle is similar.

The overall network wide average speed is lower than the Base Model (25.77km/hr compared with 28.63km/hr), this is likely to be largely caused by the additional traffic. When viewed the operation of the traffic

on the network in the model looks similar to the Base Model. When compared with the Reconfigured Bong Bong and Bundaroo Street scenario, it looks to be more congested and noticeably slower, with higher apparent traffic density, especially in the northern part of the town centre.

The following table presents a summary of modelled intersection delays.

**Table 6-2 – Summary of intersection delays for Scenario 1 – average intersection delay, critical delay, and level of service (LOS)**

Intersection	Avg delay	Mode of Control	Critical delay	LOS	Critical approach
Mittagong Road & Victoria Street	11	TCS	11	A	intersection average
Mittagong Road, BongBong Street & Station Street	38	TCS	38	C	intersection average
Bendooley Street & Bundaroo Street	9	P	12	A	south approach
BongBong Street & Merrigang Street	67	RAB	67	E	intersection average
Station Street & Wingecarribee Street	43	TCS	43	D	intersection average
Kirkham Road & Wingecarribee Street	24	P	47	D	south approach
Bendooley Street & Wingecarribee Street	10	P	10	A	south to east
Boolwey Street, Oxley Mall & Woolworths	17	RAB	17	B	intersection average
BongBong Street & Boolwey Street	34	TCS	34	C	intersection average
BongBong Street & Banyette Street	45	RAB	45	D	intersection average
Bendooley Street & Bowral Street	10	RAB	10	A	intersection average
MossVale Road & Kangaloon Road	29	RAB	29	C	intersection average
MossVale Road & Links Road	2	P	17	B	east approach

*Note – these are prepared using the LOS plug-in and are indicative of the delays encountered at the intersections in the model; average delay is the delay across all movements in the intersection; critical delay is the same as average delay for TCS and RAB, but is highest movement delay for priority intersections.*

The intersection of Bong Bong Street and Merrigang Street shows the most marked change in average delays – it increases from 32 sec (in the Reconfigured Bong Bong and Bundaroo Street scenario) to 67 sec in this current analysis. The roundabout at Boolwey Street and Oxley Mall shows an increase in average delays from 5 sec to 17 sec. Another intersection affected by additional access traffic to Oxley Mall, Bong Bong Street and Boowley Street shows a small increase in average delay from 30 sec to 34 sec.

The amended intersection of Bong Bong Street and Bundaroo Street shows very little difference in average delays, with an increase from 36 sec to 38 sec.

These increases in average intersection delays, as well as the degraded network performance, indicate that the additional traffic generation from the proposed public car parking spaces at Oxley Mall are ‘consuming’, or taking-up, a large proportion of the additional capacity that would be provided by the amended intersection at Bong Bong Street and Bundaroo Street.

The following table compares travel times from field surveys with base model and scenario model travel times.

**Table 6-3 – Summary of travel times along selected town centre routes for survey, Base Model and Scenario 1 – travel time (seconds)**

Direction	Route	Survey	Base Model TT	Scenario Model TT
North to South	Kirkham Road to Links Road via Bong Bong Street	366	400	430
South to North	Links Road to Kirkham Road via Bong Bong Street	439	390	460
North to South	Kirkham Road to Links Road via Station Street	355	310	330
South to North	Links Road to Kirkham Road via Station Street	325	300	280
North to South	Kirkham Road to Links Road via Bendooley Street	351	300	340
South to North	Links Road to Kirkham Road via Bendooley Street	438	440	n.d.
South to North	Links Road to Bowral Street/Bendooley Street	139	110	110
South to North	Bowral Street to Kirkham Road via Bendooley Street*	299	460	310
East to West	Bendooley Street to Station Street via Boolwey Street	160	110	120
West to East	Station Street to Bendooley Street via Boolwey Street	84	83	80

*Note - \* the field survey and base model travel times are via Bendooley Street, Merrigang Street and Bong Bong Street; the scenario travel times are via Bendooley Street and Bundaroo Street, making use of the amended intersection.*

*n.d. – no data, as no vehicle in the model completed the full length of the travel time trail.*

Comparison of travel times in the above table indicates that this scenario would have generally higher travel times on these routes than the Base Model, with a few exceptions. Station Street northbound would perform slightly better than the Base Model, and the northbound travel time from Bowral Street, via Bendooley Street to Mittagong Road and Kirkham Road, is still lower than the Base Model; however, when compared with the Reconfigured Bong Bong and Bundaroo Street scenario's estimate of 230 seconds, it shows a marked deterioration of 80 seconds to 310 seconds.

## Discussion

The model indicates that this scenario operates satisfactorily for a heavily used town centre, albeit with a degraded average speed when compared with the Reconfigured Bong Bong and Bundaroo Street scenario.

While network wide speeds are lower than the base case, which results from additional traffic generated by the additional car parking, queuing along Merrigang Street and Bundaroo Street is less than the Base Case. This is due to the improved capacity in the northern part of the town centre due to the modification of the Bong Bong Street, Station Street and Bundaroo Street intersection.

The average delay at Bong Bong Street and Merrigang Street in this scenario has now degraded from 36 sec in the Reconfigured Bong Bong and Bundaroo Street scenario, back down to a similar level as the Base Model (67 sec versus 65 sec average delay); this is not having the same degree of impact on traffic operations in the northern part of the town centre, due to the additional northward route provided via Bendooley Street and Bundaroo Street. Other intersections show only small increases in average delay compared with the Reconfigured Bong Bong and Bundaroo Street scenario.

## 7.0 Scenario 1A and Scenario 1B

### General

Scenario 1A is the same as Scenario 1 with the following difference:

- Additional retail floorspace is included in Oxley Mall, assuming redevelopment of all or part of this shopping centre.

It is assumed that an additional 3,000sqm of retail floorspace would be added, comprising:

- An expansion of the food store size by 1,000sqm
- The remaining 2,000sqm would cover a discount department store and possibly a limited number of additional specialty stores

The additional floorspace has been modeled assuming that it would have car parking requirements and traffic generation based on RTA guidelines and Council planning instruments.

Scenario 1B is the same as Scenario 1 with the following differences:

- Oxley Mall gets 100 additional public car parking spaces (not 250 as in Scenario 1 and 1B)
- Oxley Mall has additional retail as above with car parking and traffic generation assumed to be as per RTA guidelines
- An additional 115 car parking spaces are provided at the existing Merrigang Street public car park

### Results

#### *Scenario 1A*

Scenario 1A is overloaded with traffic and fails to complete the model analysis. The initial source of traffic operation breakdown is the volume of traffic heading south down Bong Bong Street from the north, which results in extensive queuing on Bong Bong Street, which intermittently blocks traffic from using alternative routes, such as Station Street, Merrigang Street and Bundaroo Street. This is consistent with an increase in traffic seeking to gain access to Oxley Mall via Bong Bong Street and Boolwey Street. Even a small increase in traffic on Bong Bong Street would be sufficient to consume most of the 'remaining' queuing space.

The traffic assignment used in the model, which feeds averaged costs back to model drivers every 2 minutes of model run time, should result in the re-assignment of traffic away from congestion; however, this is not happening fast enough or in sufficient numbers to keep southbound traffic on Bong Bong Street and on Mittagong Road clear. This suggests that costs on alternative routes (i.e., Merrigang Street or Bundaroo Street /Bendooley Street and Station Street/Boolwey Street) are also increasing, which would be consistent with additional traffic accessing Oxley Mall via Wingecarribee Street and Bendooley Street and via Boolwey Street (east) and Bendooley Street.

#### *Scenario 1B*

Scenario 1B, which has less total additional traffic generation than Scenario 1A, runs in the model through to the end of the analysis hour. As well as having less additional traffic generation than Scenario 1A, it distributes this across more of the northern part of the town centre by placing 115 additional public parking spaces in the

existing Merrigang Street<sup>3</sup> car park, as well as 100 additional public spaces in Oxley Mall and allows for additional retail floorspace in Oxley Mall.

A table of turning movements for this analysis case is provided in Attachment E – these turning movements are for the analysis hour of 15:00 to 16:00.

The following table compares network statistics for the analysis hour for the Base Model and the current scenario.

*Table 7-1 – Comparison of network statistics for Scenario 1B and Base Model – trips, vehicle hours of travel, free flow and delay time, vehicle kilometres of travel and average measures*

Case		Count	Distance (km)	Time (h:m:s)	Speed (km/h)	Stops	Free Flow Time (h:m:s)	Delay (h:m:s)
<b>Base Model</b>								
Complete Trips	Total	6,519	10,358	368.1		28,390	210.3	157.8
	Average		1.59	0:03:23	28.14	4.4	0:01:56	0:01:27
	Std Dev		1.02	0:02:22		3.7	0:01:03	0:01:43
All Trips	Total	6,519	10,358	368.1		28,390	210.3	157.8
	Average		1.59	0:03:23	28.14	4.4	0:01:56	0:01:27
	Std Dev		1.02	0:02:22		3.7	0:01:03	0:01:43
All (Normalised)	Total	1,000	1,589	56.5	28.14	4,355	32.3	24.2
<b>Scenario Model</b>								
Complete Trips	Total	7,315	11,079	393.5		30,850	227.5	166.0
	Average		1.51	0:03:14	28.16	4.2	0:01:52	0:01:22
	Std Dev		1.00	0:02:05		3.3	0:01:02	0:01:23
All Trips	Total	7,315	11,079	394		30,850	227.5	166.0
	Average		1.51	0:03:14	28.16	4.2	0:01:52	0:01:22
	Std Dev		1.00	0:02:05		3.3	0:01:02	0:01:23
All (Normalised)	Total	1,000	1,515	53.8	28.16	4,217	31.1	22.7

The top panel of the above table is for the Base Model and the lower panel contains results from the scenario model. Salient features of the comparison are very similar to the previous comparison with the Base Model:

- additional trips in the scenario model compared with the Base Model reflect additional traffic generated by land use development at the corner of Mittagong Road and Victoria Street as well as the additional

<sup>3</sup> An initial test was conducted by placing 150 additional public spaces in Merrigang Street, so that the total increase in public spaces would be equal to Scenario 1A. That test failed – the model could not complete its analysis; indicating that the network would be overloaded. A further test, using 125 spaces at Merrigang Street car park was run, but this also failed.

traffic generation by the additional public car parking spaces proposed at Oxley Mall, the additional retail floorspace and additional public car parking at the existing public car park in Merrigang Street

- average speeds in the scenario model and the Base Model are about the same, this along with the failure of Scenario 1A to run adequately to completion in the model, suggest that the traffic generation used in Scenario 1B has consumed most of the additional capacity that would be provided by the Reconfigured Bong Bong and Bundaroo Street scenario – it is likely, however, that some modest additional traffic generation could be supported within the town centre, possibly if it were located further south than Boolwey Street to provide more dispersed network loading
- higher average travel time in the scenario model, with slightly lower free flow time and higher average delay in the scenario model
- slightly lower average travel distance, reflecting the distribution of the additional trips
- additional total number of stops incurred by traffic in the scenario model when compared with the Base Model, although the average number of stops per vehicle is similar.

When viewed, the operation of the traffic on the network in the model for this scenario looks similar to the Base Model. When compared with the Reconfigured Bong Bong and Bundaroo Street scenario, it looks to be more congested and noticeably slower, with higher apparent traffic density, especially in the northern part of the town centre. The main features in the northern part of town are:

- westbound queues along Bundaroo Street are noticeably longer than in the Reconfigured Bong Bong and Bundaroo Street scenario, although these do not overly interfere with vehicles egressing from the driveway on the northern side of Bundaroo Street (nominally Magnet Mart).
- The length of westbound queues on Merrigang Street are variable – they are longer than those evident in Reconfigured Bong Bong and Bundaroo Street scenario, but they are still noticeably shorter than in the Base Model.

An impression of model operation is that Scenario 1B performs better than Scenario 1, even though it has slightly higher traffic generation.

The following table presents a summary modelled intersection delays.

**Table 7-2 – Summary of intersection delays for Scenario 1B – average intersection delay, critical delay, and level of service (LOS)**

Intersection	Avg delay	Mode of Control	Critical delay	LOS	Critical approach
Mittagong Road & Victoria Street	12	TCS	12	A	Intersection average
Mittagong Road, BongBong Street & Station Street	35	TCS	35	C	Intersection average
Bendooley Street & Bundaroo Street	7	P	8	A	west approach
BongBong Street & Merrigang Street	27	RAB	27	B	Intersection average
Station Street & Wingecarribee Street	41	TCS	41	C	Intersection average
Kirkham Road & Wingecarribee Street	46	P	105	F	south approach
Bendooley Street & Wingecarribee Street	9	P	9	A	south to east
Boolwey Street, Oxley Mall & Woolworths	14	RAB	14	A	Intersection average
BongBong Street & Boolwey Street	31	TCS	31	C	Intersection average
BongBong Street & Banyette Street	9	RAB	9	A	Intersection average
Bendooley Street & Bowral Street	11	RAB	11	A	Intersection average
MossVale Road & Kangaloon Road	33	RAB	33	C	Intersection average
MossVale Road & Links Road	1	P	14	A	east approach

*Note – these are prepared using the LOS plug-in and are indicative of the delays encountered at the intersections in the model; average delay is the delay across all movements in the intersection; critical delay is the same as average delay for TCS and RAB, but is highest movement delay for priority intersections.*

These intersection delays indicate generally good network performance, with similar levels of average delay as the Reconfigured Bong Bong and Bundaroo Street scenario. The intersection of Kirkham Road and Wingecarribee Street exhibits higher delays than that scenario; however, delays at this intersection are sensitive to the volume of southbound traffic along Kirkham Road north of Wingecarribee Street, as well as the eastbound clearance of traffic on the Wingecarribee Street rail overbridge. As noted above, this scenario shows higher traffic density within the network and there are traffic signal cycles at the Station Street and Wingecarribee Street intersection where queuing on Station Streets restricts full discharge of traffic from Kirkham Road.

The following table compares travel times from field surveys with base model and scenario model travel times.

**Table 7-3 – Summary of travel times along selected town centre routes for survey, Base Model and Scenario 1B – travel time (seconds)**

Direction	Route	Survey	Base Model TT	Scenario Model TT
North to South	Kirkham Road to Links Road via Bong Bong Street	366	400	410
South to North	Links Road to Kirkham Road via Bong Bong Street	439	390	350
North to South	Kirkham Road to Links Road via Station Street	355	310	320
South to North	Links Road to Kirkham Road via Station Street	325	300	270
North to South	Kirkham Road to Links Road via Bendooley Street	351	300	350
South to North	Links Road to Kirkham Road via Bendooley Street	438	440	n.d.
South to North	Links Road to Bowral Street/Bendooley Street	139	110	110
South to North	Bowral Street to Kirkham Road via Bendooley Street*	299	460	270
East to West	Bendooley Street to Station Street via Boolwey Street	160	110	91
West to East	Station Street to Bendooley Street via Boolwey Street	84	83	100

*Note - \* the field survey and base model travel times are via Bendooley Street, Merrigang Street and Bong Bong Street; the scenario travel times are via Bendooley Street and Bundaroo Street, making use of the amended intersection.*



*n.d. – no data, as no vehicle in the model completed the full length of the travel time trail.*

Comparison of travel times in the above table indicates that this scenario would have similar travel times on these routes as the Base Model, with a few exceptions. Bendooley Street northbound from Bowral Street to Kirkham Road shows better performance than the Base Model.

The following table compares this scenario's travel times with the Reconfigured Bong Bong and Bundaroo Street scenario.

**Table 7-4 – Summary of travel times along selected town centre routes for survey, Reconfigured Bong Bong and Bundaroo Street scenario and Scenario 1B – travel time (seconds)**

Direction	Route	Survey	Reconfig Bong Bong & Bundaroo Street Scenario	Scenario Model TT
North to South	Kirkham Road to Links Road via Bong Bong Street	366	390	410
South to North	Links Road to Kirkham Road via Bong Bong Street	439	370	350
North to South	Kirkham Road to Links Road via Station Street	355	330	320
South to North	Links Road to Kirkham Road via Station Street	325	320	270
North to South	Kirkham Road to Links Road via Bendooley Street	351	340	350
South to North	Links Road to Kirkham Road via Bendooley Street	438	n.d.	n.d.
South to North	Links Road to Bowral Street/Bendooley Street	139	110	110
South to North	Bowral Street to Kirkham Road via Bendooley Street*	299	230	270
East to West	Bendooley Street to Station Street via Boolwey Street	160	92	91
West to East	Station Street to Bendooley Street via Boolwey Street	84	84	100

*Note - \* the field survey and base model travel times are via Bendooley Street, Merrigang Street and Bong Bong Street; the scenario travel times are via Bendooley Street and Bundaroo Street, making use of the amended intersection.*

*n.d. – no data, as no vehicle in the model completed the full length of the travel time trail.*

The above comparison does not show across-the-board degradation of travel times on these routes: a number of routes (four) show increases in travel times and four show declines. Due to the stochastic nature of the model, small differences in travel times (one way or the other) should not be given too much weight.

## Discussion

Given the results of Scenario 1A and an initial test of Scenario 1B with 150 public car parking spaces, and subsequent test with 125 spaces (not the 115 public car parking spaces reported here), which all failed to run to completion, it suggests that the modelled network is close to capacity in Scenario 1B. It also suggests that loading additional traffic generation onto the network from both Oxley Mall and Merrigang Street public car park is an advantage. Even though Scenario 1 had lower net additional traffic generation than Scenario 1B, it had a slower average travel speed than Scenario 1B - this is primarily due to all the additional traffic in Scenario 1 loading onto the network at Oxley Mall, which has a bigger impact on the capacity of Boolwey Street and Wingecarribee Street.

Compared with the Base Model's total trips of 6,519 in the analysis hour, this scenario (1B) works satisfactorily with 7,315 trips in the analysis hour, an increase of about 12% or just under 800 additional trips. This increase in traffic capacity is gained through the upgrading of the Bong Bong Street and Bundaroo Street intersection.

The traffic network may be able to support further traffic generation of a modest nature, but, to work, such additional traffic generation would need to be loaded onto the network at a number of locations, to avoid overloading individual road links and individual intersections.

## 8.0 Scenario 2A

### General

Redevelopment of OLSH site, located between Mount Road, Centennial Road and Kirkham Road, is proposed to have the following land use and traffic generation (this information is provided by Council from the Traffic Consultant's report):

- 190 dwellings - access off Centennial Road 34 IN / 31 OUT
- Resident Aged Care Facility (153 Low and High Care Beds) - access off Mount Road 8 IN / 11 OUT
- Health Facilities (open to residents and the public) - access off Mount Road 20 IN / 25 OUT
- Total 62 IN and 67 OUT

This scenario was modelled separately by adding the above estimated traffic generation to the Base Model, and leaving the intersection of Station Street and Bong Bong Street as it currently is. The objective of this test is to investigate the impact of this proposal on the current network. Note that proposed traffic signals (under Scenario 1 at Mittagong Road and Victoria Street) are not included in this analysis.

### Results

A table of turning movements in this analysis case is provided in Attachment E – these turning movements are for the analysis hour of 15:00 to 16:00.

The following table compares network statistics for the analysis hour for the Base Model and the current scenario.

*Table 8-1 – Comparison of network statistics for Scenario 2A and Base Model – trips, vehicle hours of travel, free flow and delay time, vehicle kilometres of travel and average measures*

Case		Count	Distance (km)	Time (h:m:s)	Speed (km/h)	Stops	Free Flow Time (h:m:s)	Delay (h:m:s)
<b>Base Model</b>								
Complete Trips	Total	6,519	10,358	368.1		28,390	210.3	157.8
	Average		1.59	0:03:23	28.14	4.4	0:01:56	0:01:27
	Std Dev		1.02	0:02:22		3.7	0:01:03	0:01:43
All Trips	Total	6,519	10,358	368.1		28,390	210.3	157.8
	Average		1.59	0:03:23	28.14	4.4	0:01:56	0:01:27
	Std Dev		1.02	0:02:22		3.7	0:01:03	0:01:43
All (Normalised)	Total	1,000	1,589	56.5	28.14	4,355	32.3	24.2
<b>Scenario Model</b>								
Complete Trips	Total	6,582	10,348	368		25,334	210	158
	Average		1.57	0:03:21	28.10	3.8	0:01:55	0:01:26
	Std Dev		1.00	0:11:34		3.7	0:01:02	0:11:30
All Trips	Total	6,589	10,358	368.1		25,384	210	159
	Average		1.57	0:03:22	28.04	3.9	0:01:55	0:01:27
	Std Dev		1.00	0:11:34		3.7	0:01:02	0:11:29
All (Normalised)	Total	1,000	1,571	56	28	3,852	32	24

The top panel of the above table is for the Base Model and the lower panel contains results from the scenario model. The main feature of the above comparison is that the network operates with similar delays and average speeds as the Base Model. This reflects the modest traffic generation modelled for the proposed development as well as its peripheral location with respect to the town centre.

The following table presents a summary of modelled intersection delays.

**Table 8-2 – Summary of intersection delays for Scenario 2A – average intersection delay, critical delay, and level of service (LOS)**

Intersection	Avg delay	Mode of Control	Critical delay	LOS	Critical approach
Mittagong Road & Victoria Street	1	P	12	A	south to east
BongBong Street & Station Street	24	TCS	24	B	Intersection average
Bendooley Street & Bundaroo Street	5	P	6	A	south app
BongBong Street & Merrigang Street	70	RAB	70	E	Intersection average
Station Street & Wingecarribee Street	35	TCS	35	C	Intersection average
Kirkham Road & Wingecarribee Street	25	P	55	D	south app
Bendooley Street & Wingecarribee Street	6	P	9	A	south app
Boolwey Street, Oxley Mall & Woolworths	8	RAB	8	A	Intersection average
BongBong Street & Boolwey Street	31	TCS	31	C	Intersection average
BongBong Street & Banyette Street	7	RAB	7	A	Intersection average
Bendooley Street & Bowral Street	10	RAB	10	A	Intersection average
MossVale Road & Kangaloon Road	30	RAB	30	C	Intersection average
MossVale Road & Links Road	1	P	13	A	east app

*Note – these are prepared using the LOS plug-in and are indicative of the delays encountered at the intersections in the model; average delay is the delay across all movements in the intersection; critical delay is the same as average delay for TCS and RAB, but is highest movement delay for priority intersections.*

The results above indicate generally small changes in intersection average delays. The intersection of Wingecarribee Street and Kirkham Road would experience a modest increase in average delays from 19 sec to 25 sec; the critical movement would experience an increase in delay from 36 sec to 55 sec, and its level of service would move from C to D. This is consistent with the role of this intersection providing the main access between the proposed development and Bowral Town Centre. Average delays at the intersection of Bong Bong Street and Merrigang Street increase by 5 sec from 65 sec to 70 sec.

The following table compares travel times from field surveys with base model and scenario model travel times.

**Table 8-3 – Summary of travel times along selected town centre routes for survey, Base Model and Scenario 1B – travel time (seconds)**

Direction	Route	Survey	Base Model TT	Scenario Model TT
North to South	Kirkham Road to Links Road via Bong Bong Street	366	400	350
South to North	Links Road to Kirkham Road via Bong Bong Street	439	390	340
North to South	Kirkham Road to Links Road via Station Street	355	310	290
South to North	Links Road to Kirkham Road via Station Street	325	300	280
North to South	Kirkham Road to Links Road via Bendooley Street	351	300	300
South to North	Links Road to Kirkham Road via Bendooley Street	438	440	n.d.
South to North	Links Road to Bowral Street/Bendooley Street	139	110	110
South to North	Bowral Street to Kirkham Road via Bendooley Street*	299	460	680**
East to West	Bendooley Street to Station Street via Boolwey Street	160	110	100
West to East	Station Street to Bendooley Street via Boolwey Street	84	83	89

*Note - \* the field survey and base model travel times are via Bendooley Street, Merrigang Street and Bong Bong Street; the scenario travel times are via Bendooley Street and Bundaroo Street, making use of the amended intersection; \*\* value based on a single vehicle only travelling this route.*

*n.d. – no data, as no vehicle in the model completed the full length of the travel time trail.*

Comparison of travel times in the above table indicates that this scenario would have generally similar travel times as the Base Model, with a few exceptions. The large increase in modelled travel time along Bendooley Street is for a single vehicle in the model and so does not provide a representative estimate of travel times along there. The fact that only one vehicle travelled this trail suggests that alternative routes offered more attractive (lower) travel times.

## **Discussion**

This analysis indicates that the OLSH development, as it has been included in the model, would operate satisfactorily. The increase in delay at Wingecarribee Street and Kirkham Road for the critical movement is considered acceptable.

## 9.0 Scenario 2

### General

This scenario consists of the following elements.

1. Provision of an additional two lane wide railway overbridge parallel to the existing bridge in Wingecarribee Street (concept plan included in Attachment A)
2. Provision of 250 additional parking spaces west of the Wingecarribee Street/Kirkham Road intersection, with access into the carpark from a fourth leg of the intersection, including the additional railway overbridge outlined above
3. Provision of traffic signals (associated with the additional bridge and carpark) at the intersection of Wingecarribee Street and Kirkham Road
4. Modification of the existing signals (associated with the additional bridge and carpark) at the intersection of Wingecarribee Street and Kirkham Road
5. Modification of the existing signals at the intersection of Wingecarribee Street and Station Street (incorporating the new bridge)
6. Creation of a co-ordinated traffic signal system, including the signals at Bong Bong Street/Station Street, Station Street/Wingecarribee Street and possible signals at the intersection of Wingecarribee Street and Kirkham Road
7. Inclusion of increased commercial land use associated with the 250 space carpark outlined above
8. Inclusion of changed landuse north west of the Kirkham Road/Mount Road intersection
9. Inclusion of heavy vehicles running on a fixed route into brick works
10. The adjustment of Bundaroo Street and Bong Bong Street would be included
11. Traffic signals at Mittagong Road and Victoria Street are included but the traffic generated by proposed land use developments north east and south east of this intersection are not included

### Element Definition

#### **Elements 1, 2, 3, 4, 5 – additional railway overbridge; access to 250 space car park; signalise Wingecarribee Street/Kirkham Road intersection; adjust existing signals**

- The proposed additional railway overbridge to be coded in as per design, showing location relative to existing overbridge (refer to Attachment A)
- A fourth (western) arm would be added to the intersection and this would form the main access to the proposed car park
- Signals would be coded in at Wingecarribee Street/Kirkham Road intersection, with phasing suited to the new demands and linked with signal operation at Wingecarribee Street/Station Street
- Existing signals would be amended to incorporate the above adjustments, with a clear need for linked operation of the existing Station Street/Wingecarribee Street signals with the potential new signals
- Signal timings and lane allocations would be adjusted in order to optimise the functional performance of this system – the cycle times would be targeted at existing cycle times.
- Pedestrian facilities would be provided across both Kirkham Road approaches [north and south] and across the new [western] approach and across the eastern approach.

#### **Element 6 – Creation of co-ordinated traffic signal system, including Bong Bong Street/Station Street, Station Street/Wingecarribee Street and Wingecarribee Street/Kirkham Road**

- Cycle times would be at current levels.
- Phasing to stay as is, with adjustments at Wingecarribee Street – with close co-ordination of current and potential signals.
- The priority will be given to northbound movements along the Station Street corridor due to the importance of this movement to the overall function of the town centre's traffic system

## Element 7 – inclusion of additional landuse associated with proposed 250 space carpark

Indicative floorspace by use for testing purposes and traffic generation (information sourced from Council) is provided below.

An objective of this potential large scale re-development is to secure Bowral as the commercial centre of the Highlands. So, to reflect this, it is suggested that the Mittagong Marketplace's original proposal (i.e. excluding Aldi and the Homemaker Centre - i.e., Bing Lee; etc). And after further consideration this is discounted to 75% (assuming that the development will potentially not be quite as large).

### Potential land use mix and areas

Type	RTA Class	Area	Suggested Traffic Gen Rate	RTA Traffic Gen Rate
Major food store	Super market	3,609 m2	18/100 m2	15.5/100 m2
Discount department store	Bulk retail	8,044m2	6/100m2	2/100m2
Garden shop	Fast trade	270m2	10/100	5/100
Mini major	Fast trade	500m2	10/100	5/100
Specialty	Fast trade	3,140m2	8/100	4.6/100
Total area		15,563m2		

Source: Wingecarribee Shire Council

### Potential traffic generation

Type	Suggested generation	RTA generation
Major food store	648	560
Discount department store	482	160
Garden shop	27	13.5
Mini major	50	25
Specialty	251	144
Total generation	1,458	902

Source: Wingecarribee Shire Council

In arriving at an estimate of traffic generation to be tested, Council have provided the following approach:



- Using the Nowra Fair Field Survey generation 983 vph Chris Hallam suggested discounting the estimated traffic generation of 1458 vph by 20% = 1166 vph (total movements - i.e. In and Out).
- To reflect uncertainties, suggest that 750 vph (combined in and out) should be reflected in the Paramics model, assuming that all existing generation of the site is included in this figure. This can be eventually confirmed at a later stage of site planning.

(Based on traffic count at Kirkham Road and Sherwood Avenue, existing traffic generation of the site during the hour from 3pm to 4pm is approximately 77 vph.)

At this stage of planning it is uncertain whether this activity will be a net addition to the town centre (at least initially) or whether it will be a partial diversion of existing activity. Consequently, it will be tested as a net addition to town centre traffic generation, which is consistent with the stated goal of cementing Bowral's position as the main commercial centre of the Highlands.

It is proposed to test this with half the above traffic generation, i.e., half of the 750 vph, which is 375 vph..

The scale of the development's traffic may change network costs sufficiently to affect the base trip distribution – i.e., as vehicles seek to avoid higher network costs in the immediate vicinity. Initially this impact will be tested within the Paramics traffic model, which is configured to account for drivers selecting alternative routes for their trip through the network based on the costs and delays they face; if it is found to be insufficiently sensitive to higher costs, due to the edge position of the site, then a test within Council's strategic model may provide a better basis on which to adjust traffic in the study area.

Applying the minimum recommended level of off-street parking in the RTA GTTGD (table 5.2 on page 5-12), this development would require:

Up to 10,000 sqm – 6.1 spaces per 100m2	: 6.1*10,000/100	=610 spaces
10,000 sqm to 20,000sqm – 5.6 spaces per 100 m2	: 5.6*5,563/100	=312 spaces
<i>Total spaces</i>		<i>922 spaces</i>

Applying the Bowral Town Plan DCP parking rates (section 3 on-site car parking) making assumptions about the nature and associated category of some of the uses, the development would require:

Foodstore –	3,609 m2 at 1 space per 20 m2	= 180 spaces
Discount department store [large shop] –	8,044 m2 at 1 space per 20 m2	= 402 spaces
Garden shop [medium shop] –	270 m2 at 1 space per 30 m2	= 9 spaces
Mini major [large shop <sup>4</sup> ] –	500 m2 at 1 space per 20 m2	= 25 spaces
Specialty –	3140 m2 at 1 space per 30 m2	= 105 spaces
<i>Total spaces</i>		<i>721 spaces</i>

The additional retail floorspace, at half of the identified quantity above would require approximately half of this parking capacity, i.e., between 360 and 460 spaces.

The proposed of parking supply of 250 spaces is would be separate to the above land use expansion and would cater for notional 'catch-up' parking demand. We have assumed that this parking would be largely town centre visitor parking, with a limit of 2 hours (this assumption may need to be revisited). For the purposes of modelling

<sup>4</sup> Delivery requirements suggest large shop rate – if small / medium rate applied of 1 space per 30 m2 then the requirement would reduce by 8 to 9 spaces, depending on treatment of numerical rounding.

it is assumed that on average these spaces would turnover every 80 minutes and that about 85% of spaces would be used.

Site access:

- Proposed western arm on the intersection of Wingecarribee Street and Kirkham Road
- Access via Sherwood Avenue for a proportion (approximately 10% of total trips) of trips to and from the north.

In the model, through access between Sherwood Avenue and Wingecarribee Street/Kirkham Road signals is not permitted.

Proposed approach to testing:

- a) Code in the traffic generation and access arrangements and run the model.
- b) Based on traffic behaviour in a) above, consider analysing the traffic generation of the proposal in Council's strategic model, through modification of land use inputs and extracting the resultant sub-area demand matrix for the current study's cordon and use this information to adjust the Paramics Model's demands.
- c) Re-test proposal.
- d) A second stream of testing can be undertaken should an estimate of activity diversion from the existing town centre be available, or an assumed level of diversion as a 'threshold' test.

## **Element 8 – inclusion of changed landuse north west of intersection of Kirkham Road and Mount Road intersection**

Redevelopment of OLSH site is proposed to have the following land use and traffic generation (this information is provided by Council and taken from the Traffic Consultant's report):

- 190 dwellings - access off Centennial Road 34 IN / 31 OUT
- Resident Aged Care Facility (153 Low and High Care Beds) - access off Mount Road 8 IN / 11 OUT
- Health Facilities (open to residents and the public) - access off Mount Road 20 IN/ 25 OUT
- Total 62 IN and 67 OUT

## **Element 9 – Inclusion of heavy vehicles running on a fixed route into brick works**

These vehicles would run from Mittagong Road in the north along Kirkham Road to the Brickworks on Oxley Hill Drive in the south. They are modelled as fixed route vehicles with 7 southbound in the analysis hour and 6 northbound; these are released on a roughly even headway. This modelled as a vehicle type 21 which is 19m long and 42.5 tonnes for the southbound run, when full; and vehicle type 22 which is 19m long and 17 tonnes for the northbound run, when empty.

## **Results**

This scenario did not operate satisfactorily within the model. The main issues being difficulty getting satisfactory operation of the Wingecarribee Street and Kirkham Road intersection and the Wingecarribee Street and Station Street intersection. Relatively minor queuing on Station Street at the Wingecarribee Street intersection has a 'knock on effect' on the operation of Station Street, and the model starts to divert traffic to alternative routes, such as Bong Bong Street and Bendooley Street. This underscores the importance of keeping good movement function along Station Street, to avoid increases in congestion along other routes.

It also indicates that the location of additional traffic generation is an important consideration that future planning needs to consider – locating a major attractor on the west side of the rail line leads to an increased volume of traffic seeking to cross the rail line, almost all of this traffic would use a single crossing point – at Wingecarribee Street. In Bowral’s case, much of the source of demand for retail, commercial and personal services land use comes from the established town residential area to the east of Bendooley Street and from East Bowral. Even demand from the south (Burradoo and Moss Vale) must also cross the rail line at Wingecarribee Street.

A further test was undertaken which kept the 250 public car parking spaces but scaled back the additional retail element of the initial test scenario by 60%. Again, this analysis failed.

Consequently, the additional retail element was removed from the scenario and it was modelled. The traffic function within the model was found to be satisfactory and the following numerical results are provided to describe the analysis. This case is designated ‘Scenario 2B’.

A table of turning movements in this analysis case is provided in Attachment E – these turning movements are for the analysis hour of 15:00 to 16:00.

The following table compares network statistics for the analysis hour for the Base Model and the current scenario.

*Table 9-1 – Comparison of network statistics for Scenario 2B and Base Model – trips, vehicle hours of travel, free flow and delay time, vehicle kilometres of travel and average measures*

Case		Count	Distance (km)	Time (h:m:s)	Speed (km/h)	Stops	Free Flow Time (h:m:s)	Delay (h:m:s)
<b>Base Model</b>								
Complete Trips	Total	6,519	10,358	368.1		28,390	210.3	157.8
	Average		1.59	0:03:23	28.14	4.4	0:01:56	0:01:27
	Std Dev		1.02	0:02:22		3.7	0:01:03	0:01:43
All Trips	Total	6,519	10,358	368.1		28,390	210.3	157.8
	Average		1.59	0:03:23	28.14	4.4	0:01:56	0:01:27
	Std Dev		1.02	0:02:22		3.7	0:01:03	0:01:43
All (Normalised)	Total	1,000	1,589	56.5	28.14	4,355	32.3	24.2
<b>Scenario Model</b>								
Complete Trips	Total	6,828	10,790	417.6		32,754	221.0	196.6
	Average		1.58	0:03:40	25.84	4.8	0:01:57	0:01:44
	Std Dev		1.01	0:02:33		3.8	0:01:04	0:01:53
All Trips	Total	6,828	10,790	418		32,754	221.0	196.6
	Average		1.58	0:03:40	25.84	4.8	0:01:57	0:01:44
	Std Dev		1.01	0:02:33		3.8	0:01:04	0:01:53
All (Normalised)	Total	1,000	1,580	61.2	25.84	4,797	32.4	28.8

The top panel of the above table is for the Base Model and the lower panel contains results from the scenario model. The main feature of the above comparison is that the network is expected to operate satisfactorily, although there is an increase in average travel time per vehicle from 3 mins 23 sec to 3 mins 40 sec, with most of this increase coming from increased delay. The average speed falls to just under 26km/hr.

The following table presents a summary of modelled intersection delays.

**Table 9-2 – Summary of intersection delays for Scenario 2B – average intersection delay, critical delay, and level of service (LOS)**

Intersection	Avg delay	Mode of Control	Critical delay	LOS	Critical approach
Mittagong Road & Victoria Street	8	TCS	8	A	Intersection average
BongBong Street & Station Street	43	TCS	43	D	Intersection average
Bendooley Street & Bundaroo Street	8	P	9	A	west approach
BongBong Street & Merrigang Street	57	RAB	57	E	Intersection average
Station Street & Wingecarribee Street	56	TCS	56	D	Intersection average
Kirkham Road & Wingecarribee Street	71	TCS	71	F	Intersection average
Bendooley Street & Wingecarribee Street	7	P	10	A	south approach
Boolwey Street, Oxley Mall & Woolworths	5	RAB	6	A	Intersection average
BongBong Street & Boolwey Street	33	TCS	33	C	Intersection average
BongBong Street & Banyette Street	13	RAB	13	A	Intersection average
Bendooley Street & Bowral Street	10	RAB	10	A	Intersection average
MossVale Road & Kangaloon Road	22	RAB	22	B	Intersection average
MossVale Road & Links Road	2	P	18	B	east approach

*Note – these are prepared using the LOS plug-in and are indicative of the delays encountered at the intersections in the model; average delay is the delay across all movements in the intersection; critical delay is the same as average delay for TCS and RAB, but is highest movement delay for priority intersections.*

The results above indicate a range of effects on intersections' average delays. The two intersections directly affected by the proposal, Wingecarribee Street and Kirkham Road and Wingecarribee Street and Station Street, would have substantially higher delays than the Base Model:

- Wingecarribee Street and Kirkham Road's average delay increases from 19 sec to 71 sec with the LOS declining from C to F.
- Wingecarribee Street and Station Street's average delay increases from 37 sec to 57 sec with LOS declining from C to D.

It is possible with further optimisation of signal timings at these two intersections and the added benefit of the SCATS traffic control system, the extent of this decline in performance might be able to be attenuated by a small margin. (It should be noted that this scenario models the rail crossing using the existing bridge plus a duplicate bridge to provide four-lanes over the rail line, between Station Street and Kirkham Road. Refer to design in Attachment A)

The intersection of Station Street and Bong Bong Street, a key facility for town centre access, also is estimated to suffer a decline in performance, with average delays expected to increase from 36 sec (LOS C) in the Reconfigured Bong Bong and Bundaroo Street Scenario to 43 sec (LOS D). This is due to a combination of additional demand that would be generated by the proposal, as well as occasional transient queues of southbound traffic extending from the Station Street and Wingecarribee Street intersection back to the Station Street and Bong Bong Street intersection.

The following table compares travel times from field surveys with base model and scenario model travel times.

**Table 9-3 – Summary of travel times along selected town centre routes for survey, Base Model and Scenario 2B – travel time (seconds)**

Direction	Route	Survey	Base Model TT	Scenario Model TT
North to South	Kirkham Road to Links Road via Bong Bong Street	366	400	470
South to North	Links Road to Kirkham Road via Bong Bong Street	439	390	400
North to South	Kirkham Road to Links Road via Station Street	355	310	380
South to North	Links Road to Kirkham Road via Station Street	325	300	310
North to South	Kirkham Road to Links Road via Bendooley Street	351	300	370
South to North	Links Road to Kirkham Road via Bendooley Street	438	440	n.d.
South to North	Links Road to Bowral Street/Bendooley Street	139	110	110
South to North	Bowral Street to Kirkham Road via Bendooley Street*	299	460	240
East to West	Bendooley Street to Station Street via Boolwey Street	160	110	110
West to East	Station Street to Bendooley Street via Boolwey Street	84	83	85

*Note - \* the field survey and base model travel times are via Bendooley Street, Merrigang Street and Bong Bong Street; the scenario travel times are via Bendooley Street and Bundaroo Street, making use of the amended intersection.*

*n.d. – no data, as no vehicle in the model completed the full length of the travel time trail.*

Comparison of travel times in the above table indicates that:

- Bong Bong Street would experience an increase in travel times southbound and a more modest increase northbound;
- Station Street would experience a similar pattern of increases – a higher southbound increase than northbound;
- Bendooley Street also would experience an increase in travel times southbound, but in the northbound direction it would still experience a decline.

A further travel time comparison, this time between Scenario 2B and the Reconfigured Bong Bong and Bundaroo Street Scenario, is shown in the following table.

**Table 9-4 – Summary of travel times along selected town centre routes for survey, Reconfigured Bong Bong and Bundaroo Street scenario and Scenario 2B – travel time (seconds)**

Direction	Route	Survey	Reconfig Bong Bong & Bundaroo Street Scenario	Scenario Model TT
North to South	Kirkham Road to Links Road via Bong Bong Street	366	390	470
South to North	Links Road to Kirkham Road via Bong Bong Street	439	370	400
North to South	Kirkham Road to Links Road via Station Street	355	330	380
South to North	Links Road to Kirkham Road via Station Street	325	320	310
North to South	Kirkham Road to Links Road via Bendooley Street	351	340	370
South to North	Links Road to Kirkham Road via Bendooley Street	438	440	n.d.
South to North	Links Road to Bowral Street/Bendooley Street	139	110	110
South to North	Bowral Street to Kirkham Road via Bendooley Street*	299	230	240
East to West	Bendooley Street to Station Street via Boolwey Street	160	92	110
West to East	Station Street to Bendooley Street via Boolwey Street	84	84	85

*Note - \* the field survey and base model travel times are via Bendooley Street, Merrigang Street and Bong Bong Street; the scenario travel times are via Bendooley Street and Bundaroo Street, making use of the amended intersection.*

*n.d. – no data, as no vehicle in the model completed the full length of the travel time trail.*

This comparison shows the consistency of the increase in southbound travel times. It does indicate that northbound travel times on Bong Bong Street would increase by a small amount, but that northbound travel times on Station Street would decrease marginally.

## Discussion

The initial configuration of this scenario, with 250 public car spaces as well as additional retail floorspace located in Sherwood Village did not function satisfactorily in the model. A scaled back scenario with 60% less retail floorspace also did not function satisfactorily. Scenario 2B, which has the 250 spaces of additional public car parking and no additional retail space does function satisfactorily, although average network speeds decline from the Base Model and average delays at some intersections increase.

Better signal operation at the Station Street and Wingecarribee Street intersection and at the Kirkham Road and Wingecarribee Street intersection, through the adaptive function of the SCATS signal control system, may provide a small increase in capacity. However, from these findings it is unlikely that a material increase in additional traffic generation, beyond the 250 public car spaces tested in Scenario 2B, could be supported from this site.

The overall increase in trip generation from the Base Model to this scenario is modest: about 310 trips, which is about 5% of the Base Model's trips. This small increase in supported traffic generation, relative to Scenario 1B reported in Chapter 7 above, with an increase of 800 trips or about 12%, is due to several factors:

- Most of the traffic generated by the additional public car parking spaces and the additional retail floorspace would need to cross the rail line. Most of this crossing activity would occur at Wingecarribee Street, funnelling extra traffic onto Station Street.
- The layout of the proposed duplicate bridge does provide additional rail line crossing capacity as well as the ability to store more vehicles on the bridge. However, introducing a fourth arm (western arm to/from proposed car park) into the Wingecarribee Street and Kirkham Road intersection increases the complexity of movements and traffic conflict points at this location. This is dealt with through installing traffic signals at the intersection. Due to the close spacing of the existing Station Street and Wingecarribee Street signalised intersection and this new set of signals, about 70m between the intersection centres and about 55m between the closest stop lines, it is difficult to achieve high efficiency traffic through put. In order to improve this efficiency, the right turn from Kirkham Road north to the site was banned in the model, and permitted at the Kirkham Road and Sherwood Avenue intersection.
- Whilst the rail crossing bridge in this scenario was duplicated there was no increase in capacity at the other approaches and departures to the Station Street and Wingecarribee Street intersection. Consequently, the additional traffic drawn to Station Street to access the proposed car park causes additional delays along Station Street and at this intersection, which leads to other traffic diverting from Station Street. These diversions cause delays and congestion elsewhere within the town centre, contributing to the decline in average travel speeds throughout the model.

Substantial changes to access arrangements at an enlarged Sherwood Village could be further investigated, such as:

- Further simplifying the site access at Wingecarribee Street by making it one-way in only; or
- Developing Sherwood Avenue further as the sole access.

Both these would simplify the proposed upgraded Wingecarribee Street and Kirkham Road intersection. That intersection would, however, still require upgrading with additional rail crossing capacity and signalisation. The

arrangements would still result in funnelling of almost the same volume of additional site-generated traffic through this facility and the intersection of Wingecarribee Street and Station Street. As such, it is likely to lead capacity constraints of a similar nature and extent as identified in this analysis.

Further, an access in line with Wingecarribee Street, as modelled, is considered desirable from the perspective of visually and physically linking the proposal with the existing town centre on the eastern side of the rail line.

Maintaining good levels of service for traffic along Station Street is important for the overall function of the town centre's traffic system. This lets the small proportion of through traffic avoid congesting the rest of the town centre; it also provides a well connected access route (via the east-west roads: Bowral Street, Banyette Street, Bong Bong Street and Merrigang Street) to and from the various precincts within the town centre.



## 10.0 Scenario 3

### General

1. Inclusion of all the changes outlined in Scenario 2 (with the exception of the signals at Bong Bong Street and Station Street which will be changed to a roundabout as outlined below)
2. Provision of four travel lanes on Station Street between Bowral Street and Bong Bong Street, including provision of a two lane roundabout (removal of existing traffic signals) at the intersection of Station Street and Bong Bong Street
3. Provision of two lanes following the eastern side of the railway between Bowral Street (a roundabout has been detailed) and Funston Street, then following Railway Parade (which will be widened) to Loftus Street, then following a road reserve between Loftus Street and Moss Vale Road, forming a roundabout at Links Road.
4. Traffic signals at Mittagong Road and Victoria Street are included but additional traffic generation from the proposed land use developments on the north east and south east corners of this intersection are not included.

### Element Definition

#### Element 1 – Scenario 2 with roundabout at Station Street/Bong Bong Street intersection

As described in Scenario Two with roundabout as per attached design (removal of current traffic signals) – see concept plan (Attachment B).

#### Element 2 – Additional travel lanes on Station Street between Bowral Street and Bong Bong Street

See concept plan (Attachment C).

#### Element 3 – Additional link from Funston Street through to Moss Vale Road at Links Road

See concept plan (Attachment D).

### Results

A table of turning movements from this analysis case is provided in Attachment E – these turning movements are for the analysis hour of 15:00 to 16:00. Of note is that approximately half the vehicles travelling along Moss Vale Road divert to the proposed New Link Road from Moss Vale Road and Links Road intersection to the Funston Street and New Link Road intersection.

Observation of the model running this scenario indicates satisfactory operation with transient queues evident at the major roundabout controlled intersections. Traffic density appears much lower than in the Base Model.

The following table compares network statistics for the analysis hour for the Base Model and the current scenario.

*Table 10-1 – Comparison of network statistics for Scenario 3 and Base Model – trips, vehicle hours of travel, free flow and delay time, vehicle kilometres of travel and average measures*

Case		Count	Distance (km)	Time (h:m:s)	Speed (km/h)	Stops	Free Flow Time (h:m:s)	Delay (h:m:s)
<b>Base Model</b>								
Complete Trips	Total	6,519	10,358	368.1		28,390	210.3	157.8
	Average		1.59	0:03:23	28.14	4.4	0:01:56	0:01:27
	Std Dev		1.02	0:02:22		3.7	0:01:03	0:01:43
All Trips	Total	6,519	10,358	368.1		28,390	210.3	157.8
	Average		1.59	0:03:23	28.14	4.4	0:01:56	0:01:27
	Std Dev		1.02	0:02:22		3.7	0:01:03	0:01:43
All (Normalised)	Total	1,000	1,589	56.5	28.14	4,355	32.3	24.2
<b>Scenario Model</b>								
Complete Trips	Total	6,895	10,650	323.0		22,686	224.9	98.1
	Average		1.54	0:02:49	32.97	3.3	0:01:57	0:00:51
	Std Dev		0.97	0:01:40		2.8	0:01:04	0:00:58
All Trips	Total	6,895	10,650	323		22,686	224.9	98.1
	Average		1.54	0:02:49	32.97	3.3	0:01:57	0:00:51
	Std Dev		0.97	0:01:40		2.8	0:01:04	0:00:58
All (Normalised)	Total	1,000	1,545	46.8	32.97	3,290	32.6	14.2

The top panel of the above table is for the Base Model and the lower panel contains results from the scenario model. The main feature of the above comparison is that the network is expected to operate satisfactorily, with substantial reductions in average vehicle travel times from 3 mins 23 sec to 2 mins 49 sec, with almost all of this decrease due to reduced delay, which falls from 1 mins 27 sec to 51 sec. The average network speed is projected to increase to 33km/hr – this is nearly an increase of 5km/hr – which is a substantial increase.

The projected decrease in vehicle stops is quite dramatic, falling from 28,390 to 22,690, with average stops per vehicle declining from 4.4 to 3.3. This large decline is consistent with the observation of lower traffic density and lower congestion during model operation. It would also provide a reasonable source of road user benefits – the value of a stop is 7.1 cents for a car; 27.2 for a light truck; and, 73.8 cents for a heavy truck<sup>5</sup>, this benefit would be of the order of \$450 per peak hour. The travel time saving under this scenario, of 45 hours equates to approximately \$900 of time savings per peak hour<sup>6</sup>.

<sup>5</sup> Table 2, page 4 of Economic Parameters from RTA Economic Analysis Manual, Version 2, 1999 for September 2009

<sup>6</sup> Table 10, page 10 of Economic Parameters from RTA Economic Analysis Manual, Version 2, 1999 for September 2009, which provides a value of travel time saving for light vehicles of \$18.33 per hour. Alleviating these delays and reducing stops equates to about \$1500 (2009 dollars) per peak hour.

The following table presents a summary of modelled intersection delays.

**Table 10-2 – Summary of intersection delays for Scenario 3 – average intersection delay, critical delay, and level of service (LOS)**

Intersection	Avg delay	Mode of Control	Critical delay	LOS	Critical approach
Mittagong Road & Victoria Street	8	TCS	8	A	8
BongBong Street & Station Street	20	TCS	20	B	20
Bendooley Street & Bundaroo Street	6	P	6	A	6
BongBong Street & Merrigang Street	21	RAB	21	B	21
Station Street & Wingecarribee Street	40	TCS	40	C	40
Kirkham Road & Wingecarribee Street	35	TCS	35	C	35
Bendooley Street & Wingecarribee Street	6	P	9	A	6
Boolwey Street, Oxley Mall & Woolworths	8	RAB	8	A	8
BongBong Street & Boolwey Street	36	TCS	36	C	36
BongBong Street & Banyette Street	7	RAB	7	A	7
Bendooley Street & Bowral Street	9	RAB	9	A	9
MossVale Road & Kangaloon Road	5	RAB	5	A	5
MossVale Road & Links Road	6	RAB	6	A	6
Station Street & Bowral Street & New Link Road*	3	RAB	3	A	3

*Note – these are prepared using the LOS plug-in and are indicative of the delays encountered at the intersections in the model; average delay is the delay across all movements in the intersection; critical delay is the same as average delay for TCS and RAB, but is highest movement delay for priority intersections. \* - this is the proposed new two-lane circulating roundabout controlled intersection.*

The results above indicate reductions in average delays at all intersections, when compared with the Base Model, except for Wingecarribee Street and Kirkham Road and Wingecarribee Street and Station Street, which would experience marginally higher delays than in the Base Model:

- Wingecarribee Street and Kirkham Road's average delay increases from 19 sec to 35 sec
- Wingecarribee Street and Station Street's average delay increases from 37 sec to 40 sec

These increases are expected due to the traffic generated by the proposed public parking modelled within Sherwood Village.

When compared with the Reconfigured Bong Bong and Bundaroo Street Scenario all intersections would experience a reduction in average delays, except for the Bong Bong Street and Boolwey Street intersection which would experience an increase in average delays from 30 sec to 36 sec.

The proposed design of the upgraded Station Street provides for two lanes in each direction for the length from Bowral Street to Bundaroo Street. At Wingecarribee Street the Station Street approaches have been left as they currently are:

- The south approach has lane 1 as left turn only and lane 2 as a through lane;
- The north approach has lane 1 as a through lane and lane 2 as a shared through and right turn lane.

Even though the current stop line arrangements on Station Street's approaches and departures are retained in the model, their effective capacity has increased substantially because the second lanes on Station Street now extend

all the way from Bundaroo Street to Bowral Street. This additional effective capacity is readily noticed in the model visualisation.

As noted in Scenario 2's commentary, it is possible that with further optimisation of signal timings in terms of phase splits and offsets for these two intersections and the added benefit of the SCATS traffic control system, the extent of this decline in performance at the intersections of Station Street and Wingecarribee Street and Kirkham Road and Wingecarribee Street might be able to be attenuated by a small margin. (It should be noted that this scenario models the rail crossing using the existing bridge plus a duplicate to provide four-lanes over the rail line, between Station Street and Kirkham Road. Refer to Attachment A.)

It is possible that with further investigation, an alternative design at this location, which permits two through northbound lanes, could further improve the performance of the Station Street and Wingecarribee Street intersection. However, in looking for potential improvements there are a number of physical constraints. Given that the upgraded Station Street leads to better overall performance of alternative routes, such as Bong Bong Street, a potential method of improving the performance of this Station Street and Wingecarribee Street intersection might be to re-consider whether Wingecarribee Street between Bong Bong Street and Station Street needs to provide for all movements out to the west. With restrictions on some or possibly all<sup>7</sup> movements it may permit simplified phasing of the traffic signals at this intersection, or at least a shorter phase split for Wingecarribee Street east.

The following table compares travel times from field surveys with base model and scenario model travel times.

**Table 10-3 – Summary of travel times along selected town centre routes for survey, Reconfigured Bong Bong and Bundaroo Street scenario and Scenario 3 – travel time (seconds)**

Direction	Route	Survey	Base Model TT	Scenario Model TT
North to South	Kirkham Road to Links Road via Bong Bong Street	366	400	330
South to North	Links Road to Kirkham Road via Bong Bong Street	439	390	300
North to South	Kirkham Road to Links Road via Station Street	355	310	270
South to North	Links Road to Kirkham Road via Station Street	325	300	300
North to South	Kirkham Road to Links Road via Bendooley Street	351	300	n.d.
South to North	Links Road to Kirkham Road via Bendooley Street	438	440	n.d.
South to North	Links Road to Bowral Street/Bendooley Street	139	110	110
South to North	Bowral Street to Kirkham Road via Bendooley Street*	299	460	200
East to West	Bendooley Street to Station Street via Boolwey Street	160	110	79
West to East	Station Street to Bendooley Street via Boolwey Street	84	83	92
North to South	Kirkham Road to Links Road via Station Street and New Link Road	n.a.	n.a.	260
South to North	Links Road and Kirkham Road via New Link Road and Station Street	n.a.	n.a.	280

*Note - \* the field survey and base model travel times are via Bendooley Street, Merrigang Street and Bong Bong Street; the scenario travel times are via Bendooley Street and Bundaroo Street, making use of the amended intersection.*

*n.d. – no data, as no vehicle in the model completed the full length of the travel time trail; n.a. – not applicable as this is a new link.*

Comparison of travel times in the above table indicates that almost every route measured experiences a reduction in travel times, and some of these reductions are substantial. The following are of interest:

<sup>7</sup> In overall town centre traffic function, the current role of Wingecarribee Street between Bong Bong Street and Station Street (apart from providing property access and parking), is to provide a 'release valve' during periods of high traffic demand, permitting traffic, especially northbound traffic, that might be queued on Bong Bong Street, an alternative egress from the core of the town centre.

- The Bong Bong Street route would experience a considerable reduction in travel times, despite not really losing much of its traffic volume – the main source of these benefits are at the Moss Vale Road and Kangaloon Road roundabout as well as at the northern end of town where the proposed large capacity roundabout at Station Street and Bong Bong Street reduces delays. The associated simplification of the Bong Bong Street and Merrigang Street roundabout, by substantially reducing traffic volumes on its western arm, is another source of delay reduction.
- Station Street southbound would experience a reduction in travel time, whereas northbound there is projected to be no change via this route. With the development of the New Link Road from Links Road through to Bowral Street, the travel times between Kirkham Road and Links Road are expected to be marginally lower than the alternative Station Street route (via the current route of Station Street, Funston Street and Moss Vale Road to Links Road).
- Bendooley Street southbound has no vehicle travelling the full length of this travel time trail – this is the first analysis case where this has occurred. If nothing else this provides a demonstration of the benefit of the upgraded Station Street route, by attracting through trips away from Bendooley Street. The partial travel time trails on Bendooley Street indicate that travel times would experience an increase in travel times southbound, but in the northbound direction it would still experience a decline.

Of interest is a comparison between this scenario and the Reconfigured Bong Bong and Bundaroo Street Scenario. This is shown in the following table.

**Table 10-4 – Summary of travel times along selected town centre routes for survey, Reconfigured Bong Bong and Bundaroo Street scenario and Scenario 3 – travel time (seconds)**

Direction	Route	Survey	Reconfig Bong Bong & Bundaroo Street Scenario	Scenario Model TT
North to South	Kirkham Road to Links Road via Bong Bong Street	366	390	330
South to North	Links Road to Kirkham Road via Bong Bong Street	439	370	300
North to South	Kirkham Road to Links Road via Station Street	355	330	270
South to North	Links Road to Kirkham Road via Station Street	325	320	300
North to South	Kirkham Road to Links Road via Bendooley Street	351	340	n.d.
South to North	Links Road to Kirkham Road via Bendooley Street	438	440	n.d.
South to North	Links Road to Bowral Street/Bendooley Street	139	110	110
South to North	Bowral Street to Kirkham Road via Bendooley Street*	299	230	200
East to West	Bendooley Street to Station Street via Boolwey Street	160	92	79
West to East	Station Street to Bendooley Street via Boolwey Street	84	84	92
North to South	Kirkham Road to Links Road via Station Street and New Link Road	n.a.	n.a.	260
South to North	Links Road and Kirkham Road via New Link Road and Station Street	n.a.	n.a.	280

*Note - \* the field survey and base model travel times are via Bendooley Street, Merrigang Street and Bong Bong Street; the scenario travel times are via Bendooley Street and Bundaroo Street, making use of the amended intersection.*

*n.d. – no data, as no vehicle in the model completed the full length of the travel time trail; n.a. – not applicable as this is a new link.*

When compared with travel times in the Reconfigured Bong Bong and Bundaroo Street scenario, Scenario 3 shows reductions in travel times on almost all routes. Bong Bong Street shows reductions of about a minute in both directions. Station Street southbound also has similar reductions; northbound it is projected to have more

modest travel time savings of 20 sec. The alternative route to Station Street created by this scenario would provide a further 10 sec of travel time reduction southbound, and northbound would provide a saving of about 40 sec.

## Discussion

### *Findings from Scenario 3*

Scenario 3 develops a high capacity north-south road along the western edge of the town centre. In addition to upgrading Station Street to two lanes in each direction, it provides high capacity connections at Bundaroo Street, Mittagong Road and Bong Bong Street in the north and at Bowral Street and the New Link Road in the south. These proposed intersections are high capacity roundabouts which permit all movements, thereby facilitating accessibility and the ability to support future movement patterns which might be different from those encountered today. There are also connections at Wingecarribee Street, and via a proposed service road, at Boolwey and Bowral Streets. A further feature is the development of a New Link Road between Bowral Street and Moss Vale Road at Links Road – this would reduce Moss Vale Road south's traffic volume at the Funston Street and Kangaloon Road roundabout by about 40 to 50%.

By improving travel times north-south and south-north through the town centre, this alignment achieves a number of desirable town centre traffic management outcomes:

- Through traffic, between the north (e.g., Mittagong Road north of Wingecarribee Street) and south (Moss Vale Road south of Links Road), whilst a modest proportion of town centre traffic, is drawn to the proposed route and off the other town centre roads such as Bong Bong Street and Bendooley Street.
- Traffic access to the town centre from north or south can use the proposed route to avoid travelling along Bong Bong Street, until in the vicinity of the precinct of their destination, and then use Bundaroo Street, or Boolwey Street or Banyette Street or Bowral Street for access. Whilst this function is currently available, the similar travel times on Station Street and Bong Bong Street experienced today do not provide sufficient encouragement for longer trips<sup>8</sup> to switch to Station Street.

As such the upgraded route primarily provides a town centre distributor function. It also serves an improved bypass function. Its current access function is reduced, with design elements, such as developing the new alignment further west, along the railway's eastern boundary between Boolwey Street and Bowral Street. In conjunction with the proposed development of on-street parking along the current Station Street alignment in this section, parking friction is reduced, and interactions between vehicles and pedestrians are substantially eliminated.

Given the overall network performance indicated in this analysis, it is clear that additional town centre traffic generation, over and above that modelled in Scenario 3, could be supported with this network option in place. This additional land use development and associated traffic generation could be supported in the northern part of the town centre – good levels of access would be provided by the proposed two-lane roundabout at the intersection of Bundaroo Street, Mittagong Road and Bong Bong Street; it could also be supported further south within the town centre.

A feature of the upgraded Station Street alignment is that it can be built in stages. Given the bottleneck at the northern end of the town centre, the northern part, from Wingecarribee Street to Bundaroo Street is a reasonable candidate for the initial stage of development. The middle section, between Wingecarribee Street and Bowral Street could be built next. The development of the proposed Link Road between Bowral Street and Moss Vale Road at Links Road would be the last element to be built. The construction of these progressive sections

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<sup>8</sup> By longer trips it is meant traffic accessing the far side of the town centre (e.g., traffic from Mittagong accessing retail opportunities on Bowral Street, or traffic from Moss Vale accessing properties along Merrigang Street) and through traffic.

should be timed to coincide with increases in traffic demand – if additional traffic demand did not develop for some time, then the individual sections of this upgraded facility could be deferred to match the development of extra demand.

At current levels of demand, the modelling of the New Links Road west of Moss Vale Road is indicating volumes of about 400 vehicles per hour in each direction. This compares with a likely indicative capacity of 700 to 900 vehicles per hour per direction, depending on property access arrangements.

Consideration would need to be given in the development and assessment of the proposal to environment capacity and impacts on affected properties.

## 11.0 Discussion and Conclusions

### Discussion

Bowral Town Centre's traffic system is heavily loaded in the afternoon school peak, which was the period modelled in this project. Observation of field conditions through sites visits and review of video recordings, as well as analysis in the model indicated that a 'bottleneck' effect occurs at the northern end of the town centre, as the northbound exit routes converge at Bong Bong Street and Station Street. This leads to queuing back through the Bong Bong Street and Merrigang Street roundabout, reducing the effective capacity of Merrigang Street east of Bong Bong Street and Bong Bong Street south of Merrigang Street. In addition, traffic friction and interruptions to traffic flow from pedestrian facilities along Bong Bong Street, restrict its capacity resulting in transient impaired southbound departure service flows from the Merrigang and Bong Bong Streets roundabout.

The model also indicates that features of the town centre network result in flow break occurring as a result of small changes in traffic volumes and patterns. Most roads in the town centre have a single lane in each direction, with most intersections also having single lane approaches and departures. This combined with small interruptions to traffic flow leads to rapid extension of queues, with potential for knock-on effects at upstream intersections.

Proposed improvements at the intersection of Bundaroo Street, Bong Bong Street and Station Street were analysed using the model. This analysis indicated that re-configuration of the intersection to permit right turns to the north from Bundaroo Street would reduce the bottleneck effect, and substantially improve traffic conditions. This was primarily the result of a proportion of traffic that used Merrigang Street and Bong Bong Street to exit the town centre in the Base Model, switching to Bundaroo Street in the test scenario. Using Bundaroo Street to turn right to exit the town centre achieves higher effective throughput than the current Bong Bong Street approach, as it is not constrained by queuing through the Bong Bong Street and Merrigang Street roundabout.

The proposed amendment increases the effective capacity of the town centre's traffic system. Including a mini-roundabout at the intersection of Bendooley Street and Bundaroo Street, does not materially alter the traffic performance of this proposal, but it would improve traffic management through more controlled delineation of traffic movements through this intersection.

There were three broad scenarios tested by the model, two of which had a number of sub-scenarios. Scenario 2A, which tests the proposed development between Mount Road, Centennial Road and Kirkham Road (known as OLSH), indicates that traffic system performance would not be materially affected by the proposal, even without the amendment to the intersection of Bong Bong Street, Bundaroo Street and Station Street. This is due to two factors:

- Its relatively modest additional traffic generation, and
- Its relative remoteness to the town centre, being on the west side of the railway line.

A sub-scenario of Scenario 1 involved the testing of the proposed land use developments on the south east and north east corners of Mittagong Road and Victoria Street. In addition to an increase in traffic generation, the proposal was tested with the inclusion of traffic signals at Mittagong Road and Victoria Street. This scenario would not work satisfactorily in the model. The prime issue was that the proposed traffic signals at this intersection were interrupting southbound traffic flows along Mittagong Road, substantially altering their arrival patterns at the Merrigang Street and Bong Bong Street roundabout. This change in arrival patterns was sufficient to cause this traffic system to fail; this is an indication of the fragility of the current system's operation. Consequently, there is a need to improve capacity at this location, and the proposed amendment to the Bong Bong Street, Station Street and Bundaroo Street intersection is required.



### **Scenario 1**

Scenario 1 tested the amended Bong Bong Street, Station Street and Bundaroo Street intersection, the land use development at Mittagong Road and Victoria Street, traffic signals at Mittagong Road and Victoria Street, and an additional 250 public car parking spaces at Oxley Mall. The model indicated that the town centre would operate with slower average travel speeds when compared with the Base Case and that the Merrigang Street and Bong Bong Street roundabout would have a similar level of service to the Base Case. It also indicated that the persistent westbound queue along Merrigang Street evident in the Base Case would return, but that it would be substantially shorter than the Base Case, due to traffic being able to use Bundaroo Street to exit to the north. Overall the modelled analysis indicates that this scenario is satisfactory for a busy and dense town centre.

Scenario 1A provides for 3,000spm of additional floorspace in Oxley Mall, being a notional increase in the foodstore by 1,000sqm and more specialty stores/discount department store. The model includes parking and traffic generation for this additional floorspace. The model indicates that this does not operate satisfactorily.

Scenario 1B includes the additional floorspace and associated traffic generation in Oxley Mall as per Scenario 1A, but reduces the additional public parking in Oxley Mall from 250 spaces to 100 spaces and locates 115 public parking spaces as part of an expanded car park in Merrigang Street. The differences between Scenario 1A and 1B are less additional traffic generation at Oxley Mall, lower overall town centre traffic generation (by 35 public parking spaces), wider distribution of the public parking spaces. It should be noted that an initial model run of this scenario had an extra 150 public spaces in the Merrigang Street car park, 35 more spaces than modelled here, and the model was overloaded and failed.

These results indicate that Scenario 1B is at, or about the limit of capacity of the town centre's road network, including the amended intersection of Bong Bong Street, Bundaroo Street and Station Street. This scenario's modelled traffic looks similar to the Base Case, with queues along Merrigang Street westbound, plus some queuing in Bundaroo Street. The amendment to the Bong Bong Street, Bundaroo Street and Station Street intersection supports about 800 additional trips within the town centre model. The traffic network may be able to support further traffic generation of a modest nature, but to work satisfactorily, such additional traffic generation would need to be loaded onto the road network at a number of locations, to avoid overloading individual road links and individual intersections.

### **Scenario 2**

Scenario 2's key elements include duplication of the Wingecarribee Street rail overbridge and provision of 250 additional parking spaces in Sherwood Village with additional traffic generation from potential land use development within that site, with access via a fourth (western) arm of Kirkham Road and Wingecarribee Street. Also, the intersection of Kirkham Road and Wingecarribee Street would be signalised. This scenario was analysed with the model but satisfactory operation was not achieved. Simplifications to movements within the Wingecarribee Street and Kirkham Road intersection were modelled, removing the right turn from the north (to be accommodated at Sherwood Avenue), but this also failed. Additional traffic generated by additional retail space was scaled back by 60%, but this also failed. Removal of all additional retail traffic generation did function satisfactorily, and this was designated Scenario 2B.

Even though the model of Scenario 2B did run to satisfactory completion the results indicated that achieving efficient operation of the intersections of Wingecarribee Street and Station Street and Wingecarribee Street and Kirkham Road is difficult. Whilst the bridge duplication provides an additional lane at Wingecarribee Street's eastbound stopline at Station Street and provides additional queuing space for vehicles over the rail line, the introduction of signals at Wingecarribee Street and Kirkham Road interrupts westbound traffic flow on the bridge (currently 'free flow' movements), and there are practical difficulties achieving efficient operation of

closely spaced signals. Any increase in delays experienced by traffic using Station Street tends to have knock-on effects within other parts of the town centre.

The overall increase in trip generation from the Base Model to this scenario is modest: about 310 trips, which is about 5% of the Base Model's trips. This small increase in supported traffic generation, relative to Scenario 1B reported in Chapter 7 above, with an increase of 800 trips or about 12%, is due to several factors:

- Most of the traffic generated by the additional public car parking spaces and the additional retail floorspace would need to cross the rail line. Most of this crossing activity would occur at Wingecarribee Street, funnelling extra traffic onto Station Street.
- The layout of the proposed duplicate bridge does provide additional rail line crossing capacity as well as the ability to store more vehicles on the bridge. However, introducing a fourth arm (western arm to/from proposed car park) into the Wingecarribee Street and Kirkham Road intersection increases the complexity of movements and traffic conflict points at this location. This is dealt with through installing traffic signals at the intersection. Due to the close spacing of the existing Station Street and Wingecarribee Street signalised intersection and this new set of signals, about 70m between the intersection centres and about 55m between the closest stop lines, it is difficult to achieve high efficiency traffic through put. In order to improve this efficiency, the right turn from Kirkham Road north to the site was banned in the model, and permitted at the Kirkham Road and Sherwood Avenue intersection.
- Whilst the rail crossing bridge in this scenario was duplicated there was no increase in capacity at the other approaches and departures to the Station Street and Wingecarribee Street intersection. Consequently, the additional traffic drawn to Station Street to access the proposed car park causes additional delays along Station Street and at this intersection, which leads to other traffic diverting from Station Street. These diversions cause delays and congestion elsewhere within the town centre, contributing to the decline in average travel speeds throughout the model.

Substantial changes to access arrangements at an enlarged Sherwood Village could be further investigated, such as:

- Further simplifying the site access at Wingecarribee Street by making it one-way in only; or
- Developing Sherwood Avenue further as the sole access.

Both these would simplify the proposed upgraded Wingecarribee Street and Kirkham Road intersection. That intersection would, however, still require upgrading with additional rail crossing capacity and signalisation. The arrangements would still result in funnelling of almost the same volume of additional site-generated traffic through this facility and the intersection of Wingecarribee Street and Station Street. As such, it is likely to lead capacity constraints of a similar nature and extent as identified in this analysis.

Further, an access in line with Wingecarribee Street, as modelled, is considered desirable from the perspective of visually and physically linking the proposal with the existing town centre on the eastern side of the rail line.

Maintaining good levels of service for traffic along Station Street is important for the overall function of the town centre's traffic system. This lets the small proportion of through traffic avoid congesting the rest of the town centre; it also provides a well connected access route (via the east-west roads: Bowral Street, Banyette Street, Bong Bong Street and Merrigang Street) to and from the various precincts within the town centre.

### ***Scenario 3***

Scenario 3 builds on Scenario 2 by substantially upgrading the Station Street alignment, with provision of four travel lanes along Station Street between Bowral Street and Bong Bong Street including the provision of a large capacity roundabout at the intersection of Station Street and Bong Bong Street, with two circulating lanes. It also

includes the provision of two lanes along the eastern side of the railway between Bowral Street and Funston Street, then following Railway Parade to Loftus Street, then to Moss Vale Road at Links Road, with a high capacity roundabout at Bowral Street and Station Street.

When analysed in the traffic model, this scenario performs well, with a substantial increase in average network vehicle speeds, and a marked reduction in vehicle stops: both indicators of reduced queuing and congestion. Inspection of the model indicates improvements to traffic flows and reduced queues throughout much of the town centre network.

By improving travel times north-south and south-north through the town centre, this alignment achieves a number of desirable town centre traffic management outcomes:

- Through traffic, between the north (e.g., Mittagong Road north of Wingecarribee Street) and south (Moss Vale Road south of Links Road), whilst a modest proportion of town centre traffic, is drawn to the proposed route and off the other town centre roads such as Bong Bong Street and Bendooley Street.
- Traffic access to the town centre from north or south can use the proposed route to avoid travelling along Bong Bong Street, until in the vicinity of the precinct of their destination, and then use Bundaroo Street, or Boolwey Street or Banyette Street or Bowral Street for access. Whilst this function is currently available, the similar travel times on Station Street and Bong Bong Street experienced today do not provide sufficient encouragement for longer trips<sup>9</sup> to switch to Station Street.

As such the upgraded route primarily provides a town centre distributor function. It also serves an improved bypass function. Its current access function is reduced, with design elements, such as developing the new alignment further west, along the railway's eastern boundary between Boolwey Street and Bowral Street. In conjunction with the proposed development of on-street parking along the current Station Street alignment in this section, parking friction is reduced, and interactions between vehicles and pedestrians are substantially eliminated.

Given the overall network performance indicated in this analysis, it is clear that additional town centre traffic generation, over and above that modelled in Scenario 3, could be supported with this network option in place. This additional land use development and associated traffic generation could be supported in the northern part of the town centre – good levels of access would be provided by the proposed two-lane roundabout at the intersection of Bundaroo Street, Mittagong Road and Bong Bong Street; it could also be supported further south within the town centre.

A feature of the upgraded Station Street alignment is that it can be built in stages. Given the bottleneck at the northern end of the town centre, the northern part, from Wingecarribee Street to Bundaroo Street is a reasonable candidate for the initial stage of development. The middle section, between Wingecarribee Street and Bowral Street could be built next. The development of the proposed Link Road between Bowral Street and Moss Vale Road at Links Road would be the last element to be built. The construction of these progressive sections should be timed to coincide with increases in traffic demand – if additional traffic demand did not develop for some time, then the individual sections of this upgraded facility could be deferred to match the development of extra demand.

At current levels of demand, the modelling of the New Links Road west of Moss Vale Road is indicating volumes of about 400 vehicles per hour in each direction. This compares with a likely indicative capacity of 700 to 900 vehicles per hour per direction, depending on property access arrangements.

<sup>9</sup> By longer trips it is meant traffic accessing the far side of the town centre (e.g., traffic from Mittagong accessing retail opportunities on Bowral Street, or traffic from Moss Vale accessing properties along Merrigang Street) and through traffic.

Consideration would need to be given in the development and assessment of the proposal to environment capacity and impacts on affected properties.

### ***Town Centre Bypass and Traffic Distribution***

From the performance of Scenario 3 in the modelled analysis a number of implications can be drawn which relate to the need for a town bypass and the relative role of traffic distribution.

With regard to a town centre bypass, it is important to consider the through traffic component:

- At the southern end of the model, on Moss Vale Road south of Links Road the through traffic is about 275 vehicles per hour out of 800 vehicles northbound, and 275 vehicles per hour out of 840 vehicles per hour southbound.
- At the northern end of the model the through traffic component is about 275 vehicles per hour out of 1,140 vehicles per hour northbound, and 275 vehicles per hour out of 1,090 vehicles per hour southbound.

At the southern end of the model, through traffic represents about a third of vehicles south of Links Road on Moss Vale Road and at the northern end of the model, at the top of hill north of Kirkham Road they represent about a quarter of traffic. The Base Model has about 6,500 vehicle trips in its calibrated peak hour demand matrix, of which 550 are north-south/south-north through trips, or less than 10% of the town centre traffic.

The volume of modelled traffic using the New Link Road (of about 400 vehicles per hour per direction) comprises:

- through traffic which is moving between Mittagong Road north of Kirkham Road and Moss Vale Road south of Links Road – this is about 275 vehicles per hour during the peak period covered by this model
- traffic accessing the town centre – i.e., travelling along the New Link Road, and then turning into one of the east-west streets, such as Bowral Street, to gain access to their destination, which is about 125 vehicles per hour on the New Link Road

Further north, Station Street near Wingecarribee Street in this scenario is carrying around 600 to 650 vehicles per hour in each direction in the model.

From this analysis, it is clear that the main task that Bowral's Town Centre road network must support is one of access into and distribution within Bowral. The small proportion of north-south through traffic in the Bowral Town Centre would be insufficient, on its own, to justify a dedicated bypass. The bypass traffic, at about 275 vehicles per hour in each direction, would use about a third (or less, depending on road standard and access management) of a lane of traffic capacity in each direction. From an economic appraisal perspective, this level of traffic and its removal from the town centre would be unlikely to support even a small fraction of the capital expenditure needed to construct a bypass.

Consequently, any upgraded north-south traffic route would also need to provide a town centre distribution function. This requires a number of links into the town centre with good levels of service. If a bypass/town centre distribution route were built on the western side of the railway corridor, somewhere near the Kirkham Road alignment, it would require rail crossing points at several locations, possibly, at a minimum<sup>10</sup>, in the vicinity of:

- Somewhere to the south, perhaps near Bowral Street

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<sup>10</sup> These are purely for illustrative purposes – additional crossings may be required and physical constraints may preclude some of the crossings.

- An upgraded link at Wingecarribee Street near the railway station (currently a bridge)
- An upgraded link at Kirkham Road (currently a tunnel)

These crossings are likely to be costly facilities to build, they are also likely to give the town centre a heavily engineered appearance, especially down the western side, in contrast to its current relatively low key, small-scale character (despite the railway corridor and the brickworks, west of the railway). This arrangement would make very little difference to travel times of town access traffic (it could increase it, due to the need to cut back into town at a limited number of rail crossings) and might save a minute or so for through traffic<sup>11</sup>. On this basis it is unlikely to come close to meeting relevant investment criteria guidelines set by the NSW Treasury or economic appraisal guidelines of other funding agencies.

Alternative alignments for a town centre distributor/bypass route are limited by current land use patterns. Bendooley Street down the east side of the town centre is wholly unsuited to a higher capacity traffic function due to its unfavourable alignment, its mix of sensitive land uses and its access function. Bong Bong Street is, apart from the fact it does provide the most direct route through town, for similar reasons to Bendooley Street, also wholly unsuited to upgrading of its traffic function. This leaves Station Street, which, with re-alignment to the west, so that it abuts the railway corridor, between Boolwey Street and Bowral Street, as proposed by the design analysed in this scenario, is a preferable route for a number of reasons. The following are some of the traffic function advantages of this route:

- Re-alignment to the west so it is against the railway corridor boundary and re-configuring the parking arrangements to the east of the road almost eliminates the need for pedestrians to cross the road for the section between Bowral Street and Boolwey Street
- It also reduces impacts on sensitive land use by locating the road further from buildings along Station Street and leaves a low speed environment, in the form of a one-way service road, to maintain access and parking (which would be located closer to shops than is currently the case for the parking area west of Station Street – near the old weighbridge)
- It has good connections to the various east-west roads into and across the core of the town centre, encouraging use of the distributor road, thereby reducing traffic congestion within the heart of the town centre
- It ties in well the Wingecarribee Street rail bridge, providing a good connection to land use on the western side of the railway

In addition to the above advantages, it appears that there are a number of practical and design advantages of this alignment being upgraded to provide a town centre traffic distributor function.

It should be noted that this study analysed this route with the current traffic volumes and patterns plus additional generation associated with the particular specified land use developments. Further analysis of Bowral's potential bypass needs and options conducted for a long term future year (perhaps looking 20 to 25 years into the future) would be advantageous. It is suggested that this would be better suited, in the first instance, to application of Wingecarribee Shire Council's TRACKS model, using some future land use scenarios that use the Department of Transport's Bureau of Transport Statistics (BTS) land use (population and employment) forecast scenarios as a starting point, and are then amended using local knowledge. The BTS land use forecasts are currently available at five yearly intervals to 2036. Given the uncertainties associated with long range planning two or three different land use scenarios should be developed to permit some sensitivity testing of the road network. The advantages of the TRACKS model are:

<sup>11</sup>It is likely to require significant removal of traffic capacity within the town centre to 'force' traffic to use it.

- That it provides a rigorous four-step analysis of future scenarios, providing analytically sound estimates of future traffic demand.
- It also covers a broader area than Bowral's town centre, including alternative routes that some traffic segments would find more attractive than north-south travel through Bowral. These routes include the Old Hume Highway, Old South Road and the Hume Highway.

Should this work identify particular options that need more detailed consideration, then their traffic operations and detailed function could be analysed using a modified version of the microsimulation model that was used for this current study.

Nonetheless, our view is that a bypass of Bowral, somewhat isolated from the town centre, as opposed to a town centre distributor road, is not going to be justified unless there is a very large increase in population and employment within the environs of the three main towns in the Highlands (Moss Vale, Bowral and Mittagong). Even if this were to occur, there are currently three alternative routes which are more or less attractive between various parts of these towns:

- Old Hume Highway between Mittagong, Berrima and Moss Vale;
- Hume Highway between Mittagong (at Welby) and Berrima/New Berrima and Moss Vale, via Taylor Avenue; and,
- Old South Road between Mittagong and East Bowral and some of the eastern villages (e.g., Kangaloon, Glenquarry, etc).

As such future planning efforts, subject to the long range analysis exercise outlined above, should focus on development of the town centre distributor road as outlined in Scenario 3, including provision of additional railway corridor crossing capacity at Wingecarribee Street. In the shorter term, the principle of protecting the movement function of Station Street should assist to guide traffic management measures along that route. Also, at various intersections within the town centre, it would be advantageous from a traffic capacity/system reliability perspective to remove one or two on-street car parking spaces at critical intersections. Examples of these include:

- Westside of Station Street south of Merrigang Street
- Some of the priority controlled intersections, such as Bendooley Street, such as Wingecarribee Street

## Conclusions

Current conditions in the town centre are congested and the traffic system in the northern part of the town centre, around Merrigang, Bong Bong and Station Streets, is a bottleneck, restricting the capacity of northbound traffic to exit the town centre and this has a knock-on effect on southbound traffic.

Upgrading the intersection of Bong Bong Street, Bundaroo Street and Station Street to permit the right turn from Bundaroo Street to the north resolves this issue, for current traffic demands. The model indicates that this intersection amendment would largely reduce the extensive westbound queue along Merrigang Street, and keep it well clear of Bendooley Street.

Modelling of additional traffic generation associated with extra public parking in Oxley Mall (Scenario 1) plus additional retail floorspace (Scenario 1A) and combined with additional public parking in Merrigang Street (Scenario 1B) indicated that the amendment to the intersection of Bong Bong Street, Bundaroo Street and Station Street would be able to support approximately 100 additional public spaces in Oxley Mall, additional traffic generated by about 3,000sqm of additional retail space (of which 1,000sqm would enlarge the foodstore) and 115 additional public parking spaces in Merrigang Street. The town centre road network would not be able to support additional traffic generation beyond this level, apart from distributed minor developments.

Development of Station Street to provide a higher capacity route with roundabouts at the intersection of Bong Bong Street, Bundaroo Street and Station Street and at Bowral Street and Station Street, as modelled in Scenario 3, indicate that additional town centre traffic generation could be supported beyond the levels in Scenario 1B. The upgraded Station Street route would provide a traffic distributor function for the town centre, as well as providing for bypass traffic. Maintaining this route to support traffic movement should be a key objective of further planning. It should be noted that the design of the modelled proposal seeks to achieve this and maintain good access to current properties, through re-alignment and re-location of current parking from the western side (railway side) of the alignment to the eastern side (town centre side) of the alignment.

Furthermore, the upgrading of Station Street lends itself to being constructed in stages. The modelling identifies the northern stage (from Wingecarribee Street to Bundaroo Street) as the priority stage. Subsequently, the section from Wingecarribee Street to Bowral Street would be required, and longer term, as traffic demand develops, the section from Bowral Street to Moss Vale Road at Links Road could be developed.

While the re-configuration of the signals at the intersection of Bong Bong Street, Bundaroo Street and Station Street to permit the right turn from Bundaroo Street, would support modest increases in town centre traffic generation, if land use development proceeded rapidly, this extra capacity would be consumed quite quickly and this intersection would need to be further upgraded, by conversion to a high capacity roundabout (as modelled in Scenario 3). By skipping the short term improvement and directly constructing the high capacity roundabout, there could be some overall capital cost savings and reduced total construction delays imposed on motorists.

## Attachment A – Rail overbridge Wingecaribee Street/Station Street and Wingecaribee Street/Kirkham Road



POSSIBLE 300 SPACE  
MULTI-DECK CARPARK  
SUBJECT TO MODELLING  
ANALYSIS ETC.

MAIN SOUTHERN RAILWAY  
BOWRAL STATION

EXISTING BRIDGE TO BE MAINTAINED  
CONVERTED TO 2 LANES EAST BOUND

STATION ST

EXISTING SIGNALS TO BE MODIFIED

BONG BONG ST

WINGECARRIBEE ST  
ONE WAY

CONCEPT ONLY 2 LANE WEST BOUND BRIDGE

WINGECARRIBEE SHIRE COUNCIL  
CONCEPT ONLY  
POSSIBLE FUTURE WINGECARRIBEE ST  
RAILWAY OVERBRIDGE, MULTI-DECK CARPARK  
& TRAFFIC SIGNAL INFRASTRUCTURE

PREPARED BY: FRANK JACONS  
FEB 2019



## Attachment B – Two lane roundabout – Station Street and Bong Bong Street







## Attachment C – Station Street – Bowral Street to Bong Bong Street



PROPOSED BOUNDARY

STAGE 3

MAIN SOUTHERN RAILWAY

STATION STREET DEVIATION  
STAGE 3

BOWRAL STREET

"ALLEN'S PLUMBING SUPPLIES"

APPROX. 15 PARALLEL PARKING SPACES

WHOLESALE WAREHOUSE

MILK DEPOT

FRUIT & VEGETABLES/  
GENERAL MERCHANDISE

BANNETTE STREET

SERVICE STATION

PARALLEL PARKING SPACES

GENERAL COMMERCIAL PREMISES

ARGYLE LANE

BOOLWEY STREET

RESTAURANT

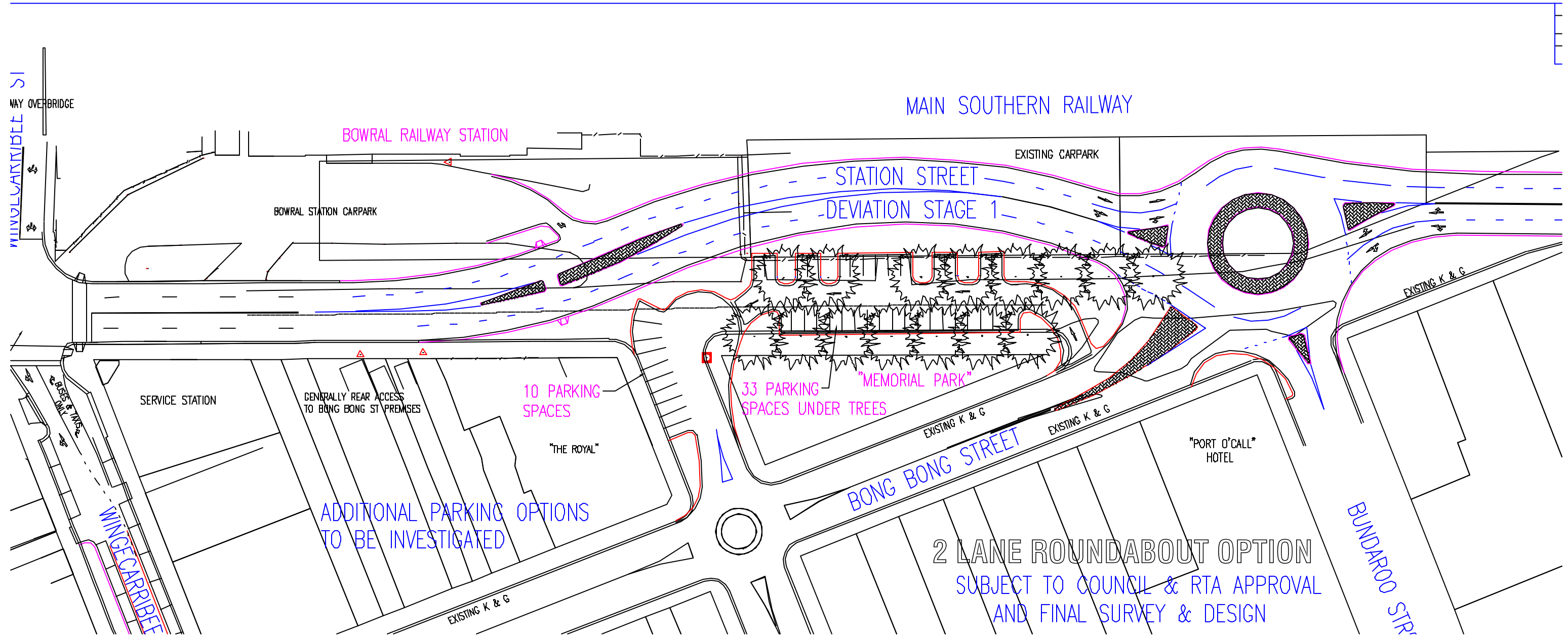
FUNERAL HOME

TO ROOFTOP PARKING

OLD BOWRAL C

STATION STAGE

"MISSIN" HUT



MAIN SOUTHERN RAILWAY

BOWRAL RAILWAY STATION

BOWRAL STATION CARPARK

EXISTING CARPARK

STATION STREET  
DEVIATION STAGE 1

EXISTING K & G

SERVICE STATION

GENERALLY REAR ACCESS  
TO BONG BONG ST PREMISES

10 PARKING  
SPACES

"THE ROYAL"

33 PARKING  
SPACES UNDER TREES

"MEMORIAL PARK"

EXISTING K & G

EXISTING K & G

"PORT O'CALL"  
HOTEL

BONG BONG STREET

BUNDAROO STR

ADDITIONAL PARKING OPTIONS  
TO BE INVESTIGATED

EXISTING K & G

2 LANE ROUNDABOUT OPTION  
SUBJECT TO COUNCIL & RTA APPROVAL  
AND FINAL SURVEY & DESIGN

## Attachment D – Extension of Railway Parade at south western part of model

## Attachment E – Tables of turning movement volumes from traffic model for each scenario



Base Model	turning movements - 15:00 to 16:00			
				Model
Mittagong Road and Kirkham Road	Mittagong Road nth	to	Kirkham Road west	38
	Mittagong Road nth	to	Mittagong Road south	1051
	Mittagong Road south	to	Mittagong Road north	1074
	Mittagong Road south	to	Kirkham Road west	8
	Kirkham Road west	to	Mittagong Road south	10
	Kirkham Road west	to	Mittagong Road north	67
Mittagong Road and Cliff Street	Mittagong Road north	to	Mittagong Road south	1033
	Mittagong Road north	to	Cliff Street east	21
	Cliff Street east	to	Mittagong Road north	16
	Cliff Street east	to	Mittagong Road south	7
	Mittagong Road south	to	Cliff Street east	16
	Mittagong Road south	to	Mittagong Road north	1063
Mittagong Road and Oxley Street	Mittagong Road north	to	Mittagong Road south	1020
	Mittagong Road north	to	Oxley Drive east	22
	Oxley Drive east	to	Mittagong Road north	13
	Oxley Drive east	to	Mittagong Road south	33
	Mittagong Road south	to	Oxley Drive east	29
	Mittagong Road south	to	Mittagong Road north	1069
Mittagong Road and Victoria Street	Mittagong Road north	to	Mittagong Road south	1040
	Mittagong Road north	to	Victoria Street east	13
	Victoria Street east	to	Mittagong Road north	3
	Victoria Street east	to	Mittagong Road south	78
	Mittagong Road south	to	Victoria Street east	36
	Mittagong Road south	to	Mittagong Road north	1092
Mittagong Road and Bundaroo Street				
	Mittagong Road north	to	Bundaroo Street east	95
	Bundaroo Street east	to	Mittagong Road north	78
Bong Bong Street and Station Street	Mittagong Road north	to	Station Street	509
	Mittagong Road	to	Bong Bong Street	521
	Bong Bong Street	to	Mittagong Road north	427
	Station Street	to	Mittagong Road north	702
Station Street and Merrigang Street	Merrigang Street east	to	Station Street south	53
	Station Street south	to	Merrigang Street east	104
Station Street and Wingecarribee Street	Station Street north	to	Wingecarribee Street west	100
	Station Street north	to	Station Street south	467
	Wingecarribee Street east	to	Station Street north	18
	Wingecarribee Street east	to	Wingecarribee Street west	52
	Wingecarribee Street east	to	Station Street south	36
	Station Street south	to	Station Street north	583
	Station Street south	to	Wingecarribee Street west	149
	Wingecarribee Street west	to	Station Street south	199
	Wingecarribee Street west	to	Station Street north	189
Station Street and Boolwey Street	Station Street north	to	Station Street south	665
	Station Street north	to	Boolwey Street east	98
	Station Street north	to	Station Street north	10
	Boolwey Street east	to	Station Street north	117
	Boolwey Street east	to	Station Street south	55
	Boolwey Street east	to	Boolwey Street east	0
	Station Street south	to	Boolwey Street east	9
	Station Street south	to	Station Street north	635
	Station Street south	to	Station Street south	2

Station Street and Banyette Street	Station Street north	to	Station Street south	534
	Station Street north	to	Banyette Street east	129
	Banyette Street east	to	Station Street north	139
	Banyette Street east	to	Station Street south	60
	Station Street south	to	Banyette Street east	19
	Station Street south	to	Station Street north	516
Station Street and Bowral Street	Station Street north	to	Station Street south	478
	Station Street north	to	Bowral Street east	120
	Bowral Street east	to	Station Street north	0
	Bowral Street east	to	Station Street south	38
	Station Street south	to	Bowral Street east	25
	Station Street south	to	Station Street north	531
Station Street and Funston Street	Station Street north	to	Funston Street west	39
	Station Street north	to	Funston Street east	466
	Funston Street east	to	Station Street north	515
	Funston Street east	to	Funston Street west	24
	Funston Street west	to	Funston Street east	8
	Funston Street west	to	Station Street north	21
Funston Street and Belmore Street	Funston Street east	to	Funston Street west	539
	Funston Street east	to	Belmore Street south	21
	Belmore Street south	to	Funston Street west	1
	Funston Street west	to	Funston Street east	474
Funston Street and Moss Vale Road	Moss Vale Road north	to	Funston Street west	11
	Moss Vale Road north	to	Moss Vale Road south	457
	Moss Vale Road north	to	Kangaloon Road east	135
	Moss Vale Road north	to	Moss Vale Road north	0
	Kangaloon Road east	to	Moss Vale Road north	141
	Kangaloon Road east	to	Funston Street west	113
	Kangaloon Road east	to	Moss Vale Road south	31
	Kangaloon Road east	to	Kangaloon Road east	0
	Moss Vale Road south	to	Kangaloon Road east	27
	Moss Vale Road south	to	Moss Vale Road north	361
	Moss Vale Road south	to	Funston Street west	427
	Moss Vale Road south	to	Funston Street west	
	Moss Vale Road south	to	Moss Vale Road south	1
	Funston Street west	to	Moss Vale Road south	384
	Funston Street west	to	Kangaloon Road east	127
	Funston Street west	to	Moss Vale Road north	0
	Funston Street west	to	Funston Street west	0
Moss Vale Road and Carrington Street	Moss Vale Road north	to	Carrington Street	6
	Moss Vale Road north	to	Moss Vale Road south	866
	Moss Vale Road south	to	Moss Vale Road north	808
	Moss Vale Road south	to	Carrington Street	6
	Carrington Street	to	Moss Vale Road south	0
	Carrington Street	to	Moss Vale Road north	3
Moss Vale Road and Alcorn Street	Moss Vale Road north	to	Alcorn Street west	29
	Moss Vale Road north	to	Moss Vale Road south	833
	Moss Vale Road north	to	Beavan Place east	0
	Beavan Place east	to	Moss Vale Road north	2
	Beavan Place east	to	Alcorn Street west	0
	Beavan Place east	to	Moss Vale Road south	1
	Moss Vale Road south	to	Beavan Place east	2
	Moss Vale Road south	to	Moss Vale Road north	780
	Moss Vale Road south	to	Alcorn Street west	19
	Alcorn Street west	to	Moss Vale Road south	9
	Alcorn Street west	to	Beavan Place east	0
	Alcorn Street west	to	Moss Vale Road north	30

Moss Vale Road and Links Road	Moss Vale Road north	to	Moss Vale Road south	805
	Moss Vale Road north	to	Links Road east	35
	Links Road east	to	Moss Vale Road north	17
	Links Road east	to	Moss Vale Road south	14
	Moss Vale Road south	to	Links Road east	10
	Moss Vale Road south	to	Moss Vale Road north	782
Bong Bong Street and Merrigang Street				
	Bong Bong Street north	to	Merrigang Street west	30
	Bong Bong Street north	to	Bong Bong Street south	368
	Bong Bong Street north	to	Merrigang Street east	179
	Bong Bong Street north	to	Bong Bong Street north	32
	Merrigang Street east	to	Bong Bong Street north	167
	Merrigang Street east	to	Merrigang Street west	23
	Merrigang Street east	to	Bong Bong Street south	61
	Merrigang Street east	to	Merrigang Street east	0
	Bong Bong Street south	to	Merrigang Street east	44
	Bong Bong Street south	to	Bong Bong Street north	225
	Bong Bong Street south	to	Merrigang Street west	0
	Bong Bong Street south	to	Bong Bong Street south	0
	Merrigang Street west	to	Bong Bong Street south	10
	Merrigang Street west	to	Merrigang Street east	94
	Merrigang Street west	to	Bong Bong Street north	0
	Merrigang Street west	to	Merrigang Street west	0
Bong Bong Street and Wingecarribee Street	Bong Bong Street north	to	Wingecarribee Street west	35
	Bong Bong Street north	to	Bong Bong Street south	406
	Bong Bong Street south	to	Bong Bong Street north	260
	Bong Bong Street south	to	Wingecarribee Street west	71
Bong Bong Street and Boolwey Street	Bong Bong Street north	to	Boolwey Street west	0
	Bong Bong Street north	to	Bong Bong Street south	295
	Bong Bong Street north	to	Boolwey Street east	83
	Boolwey Street east	to	Bong Bong Street north	84
	Boolwey Street east	to	Boolwey Street west	105
	Boolwey Street east	to	Bong Bong Street south	171
	Bong Bong Street south	to	Boolwey Street east	91
	Bong Bong Street south	to	Bong Bong Street north	227
	Bong Bong Street south	to	Boolwey Street west	61
	Boolwey Street west	to	Bong Bong Street south	0
	Boolwey Street west	to	Boolwey Street east	62
	Boolwey Street west	to	Bong Bong Street north	28
Bong Bong Street and Banyette Street	Bong Bong Street north	to	Banyette Street west	15
	Bong Bong Street north	to	Bong Bong Street south	375
	Bong Bong Street north	to	Banyette Street east	73
	Bong Bong Street north	to	Bong Bong Street north	1
	Banyette Street east	to	Bong Bong Street north	43
	Banyette Street east	to	Banyette Street west	89
	Banyette Street east	to	Bong Bong Street south	57
	Banyette Street east	to	Banyette Street east	0
	Bong Bong Street south	to	Banyette Street east	77
	Bong Bong Street south	to	Bong Bong Street north	299
	Bong Bong Street south	to	Banyette Street west	66
	Bong Bong Street south	to	Bong Bong Street south	0
	Banyette Street west	to	Bong Bong Street south	34
	Banyette Street west	to	Banyette Street east	86
	Banyette Street west	to	Bong Bong Street north	50
	Banyette Street west	to	Banyette Street west	0

Bong Bong Street and Bowral Street	Bong Bong Street north	to	Bowral Street west	7
	Bong Bong Street north	to	Moss Vale Road south	430
	Bong Bong Street north	to	Bowral Street east	16
	Bong Bong Street north	to	Bong Bong Street north	0
	Bowral Street east	to	Bong Bong Street north	68
	Bowral Street east	to	Bowral Street west	136
	Bowral Street east	to	Moss Vale Road south	170
	Bowral Street east	to	Bowral Street east	0
	Moss Vale Road south	to	Bowral Street east	211
	Moss Vale Road south	to	Bong Bong Street north	279
	Moss Vale Road south	to	Bowral Street west	10
	Moss Vale Road south	to	Moss Vale Road south	0
	Bowral Street west	to	Moss Vale Road south	9
	Bowral Street west	to	Bowral Street east	103
	Bowral Street west	to	Bong Bong Street north	92
	Bowral Street west	to	Bowral Street west	0
Bendooley Street and Bundaroo Street	Bundaroo Street east	to	Bundaroo Street west	11
	Bundaroo Street east	to	Bendooley Street south	54
	Bendooley Street south	to	Bundaroo Street east	92
	Bendooley Street south	to	Bundaroo Street west	127
	Bundaroo Street west	to	Bendooley Street south	144
	Bundaroo Street west	to	Bundaroo Street east	29
Bendooley Street and Merrigang Street	Bendooley Street north	to	Merrigang Street west	16
	Bendooley Street north	to	Bendooley Street south	190
	Bendooley Street north	to	Merrigang Street east	1
	Bendooley Street north	to	Bendooley Street north	0
	Merrigang Street east	to	Bendooley Street north	34
	Merrigang Street east	to	Merrigang Street west	93
	Merrigang Street east	to	Bendooley Street south	106
	Merrigang Street east	to	Merrigang Street east	0
	Bendooley Street south	to	Merrigang Street east	144
	Bendooley Street south	to	Bendooley Street north	116
	Bendooley Street south	to	Merrigang Street west	109
	Bendooley Street south	to	Bendooley Street south	0
	Merrigang Street west	to	Bendooley Street south	180
	Merrigang Street west	to	Merrigang Street east	66
	Merrigang Street west	to	Bendooley Street north	71
	Merrigang Street west	to	Merrigang Street west	1
Bendooley Street and Wingecarribee Street	Bendooley Street north	to	Wingecarribee Street west	105
	Bendooley Street north	to	Bendooley Street south	332
	Bendooley Street north	to	Wingecarribee Street east	30
	Wingecarribee Street east	to	Bendooley Street north	16
	Wingecarribee Street east	to	Wingecarribee Street west	16
	Wingecarribee Street east	to	Bendooley Street south	44
	Bendooley Street south	to	Wingecarribee Street east	47
	Bendooley Street south	to	Bendooley Street north	294
	Bendooley Street south	to	Wingecarribee Street west	154
	Wingecarribee Street west	to	Bendooley Street south	37
	Wingecarribee Street west	to	Wingecarribee Street east	13
	Wingecarribee Street west	to	Bendooley Street north	60

Bendooley Street and Boolwey Street	Bendooley Street north	to	Boolwey Street west	80
	Bendooley Street north	to	Bendooley Street south	295
	Bendooley Street north	to	Boolwey Street east	43
	Bendooley Street north	to	Bendooley Street north	0
	Boolwey Street east	to	Bendooley Street north	38
	Boolwey Street east	to	Boolwey Street west	57
	Boolwey Street east	to	Bendooley Street south	31
	Boolwey Street east	to	Boolwey Street east	0
	Bendooley Street south	to	Boolwey Street east	43
	Bendooley Street south	to	Bendooley Street north	357
	Bendooley Street south	to	Boolwey Street west	130
	Bendooley Street south	to	Bendooley Street south	0
	Boolwey Street west	to	Bendooley Street south	123
	Boolwey Street west	to	Boolwey Street east	69
	Boolwey Street west	to	Bendooley Street north	105
	Boolwey Street west	to	Boolwey Street west	0
Bendooley Street and Banyette Street	Bendooley Street north	to	Banyette Street west	100
	Bendooley Street north	to	Bendooley Street south	344
	Bendooley Street north	to	Driveway east	6
	Driveway east	to	Bendooley Street north	10
	Driveway east	to	Banyette Street west	10
	Driveway east	to	Bendooley Street south	18
	Bendooley Street south	to	Driveway east	10
	Bendooley Street south	to	Bendooley Street north	477
	Bendooley Street south	to	Banyette Street west	88
	Banyette Street west	to	Bendooley Street south	132
	Banyette Street west	to	Driveway east	4
	Banyette Street west	to	Bendooley Street north	34
Bendooley Street and Bowral Street	Bendooley Street north	to	Bowral Street west	109
	Bendooley Street north	to	Bendooley Street south	170
	Bendooley Street north	to	Bowral Street east	216
	Bendooley Street north	to	Bendooley Street north	0
	Bowral Street east	to	Bendooley Street north	279
	Bowral Street east	to	Bowral Street west	228
	Bowral Street east	to	Bendooley Street south	17
	Bowral Street east	to	Bowral Street east	0
	Bendooley Street south	to	Bowral Street east	3
	Bendooley Street south	to	Bendooley Street north	110
	Bendooley Street south	to	Bowral Street west	30
	Bendooley Street south	to	Bendooley Street south	0
	Bowral Street west	to	Bendooley Street south	6
	Bowral Street west	to	Bowral Street east	187
	Bowral Street west	to	Bendooley Street north	190
	Bowral Street west	to	Bowral Street west	0
Kirkham Road and Centennial Road	Kirkham Road north	to	Centennial Road west	24
	Kirkham Road north	to	Kirkham Road south	18
	Kirkham Road south	to	Kirkham Road north	27
	Kirkham Road south	to	Centennial Road west	96
	Centennial Road west	to	Kirkham Road south	92
	Centennial Road west	to	Kirkham Road north	36
Kirkham Road and Mount Road	Kirkham Road north	to	Mount Road west	0
	Kirkham Road north	to	Kirkham Road south	109
	Kirkham Road south	to	Kirkham Road north	119
	Kirkham Road south	to	Mount Road west	30
	Mount Road west	to	Kirkham Road south	44
	Mount Road west	to	Kirkham Road north	4

Kirkham Road and Sherwood Avenue	Kirkham Road north	to	Sherwood Avenue west	9
	Kirkham Road north	to	Kirkham Road south	152
	Kirkham Road south	to	Kirkham Road north	160
	Kirkham Road south	to	Sherwood Avenue west	35
	Sherwood Avenue west	to	Kirkham Road south	39
	Sherwood Avenue west	to	Kirkham Road north	8
Kirkham Road and Wingecarribee Street	Kirkham Road north	to	Kirkham Road south	35
	Kirkham Road north	to	Wingecarribee Street east	158
	Wingecarribee Street east	to	Kirkham Road north	135
	Wingecarribee Street east	to	Kirkham Road south	166
	Kirkham Road south	to	Wingecarribee Street east	223
	Kirkham Road south	to	Kirkham Road north	61
Oxleys Hill Road and Kiama Street	Oxleys Hill Road east	to	Oxleys Hill Road west	86
	Oxleys Hill Road east	to	Kiama Street south	27
	Kiama Street south	to	Oxleys Hill Road east	21
	Kiama Street south	to	Oxleys Hill Road west	2
	Oxleys Hill Road west	to	Kiama Street south	0
	Oxleys Hill Road west	to	Oxleys Hill Road east	110
<b>Car parks</b>				
Bundaroo Street egress from car park	Egress	to	Bundaroo Street east	10
	Egress	to	Bundaroo Street west	7
Merrigang Street and Post Office Lane	Merrigang Street east	to	Post Office Lane south	5
	Post Office Lane south	to	Merrigang Street east	40
	Post Office Lane south	to	Merrigang Street west	85
	Merrigang Street west	to	Post Office Lane south	22
Merrigang Street and public car park (nr Fire Station)	Car park egress	to	Merrigang Street west	2
	Car park egress	to	Merrigang Street east	42
	Merrigang Street east	to	Car park access	55
	Merrigang Street west	to	Car park access	58
Wingecarribee Street and Oxley Mall east	Wingecarribee Street east	to	Oxley Mall access	115
	Wingecarribee Street west	to	Oxley Mall access	4
Wingecarribee Street and Oxley Mall west	Wingecarribee Street east	to	Oxley Mall access	118
	Oxley Mall egress	to	Wingecarribee Street east	98
	Oxley Mall egress	to	Wingecarribee Street west	64
	Wingecarribee Street west	to	Oxley Mall access	7
Boolwey Street and Oxley Mall/Woolworths Access	Oxley Mall	to	Boolwey Street west	130
	Oxley Mall	to	Woolworths Access	16
	Oxley Mall	to	Boolwey Street east	137
	Oxley Mall	to	Oxley Mall	4
	Boolwey Street east	to	Oxley Mall	93
	Boolwey Street east	to	Boolwey Street west	88
	Boolwey Street east	to	Woolworths Access	78
	Boolwey Street east	to	Boolwey Street east	1
	Woolworths Access	to	Boolwey Street east	86
	Woolworths Access	to	Oxley Mall	14
	Woolworths Access	to	Boolwey Street west	119
	Woolworths Access	to	Woolworths Access	7
	Boolwey Street west	to	Woolworths Access	47
	Boolwey Street west	to	Boolwey Street east	78
	Boolwey Street west	to	Oxley Mall	100
	Boolwey Street west	to	Boolwey Street west	8

Banyette Street and Woolworths Access east	Banyette Street east	to	Woolworths Access	44
	Banyette Street west	to	Woolworths Access	73
Banyette Street and Woolworths Access west	Woolworths Access	to	Banyette Street west	54
	Woolworths Access	to	Banyette Street east	35
	Banyette Street east	to	Woolworths Access	19
	Banyette Street west	to	Woolworths Access	29
Bowral Street and Medical Centre east	Medical Centre	to	Bowral Street west	5
	Medical Centre	to	Bowral Street east	18
	Bowral Street east	to	Medical Centre	9
	Bowral Street west	to	Medical Centre	1
Bowral Street and Medical Centre east	Medical Centre	to	Bowral Street west	6
	Medical Centre	to	Bowral Street east	17
	Bowral Street east	to	Medical Centre	7
	Bowral Street west	to	Medical Centre	10
Bowral Street and Holmhale Street	Bowral Street east	to	Holmhale Street	4
	Holmhale Street	to	Bowral Street east	19
	Holmhale Street	to	Bowral Street west	13
	Bowral Street west	to	Holmhale Street	7
Bong Bong Street and Petrol Station Access	Bong Bong Street north	to	Petrol Station Access	37
	Petrol Station Access	to	Bong Bong Street north	5
	Petrol Station Access	to	Bong Bong Street south	19
	Bong Bong Street south	to	Petrol Station Access	4
Argyle Ln Car Park	Argyle Ln north	to	Car park	4
	Car park	to	Argyle Ln south	26
Wattle Ln Car Park	Wattle Ln south	to	Car park	12
	Car park	to	Wattle Ln south	21
	Car park	to	Wattle Ln north	6
Banyette Street and ALDI access	Banyette St east	to	ALDI	67
	ALDI	to	Banyette St east	45
	ALDI	to	Banyette St west	71
	Banyette Street west	to	ALDI	99
Station Street and Petrol Station access	Station Street north	to	Petrol Station	62
Banyette Street and Petrol Station egress	Petrol Station egress	to	Banyette Street west	30
	Petrol Station egress	to	Banyette Street east	58
Bowral Street and The Intersection access	Bowral Street east	to	The Intersection access	52
	The Intersection access	to	Bowral Street east	51
	The Intersection access	to	Bowral Street west	7
	Bowral Street west	to	The Intersection access	110
Station Street and Car Park (west side south of Bool	Station Street north	to	Car park	3
	Station Street south	to	Car park	27
	Car park	to	Station Street south	7
	Car park	to	Station Street north	14
Station Street and Car park behind Empire	Station Street north	to	Car park	36
	Car park	to	Station Street north	2
	Car park	to	Station Street south	96
	Station Street south	to	Car park	12

Station Street and Car park at station (Z57)	Station Street north	to	Car park	0
	Station Street south	to	Car park	11
	Car park	to	Station Street south	0
	Car park	to	Station Street north	0
Station Street and Car park at station (Z69)	Station Street north	to	Car park	0
	Station Street south	to	Car park	3
	Car park	to	Station Street south	19
	Car park	to	Station Street north	19
Station Street and Car park at station (Z58)	Station Street north	to	Car park	6
	Station Street south	to	Car park	0
	Car park	to	Station Street south	0
	Car park	to	Station Street north	3
Banyette Street and Argyle Lane	Argyle Lane north	to	Banyette Street west	16
	Argyle Lane north	to	Argyle Lane south	2
	Argyle Lane north	to	Banyette Street east	29
	Banyette Street east	to	Argyle Lane south	18
	Argyle Lane south	to	Banyette Street east	2
	Argyle Lane south	to	Banyette Street west	9
	Banyette Street west	to	Argyle Lane south	25
Banyette Street and Wattle Lane	Wattle Lane	to	Banyette Street west	0
	Wattle Lane	to	Banyette Street east	21
	Banyette Street east	to	Wattle Lane north	13
	Banyette Street west	to	Wattle Lane north	9



Reconfigured Bong Bong and Bundaroo Streets	turning movements - 15:00 to 16:00			Model
Mittagong Road and Kirkham Road	Mittagong Road nth	to	Kirkham Road west	91
	Mittagong Road nth	to	Mittagong Road south	1019
	Mittagong Road south	to	Mittagong Road north	1045
	Mittagong Road south	to	Kirkham Road west	23
	Kirkham Road west	to	Mittagong Road south	19
	Kirkham Road west	to	Mittagong Road north	69
Mittagong Road and Cliff Street	Mittagong Road north	to	Mittagong Road south	1003
	Mittagong Road north	to	Cliff Street east	19
	Cliff Street east	to	Mittagong Road north	11
	Cliff Street east	to	Mittagong Road south	6
	Mittagong Road south	to	Cliff Street east	11
	Mittagong Road south	to	Mittagong Road north	1047
Mittagong Road and Oxley Street	Mittagong Road north	to	Mittagong Road south	986
	Mittagong Road north	to	Oxley Drive east	22
	Oxley Drive east	to	Mittagong Road north	25
	Oxley Drive east	to	Mittagong Road south	35
	Mittagong Road south	to	Oxley Drive east	37
	Mittagong Road south	to	Mittagong Road north	1027
Mittagong Road and Victoria Street	Mittagong Road north	to	Mittagong Road south	957
	Mittagong Road north	to	Victoria Street east	57
	Victoria Street east	to	Mittagong Road north	17
	Victoria Street east	to	Mittagong Road south	96
	Mittagong Road south	to	Victoria Street east	72
	Mittagong Road south	to	Mittagong Road north	1045
Mittagong Road, Bundaroo Street, Station Street and Bong Bong Street				
	Mittagong Road north	to	Bundaroo Street east	190
	Mittagong Road north	to	Bong Bong Street south	348
	Mittagong Road north	to	Station Street south	518
	Bundaroo Street east	to	Mittagong Road north	217
	Bundaroo Street east	to	Bong Bong Street south	9
	Bundaroo Street east	to	Station Street south	19
	Bong Bong Street south	to	Mittagong Road north	237
	Station Street south	to	Mittagong Road north	670
Station Street and Merrigang Street	Merrigang Street east	to	Station Street south	53
	Station Street south	to	Merrigang Street east	94
Station Street and Wingecarribee Street	Station Street north	to	Wingecarribee Street west	107
	Station Street north	to	Station Street south	496
	Wingecarribee Street east	to	Station Street north	26
	Wingecarribee Street east	to	Wingecarribee Street west	50
	Wingecarribee Street east	to	Station Street south	139
	Station Street south	to	Station Street north	561
	Station Street south	to	Wingecarribee Street west	174
	Wingecarribee Street west	to	Station Street south	237
	Wingecarribee Street west	to	Station Street north	172
Station Street and Boolwey Street	Station Street north	to	Station Street south	731
	Station Street north	to	Boolwey Street east	194
	Station Street north	to	Station Street north	3
	Boolwey Street east	to	Station Street north	153
	Boolwey Street east	to	Station Street south	51
	Boolwey Street east	to	Boolwey Street east	24
	Station Street south	to	Boolwey Street east	6
	Station Street south	to	Station Street north	592
	Station Street south	to	Station Street south	0

Station Street and Banyette Street	Station Street north	to	Station Street south	601
	Station Street north	to	Banyette Street east	137
	Banyette Street east	to	Station Street north	121
	Banyette Street east	to	Station Street south	71
	Station Street south	to	Banyette Street east	27
	Station Street south	to	Station Street north	485
Station Street and Bowral Street	Station Street north	to	Station Street south	552
	Station Street north	to	Bowral Street east	119
	Bowral Street east	to	Station Street north	0
	Bowral Street east	to	Station Street south	34
	Station Street south	to	Bowral Street east	30
	Station Street south	to	Station Street north	512
Station Street and Funston Street	Station Street north	to	Funston Street west	65
	Station Street north	to	Funston Street east	507
	Funston Street east	to	Station Street north	505
	Funston Street east	to	Funston Street west	14
	Funston Street west	to	Funston Street east	11
	Funston Street west	to	Station Street north	24
Funston Street and Belmore Street	Funston Street east	to	Funston Street west	513
	Funston Street east	to	Belmore Street south	10
	Belmore Street south	to	Funston Street west	5
	Funston Street west	to	Funston Street east	518
Funston Street and Moss Vale Road	Moss Vale Road north	to	Funston Street west	4
	Moss Vale Road north	to	Moss Vale Road south	419
	Moss Vale Road north	to	Kangaloon Road east	135
	Moss Vale Road north	to	Moss Vale Road north	0
	Kangaloon Road east	to	Moss Vale Road north	144
	Kangaloon Road east	to	Funston Street west	111
	Kangaloon Road east	to	Moss Vale Road south	36
	Kangaloon Road east	to	Kangaloon Road east	0
	Moss Vale Road south	to	Kangaloon Road east	27
	Moss Vale Road south	to	Moss Vale Road north	342
	Moss Vale Road south	to	Funston Street west	429
	Moss Vale Road south	to	Funston Street west	87
	Moss Vale Road south	to	Moss Vale Road south	2
	Funston Street west	to	Moss Vale Road south	414
	Funston Street west	to	Kangaloon Road east	135
	Funston Street west	to	Moss Vale Road north	0
	Funston Street west	to	Funston Street west	0
Moss Vale Road and Carrington Street	Moss Vale Road north	to	Carrington Street	16
	Moss Vale Road north	to	Moss Vale Road south	853
	Moss Vale Road south	to	Moss Vale Road north	791
	Moss Vale Road south	to	Carrington Street	3
	Carrington Street	to	Moss Vale Road south	0
	Carrington Street	to	Moss Vale Road north	5
Moss Vale Road and Alcorn Street	Moss Vale Road north	to	Alcorn Street west	33
	Moss Vale Road north	to	Moss Vale Road south	823
	Moss Vale Road north	to	Beavan Place east	0
	Beavan Place east	to	Moss Vale Road north	6
	Beavan Place east	to	Alcorn Street west	0
	Beavan Place east	to	Moss Vale Road south	3
	Moss Vale Road south	to	Beavan Place east	0
	Moss Vale Road south	to	Moss Vale Road north	767
	Moss Vale Road south	to	Alcorn Street west	15
	Alcorn Street west	to	Moss Vale Road south	6
	Alcorn Street west	to	Beavan Place east	0
	Alcorn Street west	to	Moss Vale Road north	22

Moss Vale Road and Links Road	Moss Vale Road north	to	Moss Vale Road south	783
	Moss Vale Road north	to	Links Road east	55
	Links Road east	to	Moss Vale Road north	26
	Links Road east	to	Moss Vale Road south	13
	Moss Vale Road south	to	Links Road east	8
	Moss Vale Road south	to	Moss Vale Road north	754
Bong Bong Street and Merrigang Street				
	Bong Bong Street north	to	Merrigang Street west	3
	Bong Bong Street north	to	Bong Bong Street south	284
	Bong Bong Street north	to	Merrigang Street east	69
	Bong Bong Street north	to	Bong Bong Street north	0
	Merrigang Street east	to	Bong Bong Street north	51
	Merrigang Street east	to	Merrigang Street west	45
	Merrigang Street east	to	Bong Bong Street south	78
	Merrigang Street east	to	Merrigang Street east	0
	Bong Bong Street south	to	Merrigang Street east	65
	Bong Bong Street south	to	Bong Bong Street north	189
	Bong Bong Street south	to	Merrigang Street west	4
	Bong Bong Street south	to	Bong Bong Street south	2
	Merrigang Street west	to	Bong Bong Street south	13
	Merrigang Street west	to	Merrigang Street east	80
	Merrigang Street west	to	Bong Bong Street north	0
	Merrigang Street west	to	Merrigang Street west	1
Bong Bong Street and Wingecarribee Street	Bong Bong Street north	to	Wingecarribee Street west	58
	Bong Bong Street north	to	Bong Bong Street south	318
	Bong Bong Street south	to	Bong Bong Street north	246
	Bong Bong Street south	to	Wingecarribee Street west	153
Bong Bong Street and Boolwey Street	Bong Bong Street north	to	Boolwey Street west	0
	Bong Bong Street north	to	Bong Bong Street south	240
	Bong Bong Street north	to	Boolwey Street east	91
	Boolwey Street east	to	Bong Bong Street north	63
	Boolwey Street east	to	Boolwey Street west	118
	Boolwey Street east	to	Bong Bong Street south	179
	Bong Bong Street south	to	Boolwey Street east	0
	Bong Bong Street south	to	Bong Bong Street north	304
	Bong Bong Street south	to	Boolwey Street west	86
	Boolwey Street west	to	Bong Bong Street south	0
	Boolwey Street west	to	Boolwey Street east	155
	Boolwey Street west	to	Bong Bong Street north	29
Bong Bong Street and Banyette Street	Bong Bong Street north	to	Banyette Street west	12
	Bong Bong Street north	to	Bong Bong Street south	332
	Bong Bong Street north	to	Banyette Street east	73
	Bong Bong Street north	to	Bong Bong Street north	0
	Banyette Street east	to	Bong Bong Street north	46
	Banyette Street east	to	Banyette Street west	93
	Banyette Street east	to	Bong Bong Street south	60
	Banyette Street east	to	Banyette Street east	0
	Bong Bong Street south	to	Banyette Street east	178
	Bong Bong Street south	to	Bong Bong Street north	284
	Bong Bong Street south	to	Banyette Street west	85
	Bong Bong Street south	to	Bong Bong Street south	22
	Banyette Street west	to	Bong Bong Street south	53
	Banyette Street west	to	Banyette Street east	84
	Banyette Street west	to	Bong Bong Street north	68
	Banyette Street west	to	Banyette Street west	0

Bong Bong Street and Bowral Street	Bong Bong Street north	to	Bowral Street west	13
	Bong Bong Street north	to	Moss Vale Road south	387
	Bong Bong Street north	to	Bowral Street east	43
	Bong Bong Street north	to	Bong Bong Street north	0
	Bowral Street east	to	Bong Bong Street north	61
	Bowral Street east	to	Bowral Street west	129
	Bowral Street east	to	Moss Vale Road south	154
	Bowral Street east	to	Bowral Street east	0
	Moss Vale Road south	to	Bowral Street east	77
	Moss Vale Road south	to	Bong Bong Street north	404
	Moss Vale Road south	to	Bowral Street west	6
	Moss Vale Road south	to	Moss Vale Road south	0
	Bowral Street west	to	Moss Vale Road south	12
	Bowral Street west	to	Bowral Street east	76
	Bowral Street west	to	Bong Bong Street north	102
	Bowral Street west	to	Bowral Street west	0
Bendooley Street and Bundaroo Street	Bundaroo Street east	to	Bundaroo Street west	13
	Bundaroo Street east	to	Bendooley Street south	49
	Bendooley Street south	to	Bundaroo Street east	94
	Bendooley Street south	to	Bundaroo Street west	289
	Bundaroo Street west	to	Bendooley Street south	255
	Bundaroo Street west	to	Bundaroo Street east	31
Bendooley Street and Merrigang Street	Bendooley Street north	to	Merrigang Street west	8
	Bendooley Street north	to	Bendooley Street south	289
	Bendooley Street north	to	Merrigang Street east	18
	Bendooley Street north	to	Bendooley Street north	0
	Merrigang Street east	to	Bendooley Street north	70
	Merrigang Street east	to	Merrigang Street west	52
	Merrigang Street east	to	Bendooley Street south	113
	Merrigang Street east	to	Merrigang Street east	0
	Bendooley Street south	to	Merrigang Street east	141
	Bendooley Street south	to	Bendooley Street north	257
	Bendooley Street south	to	Merrigang Street west	50
	Bendooley Street south	to	Bendooley Street south	1
	Merrigang Street west	to	Bendooley Street south	117
	Merrigang Street west	to	Merrigang Street east	51
	Merrigang Street west	to	Bendooley Street north	54
	Merrigang Street west	to	Merrigang Street west	0
Bendooley Street and Wingecarribee Street	Bendooley Street north	to	Wingecarribee Street west	120
	Bendooley Street north	to	Bendooley Street south	352
	Bendooley Street north	to	Wingecarribee Street east	41
	Wingecarribee Street east	to	Bendooley Street north	24
	Wingecarribee Street east	to	Wingecarribee Street west	12
	Wingecarribee Street east	to	Bendooley Street south	44
	Bendooley Street south	to	Wingecarribee Street east	38
	Bendooley Street south	to	Bendooley Street north	344
	Bendooley Street south	to	Wingecarribee Street west	104
	Wingecarribee Street west	to	Bendooley Street south	39
	Wingecarribee Street west	to	Wingecarribee Street east	13
	Wingecarribee Street west	to	Bendooley Street north	81

Bendooley Street and Boolwey Street	Bendooley Street north	to	Boolwey Street west	108
	Bendooley Street north	to	Bendooley Street south	303
	Bendooley Street north	to	Boolwey Street east	46
	Bendooley Street north	to	Bendooley Street north	1
	Boolwey Street east	to	Bendooley Street north	51
	Boolwey Street east	to	Boolwey Street west	48
	Boolwey Street east	to	Bendooley Street south	39
	Boolwey Street east	to	Boolwey Street east	0
	Bendooley Street south	to	Boolwey Street east	28
	Bendooley Street south	to	Bendooley Street north	332
	Bendooley Street south	to	Boolwey Street west	104
	Bendooley Street south	to	Bendooley Street south	0
	Boolwey Street west	to	Bendooley Street south	164
	Boolwey Street west	to	Boolwey Street east	67
	Boolwey Street west	to	Bendooley Street north	85
	Boolwey Street west	to	Boolwey Street west	0
Bendooley Street and Banyette Street	Bendooley Street north	to	Banyette Street west	93
	Bendooley Street north	to	Bendooley Street south	406
	Bendooley Street north	to	Driveway east	10
	Driveway east	to	Bendooley Street north	15
	Driveway east	to	Banyette Street west	12
	Driveway east	to	Bendooley Street south	15
	Bendooley Street south	to	Driveway east	7
	Bendooley Street south	to	Bendooley Street north	385
	Bendooley Street south	to	Banyette Street west	74
	Banyette Street west	to	Bendooley Street south	198
	Banyette Street west	to	Driveway east	8
	Banyette Street west	to	Bendooley Street north	63
Bendooley Street and Bowral Street	Bendooley Street north	to	Bowral Street west	109
	Bendooley Street north	to	Bendooley Street south	202
	Bendooley Street north	to	Bowral Street east	309
	Bendooley Street north	to	Bendooley Street north	0
	Bowral Street east	to	Bendooley Street north	235
	Bowral Street east	to	Bowral Street west	201
	Bowral Street east	to	Bendooley Street south	18
	Bowral Street east	to	Bowral Street east	0
	Bendooley Street south	to	Bowral Street east	6
	Bendooley Street south	to	Bendooley Street north	87
	Bendooley Street south	to	Bowral Street west	28
	Bendooley Street south	to	Bendooley Street south	0
	Bowral Street west	to	Bendooley Street south	1
	Bowral Street west	to	Bowral Street east	114
	Bowral Street west	to	Bendooley Street north	149
	Bowral Street west	to	Bowral Street west	0
Kirkham Road and Centennial Road	Kirkham Road north	to	Centennial Road west	31
	Kirkham Road north	to	Kirkham Road south	81
	Kirkham Road south	to	Kirkham Road north	37
	Kirkham Road south	to	Centennial Road west	105
	Centennial Road west	to	Kirkham Road south	82
	Centennial Road west	to	Kirkham Road north	40
Kirkham Road and Mount Road	Kirkham Road north	to	Mount Road west	2
	Kirkham Road north	to	Kirkham Road south	161
	Kirkham Road south	to	Kirkham Road north	137
	Kirkham Road south	to	Mount Road west	30
	Mount Road west	to	Kirkham Road south	61
	Mount Road west	to	Kirkham Road north	5

Kirkham Road and Sherwood Avenue	Kirkham Road north	to	Sherwood Avenue west	5
	Kirkham Road north	to	Kirkham Road south	224
	Kirkham Road south	to	Kirkham Road north	180
	Kirkham Road south	to	Sherwood Avenue west	42
	Sherwood Avenue west	to	Kirkham Road south	38
	Sherwood Avenue west	to	Kirkham Road north	6
Kirkham Road and Wingecarribee Street	Kirkham Road north	to	Kirkham Road south	47
	Kirkham Road north	to	Wingecarribee Street east	218
	Wingecarribee Street east	to	Kirkham Road north	159
	Wingecarribee Street east	to	Kirkham Road south	172
	Kirkham Road south	to	Wingecarribee Street east	182
	Kirkham Road south	to	Kirkham Road north	64
Oxleys Hill Road and Kiama Street	Oxleys Hill Road east	to	Oxleys Hill Road west	76
	Oxleys Hill Road east	to	Kiama Street south	20
	Kiama Street south	to	Oxleys Hill Road east	17
	Kiama Street south	to	Oxleys Hill Road west	4
	Oxleys Hill Road west	to	Kiama Street south	0
	Oxleys Hill Road west	to	Oxleys Hill Road east	100
<b>Car parks</b>				
Bundaroo Street egress from car park	Egress	to	Bundaroo Street east	15
	Egress	to	Bundaroo Street west	13
Merrigang Street and Post Office Lane	Merrigang Street east	to	Post Office Lane south	6
	Post Office Lane south	to	Merrigang Street east	34
	Post Office Lane south	to	Merrigang Street west	99
	Merrigang Street west	to	Post Office Lane south	18
Merrigang Street and public car park (nr Fire Station)	Car park egress	to	Merrigang Street west	6
	Car park egress	to	Merrigang Street east	46
	Merrigang Street east	to	Car park access	34
	Merrigang Street west	to	Car park access	50
Wingecarribee Street and Oxley Mall east	Wingecarribee Street east	to	Oxley Mall access	106
	Wingecarribee Street west	to	Oxley Mall access	3
Wingecarribee Street and Oxley Mall west	Wingecarribee Street east	to	Oxley Mall access	93
	Oxley Mall egress	to	Wingecarribee Street east	115
	Oxley Mall egress	to	Wingecarribee Street west	80
	Wingecarribee Street west	to	Oxley Mall access	5
Boolwey Street and Oxley Mall/Woolworths Access	Oxley Mall	to	Boolwey Street west	124
	Oxley Mall	to	Woolworths Access	11
	Oxley Mall	to	Boolwey Street east	156
	Oxley Mall	to	Oxley Mall	6
	Boolwey Street east	to	Oxley Mall	96
	Boolwey Street east	to	Boolwey Street west	80
	Boolwey Street east	to	Woolworths Access	76
	Boolwey Street east	to	Boolwey Street east	5
	Woolworths Access	to	Boolwey Street east	96
	Woolworths Access	to	Oxley Mall	18
	Woolworths Access	to	Boolwey Street west	101
	Woolworths Access	to	Woolworths Access	6
	Boolwey Street west	to	Woolworths Access	39
	Boolwey Street west	to	Boolwey Street east	67
	Boolwey Street west	to	Oxley Mall	112
	Boolwey Street west	to	Boolwey Street west	22

Banyette Street and Woolworths Access east	Banyette Street east	to	Woolworths Access	45
	Banyette Street west	to	Woolworths Access	55
Banyette Street and Woolworths Access west	Woolworths Access	to	Banyette Street west	74
	Woolworths Access	to	Banyette Street east	31
	Banyette Street east	to	Woolworths Access	11
	Banyette Street west	to	Woolworths Access	43
Bowral Street and Medical Centre east	Medical Centre	to	Bowral Street west	3
	Medical Centre	to	Bowral Street east	18
	Bowral Street east	to	Medical Centre	12
	Bowral Street west	to	Medical Centre	1
Bowral Street and Medical Centre east	Medical Centre	to	Bowral Street west	5
	Medical Centre	to	Bowral Street east	17
	Bowral Street east	to	Medical Centre	6
	Bowral Street west	to	Medical Centre	13
Bowral Street and Holmhale Street	Bowral Street east	to	Holmhale Street	4
	Holmhale Street	to	Bowral Street east	26
	Holmhale Street	to	Bowral Street west	19
	Bowral Street west	to	Holmhale Street	8
Bong Bong Street and Petrol Station Access	Bong Bong Street north	to	Petrol Station Access	40
	Petrol Station Access	to	Bong Bong Street north	8
	Petrol Station Access	to	Bong Bong Street south	15
	Bong Bong Street south	to	Petrol Station Access	8
Argyle Ln Car Park	Argyle Ln north	to	Car park	10
	Car park	to	Argyle Ln south	40
Wattle Ln Car Park	Wattle Ln south	to	Car park	19
	Car park	to	Wattle Ln south	35
	Car park	to	Wattle Ln north	5
Banyette Street and ALDI access	Banyette St east	to	ALDI	55
	ALDI	to	Banyette St east	64
	ALDI	to	Banyette St west	72
	Banyette Street west	to	ALDI	107
Station Street and Petrol Station access	Station Street north	to	Petrol Station	44
Banyette Street and Petrol Station egress	Petrol Station egress	to	Banyette Street west	18
	Petrol Station egress	to	Banyette Street east	29
Bowral Street and The Intersection access	Bowral Street east	to	The Intersection access	60
	The Intersection access	to	Bowral Street east	56
	The Intersection access	to	Bowral Street west	7
	Bowral Street west	to	The Intersection access	117
Station Street and Car Park (west side south of Boolwey Str	Station Street north	to	Car park	7
	Station Street south	to	Car park	19
	Car park	to	Station Street south	7
	Car park	to	Station Street north	7
Station Street and Car park behind Empire	Station Street north	to	Car park	41
	Car park	to	Station Street north	4
	Car park	to	Station Street south	91
	Station Street south	to	Car park	9

Station Street and Car park at station (Z57)	Station Street north	to	Car park	0
	Station Street south	to	Car park	13
	Car park	to	Station Street south	0
	Car park	to	Station Street north	0
Station Street and Car park at station (Z69)	Station Street north	to	Car park	0
	Station Street south	to	Car park	3
	Car park	to	Station Street south	17
	Car park	to	Station Street north	22
Station Street and Car park at station (Z58)	Station Street north	to	Car park	1
	Station Street south	to	Car park	3
	Car park	to	Station Street south	0
	Car park	to	Station Street north	5
Banyette Street and Argyle Lane	Argyle Lane north	to	Banyette Street west	17
	Argyle Lane north	to	Argyle Lane south	9
	Argyle Lane north	to	Banyette Street east	59
	Banyette Street east	to	Argyle Lane south	29
	Argyle Lane south	to	Banyette Street east	3
	Argyle Lane south	to	Banyette Street west	7
	Banyette Street west	to	Argyle Lane south	19
Banyette Street and Wattle Lane	Wattle Lane	to	Banyette Street west	0
	Wattle Lane	to	Banyette Street east	35
	Banyette Street east	to	Wattle Lane north	29
	Banyette Street west	to	Wattle Lane north	24



Reconfigured Bong Bong and Bundaroo Streets plus RAB at Bendooley Street	turning movements - 15:00 to 16:00			Model
Mittagong Road and Kirkham Road	Mittagong Road nth	to	Kirkham Road west	83
	Mittagong Road nth	to	Mittagong Road south	1072
	Mittagong Road south	to	Mittagong Road north	1013
	Mittagong Road south	to	Kirkham Road west	27
	Kirkham Road west	to	Mittagong Road south	12
	Kirkham Road west	to	Mittagong Road north	74
Mittagong Road and Cliff Street	Mittagong Road north	to	Mittagong Road south	1049
	Mittagong Road north	to	Cliff Street east	16
	Cliff Street east	to	Mittagong Road north	15
	Cliff Street east	to	Mittagong Road south	8
	Mittagong Road south	to	Cliff Street east	16
	Mittagong Road south	to	Mittagong Road north	1009
Mittagong Road and Oxley Street	Mittagong Road north	to	Mittagong Road south	1024
	Mittagong Road north	to	Oxley Drive east	34
	Oxley Drive east	to	Mittagong Road north	22
	Oxley Drive east	to	Mittagong Road south	31
	Mittagong Road south	to	Oxley Drive east	24
	Mittagong Road south	to	Mittagong Road north	998
Mittagong Road and Victoria Street	Mittagong Road north	to	Mittagong Road south	993
	Mittagong Road north	to	Victoria Street east	54
	Victoria Street east	to	Mittagong Road north	14
	Victoria Street east	to	Mittagong Road south	99
	Mittagong Road south	to	Victoria Street east	63
	Mittagong Road south	to	Mittagong Road north	1006
Mittagong Road, Bundaroo Street, Station Street and Bong Bong	Mittagong Road north	to	Bundaroo Street east	126
	Mittagong Road north	to	Bong Bong Street south	427
	Mittagong Road north	to	Station Street south	554
	Bundaroo Street east	to	Mittagong Road north	174
	Bundaroo Street east	to	Bong Bong Street south	31
	Bundaroo Street east	to	Station Street south	26
	Bong Bong Street south	to	Mittagong Road north	246
	Station Street north	to	Mittagong Road north	656
Station Street and Merrigang Street	Merrigang Street east	to	Station Street south	44
	Station Street south	to	Merrigang Street east	107
Station Street and Wingecarribee Street	Station Street north	to	Wingecarribee Street west	80
	Station Street north	to	Station Street south	542
	Wingecarribee Street east	to	Station Street north	9
	Wingecarribee Street east	to	Wingecarribee Street west	36
	Wingecarribee Street east	to	Station Street south	101
	Station Street south	to	Station Street north	557
	Station Street south	to	Wingecarribee Street west	190
	Wingecarribee Street west	to	Station Street south	255
	Wingecarribee Street west	to	Station Street north	171
Station Street and Boolwey Street	Station Street north	to	Station Street south	740
	Station Street north	to	Boolwey Street east	201
	Station Street north	to	Station Street north	7
	Boolwey Street east	to	Station Street north	154
	Boolwey Street east	to	Station Street south	60
	Boolwey Street east	to	Boolwey Street east	25
	Station Street south	to	Boolwey Street east	14
	Station Street south	to	Station Street north	624
	Station Street south	to	Station Street south	1

Reconfigured Bong Bong and Bundaroo Streets	turning movements - 15:00 to 16:00			
plus RAB at Bendooley Street				Model
Station Street and Banyette Street	Station Street north	to	Station Street south	591
	Station Street north	to	Banyette Street east	168
	Banyette Street east	to	Station Street north	133
	Banyette Street east	to	Station Street south	58
	Station Street south	to	Banyette Street east	9
	Station Street south	to	Station Street north	522
Station Street and Bowral Street	Station Street north	to	Station Street south	541
	Station Street north	to	Bowral Street east	108
	Bowral Street east	to	Station Street north	0
	Bowral Street east	to	Station Street south	35
	Station Street south	to	Bowral Street east	25
	Station Street south	to	Station Street north	528
Station Street and Funston Street	Station Street north	to	Funston Street west	59
	Station Street north	to	Funston Street east	503
	Funston Street east	to	Station Street north	536
	Funston Street east	to	Funston Street west	15
	Funston Street west	to	Funston Street east	10
	Funston Street west	to	Station Street north	19
Funston Street and Belmore Street	Funston Street east	to	Funston Street west	548
	Funston Street east	to	Belmore Street south	12
	Belmore Street south	to	Funston Street west	3
	Funston Street west	to	Funston Street east	512
Funston Street and Moss Vale Road	Moss Vale Road north	to	Funston Street west	3
	Moss Vale Road north	to	Moss Vale Road south	399
	Moss Vale Road north	to	Kangaloon Road east	113
	Moss Vale Road north	to	Moss Vale Road north	0
	Kangaloon Road east	to	Moss Vale Road north	159
	Kangaloon Road east	to	Funston Street west	117
	Kangaloon Road east	to	Moss Vale Road south	34
	Kangaloon Road east	to	Kangaloon Road east	0
	Moss Vale Road south	to	Kangaloon Road east	28
	Moss Vale Road south	to	Moss Vale Road north	355
	Moss Vale Road south	to	Funston Street west	359
	Moss Vale Road south	to	Funston Street west	79
	Moss Vale Road south	to	Moss Vale Road south	1
	Funston Street west	to	Moss Vale Road south	393
	Funston Street west	to	Kangaloon Road east	133
	Funston Street west	to	Moss Vale Road north	0
	Funston Street west	to	Funston Street west	0
Moss Vale Road and Carrington Street	Moss Vale Road north	to	Carrington Street	7
	Moss Vale Road north	to	Moss Vale Road south	814
	Moss Vale Road south	to	Moss Vale Road north	821
	Moss Vale Road south	to	Carrington Street	9
	Carrington Street	to	Moss Vale Road south	0
	Carrington Street	to	Moss Vale Road north	3
Moss Vale Road and Alcorn Street	Moss Vale Road north	to	Alcorn Street west	30
	Moss Vale Road north	to	Moss Vale Road south	784
	Moss Vale Road north	to	Beavan Place east	0
	Beavan Place east	to	Moss Vale Road north	3
	Beavan Place east	to	Alcorn Street west	0
	Beavan Place east	to	Moss Vale Road south	1
	Moss Vale Road south	to	Beavan Place east	2
	Moss Vale Road south	to	Moss Vale Road north	806
	Moss Vale Road south	to	Alcorn Street west	24
	Alcorn Street west	to	Moss Vale Road south	7
	Alcorn Street west	to	Beavan Place east	0
	Alcorn Street west	to	Moss Vale Road north	23

Reconfigured Bong Bong and Bundaroo Streets plus RAB at Bendooley Street	turning movements - 15:00 to 16:00			Model
Moss Vale Road and Links Road	Moss Vale Road north	to	Moss Vale Road south	752
	Moss Vale Road north	to	Links Road east	43
	Links Road east	to	Moss Vale Road north	18
	Links Road east	to	Moss Vale Road south	10
	Moss Vale Road south	to	Links Road east	8
	Moss Vale Road south	to	Moss Vale Road north	811
Bong Bong Street and Merrigang Street	Bong Bong Street north	to	Merrigang Street west	3
	Bong Bong Street north	to	Bong Bong Street south	311
	Bong Bong Street north	to	Merrigang Street east	142
	Bong Bong Street north	to	Bong Bong Street north	0
	Merrigang Street east	to	Bong Bong Street north	57
	Merrigang Street east	to	Merrigang Street west	33
	Merrigang Street east	to	Bong Bong Street south	63
	Merrigang Street east	to	Merrigang Street east	0
	Bong Bong Street south	to	Merrigang Street east	71
	Bong Bong Street south	to	Bong Bong Street north	190
	Bong Bong Street south	to	Merrigang Street west	7
	Bong Bong Street south	to	Bong Bong Street south	6
	Merrigang Street west	to	Bong Bong Street south	11
	Merrigang Street west	to	Merrigang Street east	94
	Merrigang Street west	to	Bong Bong Street north	1
	Merrigang Street west	to	Merrigang Street west	1
Bong Bong Street and Wingecarribee Street	Bong Bong Street north	to	Wingecarribee Street west	51
	Bong Bong Street north	to	Bong Bong Street south	349
	Bong Bong Street south	to	Bong Bong Street north	268
	Bong Bong Street south	to	Wingecarribee Street west	93
Bong Bong Street and Boolwey Street	Bong Bong Street north	to	Boolwey Street west	0
	Bong Bong Street north	to	Bong Bong Street south	259
	Bong Bong Street north	to	Boolwey Street east	81
	Boolwey Street east	to	Bong Bong Street north	60
	Boolwey Street east	to	Boolwey Street west	107
	Boolwey Street east	to	Bong Bong Street south	173
	Bong Bong Street south	to	Boolwey Street east	0
	Bong Bong Street south	to	Bong Bong Street north	265
	Bong Bong Street south	to	Boolwey Street west	97
	Boolwey Street west	to	Bong Bong Street south	0
	Boolwey Street west	to	Boolwey Street east	166
	Boolwey Street west	to	Bong Bong Street north	18
Bong Bong Street and Banyette Street	Bong Bong Street north	to	Banyette Street west	11
	Bong Bong Street north	to	Bong Bong Street south	310
	Bong Bong Street north	to	Banyette Street east	106
	Bong Bong Street north	to	Bong Bong Street north	0
	Banyette Street east	to	Bong Bong Street north	36
	Banyette Street east	to	Banyette Street west	62
	Banyette Street east	to	Bong Bong Street south	59
	Banyette Street east	to	Banyette Street east	0
	Bong Bong Street south	to	Banyette Street east	206
	Bong Bong Street south	to	Bong Bong Street north	277
	Bong Bong Street south	to	Banyette Street west	90
	Bong Bong Street south	to	Bong Bong Street south	8
	Banyette Street west	to	Bong Bong Street south	50
	Banyette Street west	to	Banyette Street east	102
	Banyette Street west	to	Bong Bong Street north	61
	Banyette Street west	to	Banyette Street west	0

Reconfigured Bong Bong and Bundaroo Streets plus RAB at Bendooley Street	turning movements - 15:00 to 16:00			Model
Bong Bong Street and Bowral Street	Bong Bong Street north	to	Bowral Street west	11
	Bong Bong Street north	to	Moss Vale Road south	367
	Bong Bong Street north	to	Bowral Street east	23
	Bong Bong Street north	to	Bong Bong Street north	0
	Bowral Street east	to	Bong Bong Street north	75
	Bowral Street east	to	Bowral Street west	114
	Bowral Street east	to	Moss Vale Road south	133
	Bowral Street east	to	Bowral Street east	0
	Moss Vale Road south	to	Bowral Street east	91
	Moss Vale Road south	to	Bong Bong Street north	414
	Moss Vale Road south	to	Bowral Street west	9
	Moss Vale Road south	to	Moss Vale Road south	0
	Bowral Street west	to	Moss Vale Road south	16
	Bowral Street west	to	Bowral Street east	104
	Bowral Street west	to	Bong Bong Street north	96
	Bowral Street west	to	Bowral Street west	0
Bendooley Street and Bundaroo Street	Bundaroo Street east	to	Bundaroo Street west	10
	Bundaroo Street east	to	Bendooley Street south	54
	Bendooley Street south	to	Bundaroo Street east	89
	Bendooley Street south	to	Bundaroo Street west	251
	Bundaroo Street west	to	Bendooley Street south	54
	Bundaroo Street west	to	Bundaroo Street east	10
Bendooley Street and Merrigang Street	Bendooley Street north	to	Merrigang Street west	13
	Bendooley Street north	to	Bendooley Street south	187
	Bendooley Street north	to	Merrigang Street east	11
	Bendooley Street north	to	Bendooley Street north	0
	Merrigang Street east	to	Bendooley Street north	65
	Merrigang Street east	to	Merrigang Street west	51
	Merrigang Street east	to	Bendooley Street south	97
	Merrigang Street east	to	Merrigang Street east	0
	Bendooley Street south	to	Merrigang Street east	154
	Bendooley Street south	to	Bendooley Street north	210
	Bendooley Street south	to	Merrigang Street west	47
	Bendooley Street south	to	Bendooley Street south	4
	Merrigang Street west	to	Bendooley Street south	177
	Merrigang Street west	to	Merrigang Street east	67
	Merrigang Street west	to	Bendooley Street north	66
	Merrigang Street west	to	Merrigang Street west	0
Bendooley Street and Wingecarribee Street	Bendooley Street north	to	Wingecarribee Street west	134
	Bendooley Street north	to	Bendooley Street south	279
	Bendooley Street north	to	Wingecarribee Street east	44
	Wingecarribee Street east	to	Bendooley Street north	21
	Wingecarribee Street east	to	Wingecarribee Street west	9
	Wingecarribee Street east	to	Bendooley Street south	47
	Bendooley Street south	to	Wingecarribee Street east	38
	Bendooley Street south	to	Bendooley Street north	314
	Bendooley Street south	to	Wingecarribee Street west	137
	Wingecarribee Street west	to	Bendooley Street south	30
	Wingecarribee Street west	to	Wingecarribee Street east	16
	Wingecarribee Street west	to	Bendooley Street north	79

Reconfigured Bong Bong and Bundaroo Streets plus RAB at Bendooley Street	turning movements - 15:00 to 16:00			Model
Bendooley Street and Boolwey Street	Bendooley Street north	to	Boolwey Street west	75
	Bendooley Street north	to	Bendooley Street south	234
	Bendooley Street north	to	Boolwey Street east	47
	Bendooley Street north	to	Bendooley Street north	1
	Boolwey Street east	to	Bendooley Street north	52
	Boolwey Street east	to	Boolwey Street west	51
	Boolwey Street east	to	Bendooley Street south	37
	Boolwey Street east	to	Boolwey Street east	0
	Bendooley Street south	to	Boolwey Street east	33
	Bendooley Street south	to	Bendooley Street north	339
	Bendooley Street south	to	Boolwey Street west	93
	Bendooley Street south	to	Bendooley Street south	0
	Boolwey Street west	to	Bendooley Street south	153
	Boolwey Street west	to	Boolwey Street east	57
	Boolwey Street west	to	Bendooley Street north	91
	Boolwey Street west	to	Boolwey Street west	0
Bendooley Street and Banyette Street	Bendooley Street north	to	Banyette Street west	69
	Bendooley Street north	to	Bendooley Street south	352
	Bendooley Street north	to	Driveway east	7
	Driveway east	to	Bendooley Street north	12
	Driveway east	to	Banyette Street west	8
	Driveway east	to	Bendooley Street south	24
	Bendooley Street south	to	Driveway east	9
	Bendooley Street south	to	Bendooley Street north	393
	Bendooley Street south	to	Banyette Street west	90
	Banyette Street west	to	Bendooley Street south	243
	Banyette Street west	to	Driveway east	10
	Banyette Street west	to	Bendooley Street north	56
Bendooley Street and Bowral Street	Bendooley Street north	to	Bowral Street west	95
	Bendooley Street north	to	Bendooley Street south	209
	Bendooley Street north	to	Bowral Street east	318
	Bendooley Street north	to	Bendooley Street north	0
	Bowral Street east	to	Bendooley Street north	236
	Bowral Street east	to	Bowral Street west	187
	Bowral Street east	to	Bendooley Street south	19
	Bowral Street east	to	Bowral Street east	0
	Bendooley Street south	to	Bowral Street east	1
	Bendooley Street south	to	Bendooley Street north	104
	Bendooley Street south	to	Bowral Street west	29
	Bendooley Street south	to	Bendooley Street south	0
	Bowral Street west	to	Bendooley Street south	5
	Bowral Street west	to	Bowral Street east	108
	Bowral Street west	to	Bendooley Street north	158
	Bowral Street west	to	Bowral Street west	1
Kirkham Road and Centennial Road	Kirkham Road north	to	Centennial Road west	31
	Kirkham Road north	to	Kirkham Road south	79
	Kirkham Road south	to	Kirkham Road north	35
	Kirkham Road south	to	Centennial Road west	94
	Centennial Road west	to	Kirkham Road south	93
	Centennial Road west	to	Kirkham Road north	46
Kirkham Road and Mount Road	Kirkham Road north	to	Mount Road west	3
	Kirkham Road north	to	Kirkham Road south	168
	Kirkham Road south	to	Kirkham Road north	124
	Kirkham Road south	to	Mount Road west	33
	Mount Road west	to	Kirkham Road south	55
	Mount Road west	to	Kirkham Road north	5

Reconfigured Bong Bong and Bundaroo Streets plus RAB at Bendooley Street	turning movements - 15:00 to 16:00			Model
Kirkham Road and Sherwood Avenue	Kirkham Road north	to	Sherwood Avenue west	14
	Kirkham Road north	to	Kirkham Road south	218
	Kirkham Road south	to	Kirkham Road north	162
	Kirkham Road south	to	Sherwood Avenue west	41
	Sherwood Avenue west	to	Kirkham Road south	47
	Sherwood Avenue west	to	Kirkham Road north	6
Kirkham Road and Wingecarribee Street	Kirkham Road north	to	Kirkham Road south	38
	Kirkham Road north	to	Wingecarribee Street east	209
	Wingecarribee Street east	to	Kirkham Road north	142
	Wingecarribee Street east	to	Kirkham Road south	166
	Kirkham Road south	to	Wingecarribee Street east	222
	Kirkham Road south	to	Kirkham Road north	60
Oxleys Hill Road and Kiama Street	Oxleys Hill Road east	to	Oxleys Hill Road west	84
	Oxleys Hill Road east	to	Kiama Street south	21
	Kiama Street south	to	Oxleys Hill Road east	13
	Kiama Street south	to	Oxleys Hill Road west	4
	Oxleys Hill Road west	to	Kiama Street south	0
	Oxleys Hill Road west	to	Oxleys Hill Road east	107
<b>Car parks</b>				
Bundaroo Street egress from car park	Egress	to	Bundaroo Street east	14
	Egress	to	Bundaroo Street west	12
Merrigang Street and Post Office Lane	Merrigang Street east	to	Post Office Lane south	9
	Post Office Lane south	to	Merrigang Street east	40
	Post Office Lane south	to	Merrigang Street west	88
	Merrigang Street west	to	Post Office Lane south	19
Merrigang Street and public car park (nr Fire Station)	Car park egress	to	Merrigang Street west	3
	Car park egress	to	Merrigang Street east	41
	Merrigang Street east	to	Car park access	39
	Merrigang Street west	to	Car park access	57
Wingecarribee Street and Oxley Mall east	Wingecarribee Street east	to	Oxley Mall access	120
	Wingecarribee Street west	to	Oxley Mall access	3
Wingecarribee Street and Oxley Mall west	Wingecarribee Street east	to	Oxley Mall access	115
	Oxley Mall egress	to	Wingecarribee Street east	106
	Oxley Mall egress	to	Wingecarribee Street west	59
	Wingecarribee Street west	to	Oxley Mall access	7
Boolwey Street and Oxley Mall/Woolworths Access	Oxley Mall	to	Boolwey Street west	132
	Oxley Mall	to	Woolworths Access	18
	Oxley Mall	to	Boolwey Street east	158
	Oxley Mall	to	Oxley Mall	5
	Boolwey Street east	to	Oxley Mall	80
	Boolwey Street east	to	Boolwey Street west	72
	Boolwey Street east	to	Woolworths Access	64
	Boolwey Street east	to	Boolwey Street east	0
	Woolworths Access	to	Boolwey Street east	86
	Woolworths Access	to	Oxley Mall	18
	Woolworths Access	to	Boolwey Street west	102
	Woolworths Access	to	Woolworths Access	8
	Boolwey Street west	to	Woolworths Access	49
	Boolwey Street west	to	Boolwey Street east	55
	Boolwey Street west	to	Oxley Mall	120
	Boolwey Street west	to	Boolwey Street west	21

Reconfigured Bong Bong and Bundaroo Streets plus RAB at Bendooley Street	turning movements - 15:00 to 16:00			Model
Banyette Street and Woolworths Access east	Banyette Street east	to	Woolworths Access	58
	Banyette Street west	to	Woolworths Access	73
Banyette Street and Woolworths Access west	Woolworths Access	to	Banyette Street west	59
	Woolworths Access	to	Banyette Street east	29
	Banyette Street east	to	Woolworths Access	10
	Banyette Street west	to	Woolworths Access	60
Bowral Street and Medical Centre east	Medical Centre	to	Bowral Street west	4
	Medical Centre	to	Bowral Street east	16
	Bowral Street east	to	Medical Centre	12
	Bowral Street west	to	Medical Centre	0
Bowral Street and Medical Centre east	Medical Centre	to	Bowral Street west	10
	Medical Centre	to	Bowral Street east	15
	Bowral Street east	to	Medical Centre	5
	Bowral Street west	to	Medical Centre	11
Bowral Street and Holmhale Street	Bowral Street east	to	Holmhale Street	13
	Holmhale Street	to	Bowral Street east	18
	Holmhale Street	to	Bowral Street west	20
	Bowral Street west	to	Holmhale Street	8
Bong Bong Street and Petrol Station Access	Bong Bong Street north	to	Petrol Station Access	44
	Petrol Station Access	to	Bong Bong Street north	8
	Petrol Station Access	to	Bong Bong Street south	18
	Bong Bong Street south	to	Petrol Station Access	9
Argyle Ln Car Park	Argyle Ln north	to	Car park	10
	Car park	to	Argyle Ln south	37
Wattle Ln Car Park	Wattle Ln south	to	Car park	17
	Car park	to	Wattle Ln south	28
	Car park	to	Wattle Ln north	6
Banyette Street and ALDI access	Banyette St east	to	ALDI	43
	ALDI	to	Banyette St east	47
	ALDI	to	Banyette St west	67
	Banyette Street west	to	ALDI	92
Station Street and Petrol Station access	Station Street north	to	Petrol Station	43
Banyette Street and Petrol Station egress	Petrol Station egress	to	Banyette Street west	23
	Petrol Station egress	to	Banyette Street east	21
Bowral Street and The Intersection access	Bowral Street east	to	The Intersection access	56
	The Intersection access	to	Bowral Street east	53
	The Intersection access	to	Bowral Street west	6
	Bowral Street west	to	The Intersection access	98
Station Street and Car Park (west side south of Boolwey Street)	Station Street north	to	Car park	1
	Station Street south	to	Car park	26
	Car park	to	Station Street south	5
	Car park	to	Station Street north	11
Station Street and Car park behind Empire	Station Street north	to	Car park	50
	Car park	to	Station Street north	5
	Car park	to	Station Street south	94
	Station Street south	to	Car park	24

Reconfigured Bong Bong and Bundaroo Streets plus RAB at Bendooley Street	turning movements - 15:00 to 16:00			Model
Station Street and Car park at station (Z57)	Station Street north	to	Car park	0
	Station Street south	to	Car park	10
	Car park	to	Station Street south	0
	Car park	to	Station Street north	0
Station Street and Car park at station (Z69)	Station Street north	to	Car park	0
	Station Street south	to	Car park	3
	Car park	to	Station Street south	13
	Car park	to	Station Street north	21
Station Street and Car park at station (Z58)	Station Street north	to	Car park	4
	Station Street south	to	Car park	2
	Car park	to	Station Street south	0
	Car park	to	Station Street north	7
Banyette Street and Argyle Lane	Argyle Lane north	to	Banyette Street west	17
	Argyle Lane north	to	Argyle Lane south	8
	Argyle Lane north	to	Banyette Street east	65
	Banyette Street east	to	Argyle Lane south	15
	Argyle Lane south	to	Banyette Street east	2
	Argyle Lane south	to	Banyette Street west	13
	Banyette Street west	to	Argyle Lane south	19
Banyette Street and Wattle Lane	Wattle Lane	to	Banyette Street west	1
	Wattle Lane	to	Banyette Street east	27
	Banyette Street east	to	Wattle Lane north	33
	Banyette Street west	to	Wattle Lane north	16



Scenario 1	turning movements - 15:00 to 16:00			
Oxley Mall plus 250 additional public parking spaces				Model
Mittagong Road and Kirkham Road	Mittagong Road nth	to	Kirkham Road west	101
	Mittagong Road nth	to	Mittagong Road south	1083
	Mittagong Road south	to	Mittagong Road north	1169
	Mittagong Road south	to	Kirkham Road west	28
	Kirkham Road west	to	Mittagong Road south	15
	Kirkham Road west	to	Mittagong Road north	74
Mittagong Road and Cliff Street	Mittagong Road north	to	Mittagong Road south	1067
	Mittagong Road north	to	Cliff Street east	15
	Cliff Street east	to	Mittagong Road north	11
	Cliff Street east	to	Mittagong Road south	2
	Mittagong Road south	to	Cliff Street east	20
	Mittagong Road south	to	Mittagong Road north	1170
Mittagong Road and Oxley Street	Mittagong Road north	to	Mittagong Road south	1049
	Mittagong Road north	to	Oxley Drive east	25
	Oxley Drive east	to	Mittagong Road north	19
	Oxley Drive east	to	Mittagong Road south	34
	Mittagong Road south	to	Oxley Drive east	37
	Mittagong Road south	to	Mittagong Road north	1169
Mittagong Road and Victoria Street	Mittagong Road north	to	Mittagong Road south	1022
	Mittagong Road north	to	Victoria Street east	57
	Victoria Street east	to	Mittagong Road north	19
	Victoria Street east	to	Mittagong Road south	107
	Mittagong Road south	to	Victoria Street east	84
	Mittagong Road south	to	Mittagong Road north	1189
Mittagong Road, Bundaroo Street, Station Street and Bong Bong Street				
	Mittagong Road north	to	Bundaroo Street east	291
	Mittagong Road north	to	Bong Bong Street south	359
	Mittagong Road north	to	Station Street south	464
	Bundaroo Street east	to	Mittagong Road north	327
	Bundaroo Street east	to	Bong Bong Street south	19
	Bundaroo Street east	to	Station Street south	14
	Bong Bong Street south	to	Mittagong Road north	290
	Station Street north	to	Mittagong Road north	654
Station Street and Merrigang Street	Merrigang Street east	to	Station Street south	56
	Station Street south	to	Merrigang Street east	94
Station Street and Wingecarribee Street	Station Street north	to	Wingecarribee Street west	99
	Station Street north	to	Station Street south	446
	Wingecarribee Street east	to	Station Street north	10
	Wingecarribee Street east	to	Wingecarribee Street west	37
	Wingecarribee Street east	to	Station Street south	148
	Station Street south	to	Station Street north	569
	Station Street south	to	Wingecarribee Street west	182
	Wingecarribee Street west	to	Station Street south	254
	Wingecarribee Street west	to	Station Street north	156

Scenario 1	turning movements - 15:00 to 16:00			
Oxley Mall plus 250 additional public parking spaces				Model
Station Street and Boolwey Street	Station Street north	to	Station Street south	668
	Station Street north	to	Boolwey Street east	207
	Station Street north	to	Station Street north	7
	Boolwey Street east	to	Station Street north	170
	Boolwey Street east	to	Station Street south	61
	Boolwey Street east	to	Boolwey Street east	44
	Station Street south	to	Boolwey Street east	9
	Station Street south	to	Station Street north	602
	Station Street south	to	Station Street south	1
Station Street and Banyette Street	Station Street north	to	Station Street south	558
	Station Street north	to	Banyette Street east	133
	Banyette Street east	to	Station Street north	154
	Banyette Street east	to	Station Street south	65
	Station Street south	to	Banyette Street east	21
	Station Street south	to	Station Street north	466
Station Street and Bowral Street	Station Street north	to	Station Street south	507
	Station Street north	to	Bowral Street east	119
	Bowral Street east	to	Station Street north	0
	Bowral Street east	to	Station Street south	45
	Station Street south	to	Bowral Street east	35
	Station Street south	to	Station Street north	484
Station Street and Funston Street	Station Street north	to	Funston Street west	67
	Station Street north	to	Funston Street east	462
	Funston Street east	to	Station Street north	491
	Funston Street east	to	Funston Street west	34
	Funston Street west	to	Funston Street east	13
	Funston Street west	to	Station Street north	20
Funston Street and Belmore Street	Funston Street east	to	Funston Street west	523
	Funston Street east	to	Belmore Street south	13
	Belmore Street south	to	Funston Street west	2
	Funston Street west	to	Funston Street east	476
Funston Street and Moss Vale Road	Moss Vale Road north	to	Funston Street west	6
	Moss Vale Road north	to	Moss Vale Road south	473
	Moss Vale Road north	to	Kangaloon Road east	122
	Moss Vale Road north	to	Moss Vale Road north	0
	Kangaloon Road east	to	Moss Vale Road north	153
	Kangaloon Road east	to	Funston Street west	123
	Kangaloon Road east	to	Moss Vale Road south	20
	Kangaloon Road east	to	Kangaloon Road east	0
	Moss Vale Road south	to	Kangaloon Road east	16
	Moss Vale Road south	to	Moss Vale Road north	348
	Moss Vale Road south	to	Funston Street west	400
	Moss Vale Road south	to	Funston Street west	78
	Moss Vale Road south	to	Moss Vale Road south	1
	Funston Street west	to	Moss Vale Road south	367
	Funston Street west	to	Kangaloon Road east	143
	Funston Street west	to	Moss Vale Road north	0
	Funston Street west	to	Funston Street west	0
Moss Vale Road and Carrington Street	Moss Vale Road north	to	Carrington Street	11
	Moss Vale Road north	to	Moss Vale Road south	845
	Moss Vale Road south	to	Moss Vale Road north	763
	Moss Vale Road south	to	Carrington Street	6
	Carrington Street	to	Moss Vale Road south	0
	Carrington Street	to	Moss Vale Road north	2

Scenario 1	turning movements - 15:00 to 16:00			
Oxley Mall plus 250 additional public parking spaces				Model
Moss Vale Road and Alcorn Street	Moss Vale Road north	to	Alcorn Street west	34
	Moss Vale Road north	to	Moss Vale Road south	808
	Moss Vale Road north	to	Beavan Place east	0
	Beavan Place east	to	Moss Vale Road north	2
	Beavan Place east	to	Alcorn Street west	0
	Beavan Place east	to	Moss Vale Road south	2
	Moss Vale Road south	to	Beavan Place east	3
	Moss Vale Road south	to	Moss Vale Road north	752
	Moss Vale Road south	to	Alcorn Street west	21
	Alcorn Street west	to	Moss Vale Road south	9
	Alcorn Street west	to	Beavan Place east	0
	Alcorn Street west	to	Moss Vale Road north	19
Moss Vale Road and Links Road	Moss Vale Road north	to	Moss Vale Road south	784
	Moss Vale Road north	to	Links Road east	37
	Links Road east	to	Moss Vale Road north	24
	Links Road east	to	Moss Vale Road south	13
	Moss Vale Road south	to	Links Road east	8
	Moss Vale Road south	to	Moss Vale Road north	755
Bong Bong Street and Merrigang Street				
	Bong Bong Street north	to	Merrigang Street west	3
	Bong Bong Street north	to	Bong Bong Street south	311
	Bong Bong Street north	to	Merrigang Street east	58
	Bong Bong Street north	to	Bong Bong Street north	0
	Merrigang Street east	to	Bong Bong Street north	100
	Merrigang Street east	to	Merrigang Street west	42
	Merrigang Street east	to	Bong Bong Street south	66
	Merrigang Street east	to	Merrigang Street east	0
	Bong Bong Street south	to	Merrigang Street east	82
	Bong Bong Street south	to	Bong Bong Street north	184
	Bong Bong Street south	to	Merrigang Street west	8
	Bong Bong Street south	to	Bong Bong Street south	2
	Merrigang Street west	to	Bong Bong Street south	7
	Merrigang Street west	to	Merrigang Street east	84
	Merrigang Street west	to	Bong Bong Street north	0
	Merrigang Street west	to	Merrigang Street west	2
Bong Bong Street and Wingecarribee Street	Bong Bong Street north	to	Wingecarribee Street west	48
	Bong Bong Street north	to	Bong Bong Street south	338
	Bong Bong Street south	to	Bong Bong Street north	265
	Bong Bong Street south	to	Wingecarribee Street west	144
Bong Bong Street and Boolwey Street	Bong Bong Street north	to	Boolwey Street west	0
	Bong Bong Street north	to	Bong Bong Street south	256
	Bong Bong Street north	to	Boolwey Street east	76
	Boolwey Street east	to	Bong Bong Street north	58
	Boolwey Street east	to	Boolwey Street west	129
	Boolwey Street east	to	Bong Bong Street south	245
	Bong Bong Street south	to	Boolwey Street east	0
	Bong Bong Street south	to	Bong Bong Street north	323
	Bong Bong Street south	to	Boolwey Street west	113
	Boolwey Street west	to	Bong Bong Street south	0
	Boolwey Street west	to	Boolwey Street east	197
	Boolwey Street west	to	Bong Bong Street north	19

Scenario 1	turning movements - 15:00 to 16:00			
Oxley Mall plus 250 additional public parking spaces				Model
Bong Bong Street and Banyette Street	Bong Bong Street north	to	Banyette Street west	20
	Bong Bong Street north	to	Bong Bong Street south	403
	Bong Bong Street north	to	Banyette Street east	65
	Bong Bong Street north	to	Bong Bong Street north	0
	Banyette Street east	to	Bong Bong Street north	32
	Banyette Street east	to	Banyette Street west	102
	Banyette Street east	to	Bong Bong Street south	69
	Banyette Street east	to	Banyette Street east	0
	Bong Bong Street south	to	Banyette Street east	172
	Bong Bong Street south	to	Bong Bong Street north	317
	Bong Bong Street south	to	Banyette Street west	88
	Bong Bong Street south	to	Bong Bong Street south	17
	Banyette Street west	to	Bong Bong Street south	41
	Banyette Street west	to	Banyette Street east	111
	Banyette Street west	to	Bong Bong Street north	90
	Banyette Street west	to	Banyette Street west	0
Bong Bong Street and Bowral Street	Bong Bong Street north	to	Bowral Street west	16
	Bong Bong Street north	to	Moss Vale Road south	433
	Bong Bong Street north	to	Bowral Street east	57
	Bong Bong Street north	to	Bong Bong Street north	0
	Bowral Street east	to	Bong Bong Street north	75
	Bowral Street east	to	Bowral Street west	137
	Bowral Street east	to	Moss Vale Road south	155
	Bowral Street east	to	Bowral Street east	0
	Moss Vale Road south	to	Bowral Street east	75
	Moss Vale Road south	to	Bong Bong Street north	420
	Moss Vale Road south	to	Bowral Street west	4
	Moss Vale Road south	to	Moss Vale Road south	0
	Bowral Street west	to	Moss Vale Road south	15
	Bowral Street west	to	Bowral Street east	93
	Bowral Street west	to	Bong Bong Street north	101
	Bowral Street west	to	Bowral Street west	0
Bendooley Street and Bundaroo Street	Bundaroo Street east	to	Bundaroo Street west	10
	Bundaroo Street east	to	Bendooley Street south	60
	Bendooley Street south	to	Bundaroo Street east	87
	Bendooley Street south	to	Bundaroo Street west	421
	Bundaroo Street west	to	Bendooley Street south	323
	Bundaroo Street west	to	Bundaroo Street east	29
Bendooley Street and Merrigang Street	Bendooley Street north	to	Merrigang Street west	12
	Bendooley Street north	to	Bendooley Street south	368
	Bendooley Street north	to	Merrigang Street east	10
	Bendooley Street north	to	Bendooley Street north	5
	Merrigang Street east	to	Bendooley Street north	89
	Merrigang Street east	to	Merrigang Street west	51
	Merrigang Street east	to	Bendooley Street south	127
	Merrigang Street east	to	Merrigang Street east	0
	Bendooley Street south	to	Merrigang Street east	155
	Bendooley Street south	to	Bendooley Street north	344
	Bendooley Street south	to	Merrigang Street west	91
	Bendooley Street south	to	Bendooley Street south	2
	Merrigang Street west	to	Bendooley Street south	173
	Merrigang Street west	to	Merrigang Street east	53
	Merrigang Street west	to	Bendooley Street north	68
	Merrigang Street west	to	Merrigang Street west	3

Scenario 1	turning movements - 15:00 to 16:00			
Oxley Mall plus 250 additional public parking spaces				Model
Bendooley Street and Wingecarribee Street	Bendooley Street north	to	Wingecarribee Street west	295
	Bendooley Street north	to	Bendooley Street south	320
	Bendooley Street north	to	Wingecarribee Street east	46
	Wingecarribee Street east	to	Bendooley Street north	21
	Wingecarribee Street east	to	Wingecarribee Street west	36
	Wingecarribee Street east	to	Bendooley Street south	36
	Bendooley Street south	to	Wingecarribee Street east	50
	Bendooley Street south	to	Bendooley Street north	303
	Bendooley Street south	to	Wingecarribee Street west	201
	Wingecarribee Street west	to	Bendooley Street south	74
	Wingecarribee Street west	to	Wingecarribee Street east	27
	Wingecarribee Street west	to	Bendooley Street north	268
Bendooley Street and Boolwey Street	Bendooley Street north	to	Boolwey Street west	97
	Bendooley Street north	to	Bendooley Street south	299
	Bendooley Street north	to	Boolwey Street east	47
	Bendooley Street north	to	Bendooley Street north	0
	Boolwey Street east	to	Bendooley Street north	64
	Boolwey Street east	to	Boolwey Street west	86
	Boolwey Street east	to	Bendooley Street south	32
	Boolwey Street east	to	Boolwey Street east	0
	Bendooley Street south	to	Boolwey Street east	21
	Bendooley Street south	to	Bendooley Street north	373
	Bendooley Street south	to	Boolwey Street west	146
	Bendooley Street south	to	Bendooley Street south	0
	Boolwey Street west	to	Bendooley Street south	212
	Boolwey Street west	to	Boolwey Street east	68
	Boolwey Street west	to	Bendooley Street north	108
	Boolwey Street west	to	Boolwey Street west	0
Bendooley Street and Banyette Street	Bendooley Street north	to	Banyette Street west	103
	Bendooley Street north	to	Bendooley Street south	436
	Bendooley Street north	to	Driveway east	6
	Driveway east	to	Bendooley Street north	19
	Driveway east	to	Banyette Street west	8
	Driveway east	to	Bendooley Street south	15
	Bendooley Street south	to	Driveway east	8
	Bendooley Street south	to	Bendooley Street north	465
	Bendooley Street south	to	Banyette Street west	98
	Banyette Street west	to	Bendooley Street south	207
	Banyette Street west	to	Driveway east	14
	Banyette Street west	to	Bendooley Street north	50
Bendooley Street and Bowral Street	Bendooley Street north	to	Bowral Street west	127
	Bendooley Street north	to	Bendooley Street south	195
	Bendooley Street north	to	Bowral Street east	332
	Bendooley Street north	to	Bendooley Street north	0
	Bowral Street east	to	Bendooley Street north	326
	Bowral Street east	to	Bowral Street west	212
	Bowral Street east	to	Bendooley Street south	15
	Bowral Street east	to	Bowral Street east	0
	Bendooley Street south	to	Bowral Street east	6
	Bendooley Street south	to	Bendooley Street north	106
	Bendooley Street south	to	Bowral Street west	34
	Bendooley Street south	to	Bendooley Street south	0
	Bowral Street west	to	Bendooley Street south	20
	Bowral Street west	to	Bowral Street east	131
	Bowral Street west	to	Bendooley Street north	143
	Bowral Street west	to	Bowral Street west	0

Scenario 1	turning movements - 15:00 to 16:00			
Oxley Mall plus 250 additional public parking spaces				Model
Kirkham Road and Centennial Road	Kirkham Road north	to	Centennial Road west	36
	Kirkham Road north	to	Kirkham Road south	90
	Kirkham Road south	to	Kirkham Road north	39
	Kirkham Road south	to	Centennial Road west	101
	Centennial Road west	to	Kirkham Road south	77
	Centennial Road west	to	Kirkham Road north	35
Kirkham Road and Mount Road	Kirkham Road north	to	Mount Road west	2
	Kirkham Road north	to	Kirkham Road south	163
	Kirkham Road south	to	Kirkham Road north	134
	Kirkham Road south	to	Mount Road west	25
	Mount Road west	to	Kirkham Road south	51
	Mount Road west	to	Kirkham Road north	4
Kirkham Road and Sherwood Avenue	Kirkham Road north	to	Sherwood Avenue west	10
	Kirkham Road north	to	Kirkham Road south	211
	Kirkham Road south	to	Kirkham Road north	165
	Kirkham Road south	to	Sherwood Avenue west	36
	Sherwood Avenue west	to	Kirkham Road south	31
	Sherwood Avenue west	to	Kirkham Road north	5
Kirkham Road and Wingecarribee Street	Kirkham Road north	to	Kirkham Road south	41
	Kirkham Road north	to	Wingecarribee Street east	202
	Wingecarribee Street east	to	Kirkham Road north	146
	Wingecarribee Street east	to	Kirkham Road south	175
	Kirkham Road south	to	Wingecarribee Street east	207
	Kirkham Road south	to	Kirkham Road north	55
Oxleys Hill Road and Kiama Street	Oxleys Hill Road east	to	Oxleys Hill Road west	89
	Oxleys Hill Road east	to	Kiama Street south	31
	Kiama Street south	to	Oxleys Hill Road east	19
	Kiama Street south	to	Oxleys Hill Road west	3
	Oxleys Hill Road west	to	Kiama Street south	0
	Oxleys Hill Road west	to	Oxleys Hill Road east	105
<b>Car parks</b>				
Bundaroo Street egress from car park	Egress	to	Bundaroo Street east	13
	Egress	to	Bundaroo Street west	14
Merrigang Street and Post Office Lane	Merrigang Street east	to	Post Office Lane south	3
	Post Office Lane south	to	Merrigang Street east	57
	Post Office Lane south	to	Merrigang Street west	101
	Merrigang Street west	to	Post Office Lane south	9
Merrigang Street and public car park (nr Fire Station)	Car park egress	to	Merrigang Street west	5
	Car park egress	to	Merrigang Street east	63
	Merrigang Street east	to	Car park access	41
	Merrigang Street west	to	Car park access	38
Wingecarribee Street and Oxley Mall east	Wingecarribee Street east	to	Oxley Mall access	211
	Wingecarribee Street west	to	Oxley Mall access	2
Wingecarribee Street and Oxley Mall west	Wingecarribee Street east	to	Oxley Mall access	281
	Oxley Mall egress	to	Wingecarribee Street east	346
	Oxley Mall egress	to	Wingecarribee Street west	82
	Wingecarribee Street west	to	Oxley Mall access	10

Scenario 1	turning movements - 15:00 to 16:00			
Oxley Mall plus 250 additional public parking spaces				Model
Boolwey Street and Oxley Mall/Woolworths Access	Oxley Mall	to	Boolwey Street west	222
	Oxley Mall	to	Woolworths Access	24
	Oxley Mall	to	Boolwey Street east	233
	Oxley Mall	to	Oxley Mall	7
	Boolwey Street east	to	Oxley Mall	159
	Boolwey Street east	to	Boolwey Street west	78
	Boolwey Street east	to	Woolworths Access	86
	Boolwey Street east	to	Boolwey Street east	5
	Woolworths Access	to	Boolwey Street east	92
	Woolworths Access	to	Oxley Mall	25
	Woolworths Access	to	Boolwey Street west	91
	Woolworths Access	to	Woolworths Access	5
	Boolwey Street west	to	Woolworths Access	40
	Boolwey Street west	to	Boolwey Street east	58
	Boolwey Street west	to	Oxley Mall	159
	Boolwey Street west	to	Boolwey Street west	15
Banyette Street and Woolworths Access east	Banyette Street east	to	Woolworths Access	52
	Banyette Street west	to	Woolworths Access	72
Banyette Street and Woolworths Access west	Woolworths Access	to	Banyette Street west	62
	Woolworths Access	to	Banyette Street east	34
	Banyette Street east	to	Woolworths Access	15
	Banyette Street west	to	Woolworths Access	37
Bowral Street and Medical Centre east	Medical Centre	to	Bowral Street west	5
	Medical Centre	to	Bowral Street east	21
	Bowral Street east	to	Medical Centre	19
	Bowral Street west	to	Medical Centre	5
Bowral Street and Medical Centre east	Medical Centre	to	Bowral Street west	8
	Medical Centre	to	Bowral Street east	21
	Bowral Street east	to	Medical Centre	5
	Bowral Street west	to	Medical Centre	8
Bowral Street and Holmhale Street	Bowral Street east	to	Holmhale Street	9
	Holmhale Street	to	Bowral Street east	27
	Holmhale Street	to	Bowral Street west	17
	Bowral Street west	to	Holmhale Street	14
Bong Bong Street and Petrol Station Access	Bong Bong Street north	to	Petrol Station Access	46
	Petrol Station Access	to	Bong Bong Street north	7
	Petrol Station Access	to	Bong Bong Street south	19
	Bong Bong Street south	to	Petrol Station Access	8
Argyle Ln Car Park	Argyle Ln north	to	Car park	8
	Car park	to	Argyle Ln south	31
Wattle Ln Car Park	Wattle Ln south	to	Car park	17
	Car park	to	Wattle Ln south	48
	Car park	to	Wattle Ln north	5
Banyette Street and ALDI access	Banyette St east	to	ALDI	56
	ALDI	to	Banyette St east	71
	ALDI	to	Banyette St west	78
	Banyette Street west	to	ALDI	88
Station Street and Petrol Station access	Station Street north	to	Petrol Station	43

Scenario 1	turning movements - 15:00 to 16:00			
Oxley Mall plus 250 additional public parking spaces				Model
Banyette Street and Petrol Station egress	Petrol Station egress	to	Banyette Street west	23
	Petrol Station egress	to	Banyette Street east	44
Bowral Street and The Intersection access	Bowral Street east	to	The Intersection access	61
	The Intersection access	to	Bowral Street east	47
	The Intersection access	to	Bowral Street west	8
	Bowral Street west	to	The Intersection access	112
Station Street and Car Park (west side south of Boolwey Street)	Station Street north	to	Car park	8
	Station Street south	to	Car park	16
	Car park	to	Station Street south	13
	Car park	to	Station Street north	11
Station Street and Car park behind Empire	Station Street north	to	Car park	56
	Car park	to	Station Street north	4
	Car park	to	Station Street south	89
	Station Street south	to	Car park	18
Station Street and Car park at station (Z57)	Station Street north	to	Car park	0
	Station Street south	to	Car park	11
	Car park	to	Station Street south	0
	Car park	to	Station Street north	0
Station Street and Car park at station (Z69)	Station Street north	to	Car park	0
	Station Street south	to	Car park	3
	Car park	to	Station Street south	16
	Car park	to	Station Street north	19
Station Street and Car park at station (Z58)	Station Street north	to	Car park	8
	Station Street south	to	Car park	2
	Car park	to	Station Street south	0
	Car park	to	Station Street north	9
Banyette Street and Argyle Lane	Argyle Lane north	to	Banyette Street west	11
	Argyle Lane north	to	Argyle Lane south	4
	Argyle Lane north	to	Banyette Street east	57
	Banyette Street east	to	Argyle Lane south	24
	Argyle Lane south	to	Banyette Street east	2
	Argyle Lane south	to	Banyette Street west	13
	Banyette Street west	to	Argyle Lane south	22
Banyette Street and Wattle Lane	Wattle Lane	to	Banyette Street west	1
	Wattle Lane	to	Banyette Street east	45
	Banyette Street east	to	Wattle Lane north	39
	Banyette Street west	to	Wattle Lane north	18



Scenario 1B - Oxley Mall plus 100 public spaces plus extra retail plus 115 spaces in Merrigang Street	turning movements - 15:00 to 16:00			Model
Mittagong Road and Kirkham Road	Mittagong Road nth	to	Kirkham Road west	82
	Mittagong Road nth	to	Mittagong Road south	1106
	Mittagong Road south	to	Mittagong Road north	1117
	Mittagong Road south	to	Kirkham Road west	20
	Kirkham Road west	to	Mittagong Road south	23
	Kirkham Road west	to	Mittagong Road north	63
Mittagong Road and Cliff Street	Mittagong Road north	to	Mittagong Road south	1095
	Mittagong Road north	to	Cliff Street east	19
	Cliff Street east	to	Mittagong Road north	14
	Cliff Street east	to	Mittagong Road south	6
	Mittagong Road south	to	Cliff Street east	13
	Mittagong Road south	to	Mittagong Road north	1113
Mittagong Road and Oxley Street	Mittagong Road north	to	Mittagong Road south	1065
	Mittagong Road north	to	Oxley Drive east	36
	Oxley Drive east	to	Mittagong Road north	17
	Oxley Drive east	to	Mittagong Road south	51
	Mittagong Road south	to	Oxley Drive east	33
	Mittagong Road south	to	Mittagong Road north	1108
Mittagong Road and Victoria Street	Mittagong Road north	to	Mittagong Road south	1062
	Mittagong Road north	to	Victoria Street east	57
	Victoria Street east	to	Mittagong Road north	14
	Victoria Street east	to	Mittagong Road south	97
	Mittagong Road south	to	Victoria Street east	84
	Mittagong Road south	to	Mittagong Road north	1119
Mittagong Road, Bundaroo Street, Station Street and Bong Bong Street	Mittagong Road north	to	Bundaroo Street east	240
	Mittagong Road north	to	Bong Bong Street south	431
	Mittagong Road north	to	Station Street south	472
	Bundaroo Street east	to	Mittagong Road north	291
	Bundaroo Street east	to	Bong Bong Street south	23
	Bundaroo Street east	to	Station Street south	23
	Bong Bong Street south	to	Mittagong Road north	269
	Station Street north	to	Mittagong Road north	638
Station Street and Merrigang Street	Merrigang Street east	to	Station Street south	53
	Station Street south	to	Merrigang Street east	101
Station Street and Wingecarribee Street	Station Street north	to	Wingecarribee Street west	98
	Station Street north	to	Station Street south	458
	Wingecarribee Street east	to	Station Street north	22
	Wingecarribee Street east	to	Wingecarribee Street west	35
	Wingecarribee Street east	to	Station Street south	154
	Station Street south	to	Station Street north	562
	Station Street south	to	Wingecarribee Street west	190
	Wingecarribee Street west	to	Station Street south	250
	Wingecarribee Street west	to	Station Street north	163
Station Street and Boolwey Street	Station Street north	to	Station Street south	686
	Station Street north	to	Boolwey Street east	197
	Station Street north	to	Station Street north	11
	Boolwey Street east	to	Station Street north	163
	Boolwey Street east	to	Station Street south	60
	Boolwey Street east	to	Boolwey Street east	40
	Station Street south	to	Boolwey Street east	9
	Station Street south	to	Station Street north	606
	Station Street south	to	Station Street south	2

Scenario 1B - Oxley Mall plus 100 public spaces plus extra retail plus 115 spaces in Merrigang Street	turning movements - 15:00 to 16:00			Model
Station Street and Banyette Street	Station Street north	to	Station Street south	569
	Station Street north	to	Banyette Street east	143
	Banyette Street east	to	Station Street north	152
	Banyette Street east	to	Station Street south	68
	Station Street south	to	Banyette Street east	15
	Station Street south	to	Station Street north	476
Station Street and Bowral Street	Station Street north	to	Station Street south	522
	Station Street north	to	Bowral Street east	113
	Bowral Street east	to	Station Street north	0
	Bowral Street east	to	Station Street south	57
	Station Street south	to	Bowral Street east	32
	Station Street south	to	Station Street north	490
Station Street and Funston Street	Station Street north	to	Funston Street west	58
	Station Street north	to	Funston Street east	488
	Funston Street east	to	Station Street north	486
	Funston Street east	to	Funston Street west	19
	Funston Street west	to	Funston Street east	9
	Funston Street west	to	Station Street north	19
Funston Street and Belmore Street	Funston Street east	to	Funston Street west	504
	Funston Street east	to	Belmore Street south	13
	Belmore Street south	to	Funston Street west	1
	Funston Street west	to	Funston Street east	496
Funston Street and Moss Vale Road	Moss Vale Road north	to	Funston Street west	4
	Moss Vale Road north	to	Moss Vale Road south	451
	Moss Vale Road north	to	Kangaloon Road east	111
	Moss Vale Road north	to	Moss Vale Road north	0
	Kangaloon Road east	to	Moss Vale Road north	188
	Kangaloon Road east	to	Funston Street west	104
	Kangaloon Road east	to	Moss Vale Road south	30
	Kangaloon Road east	to	Kangaloon Road east	0
	Moss Vale Road south	to	Kangaloon Road east	25
	Moss Vale Road south	to	Moss Vale Road north	323
	Moss Vale Road south	to	Funston Street west	418
	Moss Vale Road south	to	Funston Street west	81
	Moss Vale Road south	to	Moss Vale Road south	2
	Funston Street west	to	Moss Vale Road south	390
	Funston Street west	to	Kangaloon Road east	150
	Funston Street west	to	Moss Vale Road north	0
	Funston Street west	to	Funston Street west	0
Moss Vale Road and Carrington Street	Moss Vale Road north	to	Carrington Street	3
	Moss Vale Road north	to	Moss Vale Road south	866
	Moss Vale Road south	to	Moss Vale Road north	766
	Moss Vale Road south	to	Carrington Street	7
	Carrington Street	to	Moss Vale Road south	0
	Carrington Street	to	Moss Vale Road north	3

Scenario 1B - Oxley Mall plus 100 public spaces plus extra retail plus 115 spaces in Merrigang Street	turning movements - 15:00 to 16:00			Model
Moss Vale Road and Alcorn Street	Moss Vale Road north	to	Alcorn Street west	34
	Moss Vale Road north	to	Moss Vale Road south	831
	Moss Vale Road north	to	Beavan Place east	0
	Beavan Place east	to	Moss Vale Road north	2
	Beavan Place east	to	Alcorn Street west	0
	Beavan Place east	to	Moss Vale Road south	3
	Moss Vale Road south	to	Beavan Place east	2
	Moss Vale Road south	to	Moss Vale Road north	751
	Moss Vale Road south	to	Alcorn Street west	14
	Alcorn Street west	to	Moss Vale Road south	5
	Alcorn Street west	to	Beavan Place east	0
	Alcorn Street west	to	Moss Vale Road north	20
Moss Vale Road and Links Road	Moss Vale Road north	to	Moss Vale Road south	792
	Moss Vale Road north	to	Links Road east	45
	Links Road east	to	Moss Vale Road north	23
	Links Road east	to	Moss Vale Road south	15
	Moss Vale Road south	to	Links Road east	8
	Moss Vale Road south	to	Moss Vale Road north	743
Bong Bong Street and Merrigang Street				
	Bong Bong Street north	to	Merrigang Street west	5
	Bong Bong Street north	to	Bong Bong Street south	305
	Bong Bong Street north	to	Merrigang Street east	146
	Bong Bong Street north	to	Bong Bong Street north	0
	Merrigang Street east	to	Bong Bong Street north	61
	Merrigang Street east	to	Merrigang Street west	45
	Merrigang Street east	to	Bong Bong Street south	83
	Merrigang Street east	to	Merrigang Street east	0
	Bong Bong Street south	to	Merrigang Street east	68
	Bong Bong Street south	to	Bong Bong Street north	200
	Bong Bong Street south	to	Merrigang Street west	3
	Bong Bong Street south	to	Bong Bong Street south	5
	Merrigang Street west	to	Bong Bong Street south	13
	Merrigang Street west	to	Merrigang Street east	88
	Merrigang Street west	to	Bong Bong Street north	0
	Merrigang Street west	to	Merrigang Street west	0
Bong Bong Street and Wingecarribee Street	Bong Bong Street north	to	Wingecarribee Street west	55
	Bong Bong Street north	to	Bong Bong Street south	341
	Bong Bong Street south	to	Bong Bong Street north	279
	Bong Bong Street south	to	Wingecarribee Street west	156
Bong Bong Street and Boolwey Street	Bong Bong Street north	to	Boolwey Street west	0
	Bong Bong Street north	to	Bong Bong Street south	251
	Bong Bong Street north	to	Boolwey Street east	88
	Boolwey Street east	to	Bong Bong Street north	75
	Boolwey Street east	to	Boolwey Street west	133
	Boolwey Street east	to	Bong Bong Street south	214
	Bong Bong Street south	to	Boolwey Street east	0
	Bong Bong Street south	to	Bong Bong Street north	326
	Bong Bong Street south	to	Boolwey Street west	130
	Boolwey Street west	to	Bong Bong Street south	0
	Boolwey Street west	to	Boolwey Street east	198
	Boolwey Street west	to	Bong Bong Street north	23

Scenario 1B - Oxley Mall plus 100 public spaces plus extra retail plus 115 spaces in Merrigang Street	turning movements - 15:00 to 16:00			Model
Bong Bong Street and Banyette Street	Bong Bong Street north	to	Banyette Street west	26
	Bong Bong Street north	to	Bong Bong Street south	367
	Bong Bong Street north	to	Banyette Street east	64
	Bong Bong Street north	to	Bong Bong Street north	1
	Banyette Street east	to	Bong Bong Street north	43
	Banyette Street east	to	Banyette Street west	80
	Banyette Street east	to	Bong Bong Street south	61
	Banyette Street east	to	Banyette Street east	0
	Bong Bong Street south	to	Banyette Street east	169
	Bong Bong Street south	to	Bong Bong Street north	352
	Bong Bong Street south	to	Banyette Street west	96
	Bong Bong Street south	to	Bong Bong Street south	14
	Banyette Street west	to	Bong Bong Street south	31
	Banyette Street west	to	Banyette Street east	98
	Banyette Street west	to	Bong Bong Street north	73
	Banyette Street west	to	Banyette Street west	0
Bong Bong Street and Bowral Street	Bong Bong Street north	to	Bowral Street west	19
	Bong Bong Street north	to	Moss Vale Road south	388
	Bong Bong Street north	to	Bowral Street east	32
	Bong Bong Street north	to	Bong Bong Street north	0
	Bowral Street east	to	Bong Bong Street north	99
	Bowral Street east	to	Bowral Street west	139
	Bowral Street east	to	Moss Vale Road south	167
	Bowral Street east	to	Bowral Street east	0
	Moss Vale Road south	to	Bowral Street east	85
	Moss Vale Road south	to	Bong Bong Street north	418
	Moss Vale Road south	to	Bowral Street west	9
	Moss Vale Road south	to	Moss Vale Road south	0
	Bowral Street west	to	Moss Vale Road south	10
	Bowral Street west	to	Bowral Street east	131
	Bowral Street west	to	Bong Bong Street north	114
	Bowral Street west	to	Bowral Street west	0
Bendooley Street and Bundaroo Street	Bundaroo Street east	to	Bundaroo Street west	8
	Bundaroo Street east	to	Bendooley Street south	67
	Bendooley Street south	to	Bundaroo Street east	79
	Bendooley Street south	to	Bundaroo Street west	355
	Bundaroo Street west	to	Bendooley Street south	308
	Bundaroo Street west	to	Bundaroo Street east	32
Bendooley Street and Merrigang Street	Bendooley Street north	to	Merrigang Street west	11
	Bendooley Street north	to	Bendooley Street south	356
	Bendooley Street north	to	Merrigang Street east	17
	Bendooley Street north	to	Bendooley Street north	0
	Merrigang Street east	to	Bendooley Street north	59
	Merrigang Street east	to	Merrigang Street west	64
	Merrigang Street east	to	Bendooley Street south	97
	Merrigang Street east	to	Merrigang Street east	0
	Bendooley Street south	to	Merrigang Street east	141
	Bendooley Street south	to	Bendooley Street north	308
	Bendooley Street south	to	Merrigang Street west	96
	Bendooley Street south	to	Bendooley Street south	1
	Merrigang Street west	to	Bendooley Street south	190
	Merrigang Street west	to	Merrigang Street east	50
	Merrigang Street west	to	Bendooley Street north	65
	Merrigang Street west	to	Merrigang Street west	3

Scenario 1B - Oxley Mall plus 100 public spaces plus extra retail plus 115 spaces in Merrigang Street	turning movements - 15:00 to 16:00			Model
Bendooley Street and Wingecarribee Street	Bendooley Street north	to	Wingecarribee Street west	201
	Bendooley Street north	to	Bendooley Street south	399
	Bendooley Street north	to	Wingecarribee Street east	35
	Wingecarribee Street east	to	Bendooley Street north	27
	Wingecarribee Street east	to	Wingecarribee Street west	20
	Wingecarribee Street east	to	Bendooley Street south	57
	Bendooley Street south	to	Wingecarribee Street east	39
	Bendooley Street south	to	Bendooley Street north	337
	Bendooley Street south	to	Wingecarribee Street west	215
	Wingecarribee Street west	to	Bendooley Street south	44
	Wingecarribee Street west	to	Wingecarribee Street east	26
	Wingecarribee Street west	to	Bendooley Street north	185
Bendooley Street and Boolwey Street	Bendooley Street north	to	Boolwey Street west	105
	Bendooley Street north	to	Bendooley Street south	350
	Bendooley Street north	to	Boolwey Street east	55
	Bendooley Street north	to	Bendooley Street north	0
	Boolwey Street east	to	Bendooley Street north	88
	Boolwey Street east	to	Boolwey Street west	65
	Boolwey Street east	to	Bendooley Street south	32
	Boolwey Street east	to	Boolwey Street east	0
	Bendooley Street south	to	Boolwey Street east	29
	Bendooley Street south	to	Bendooley Street north	413
	Bendooley Street south	to	Boolwey Street west	128
	Bendooley Street south	to	Bendooley Street south	0
	Boolwey Street west	to	Bendooley Street south	231
	Boolwey Street west	to	Boolwey Street east	71
	Boolwey Street west	to	Bendooley Street north	96
	Boolwey Street west	to	Boolwey Street west	0
Bendooley Street and Banyette Street	Bendooley Street north	to	Banyette Street west	95
	Bendooley Street north	to	Bendooley Street south	506
	Bendooley Street north	to	Driveway east	14
	Driveway east	to	Bendooley Street north	15
	Driveway east	to	Banyette Street west	11
	Driveway east	to	Bendooley Street south	23
	Bendooley Street south	to	Driveway east	11
	Bendooley Street south	to	Bendooley Street north	500
	Bendooley Street south	to	Banyette Street west	93
	Banyette Street west	to	Bendooley Street south	187
	Banyette Street west	to	Driveway east	9
	Banyette Street west	to	Bendooley Street north	47
Bendooley Street and Bowral Street	Bendooley Street north	to	Bowral Street west	124
	Bendooley Street north	to	Bendooley Street south	203
	Bendooley Street north	to	Bowral Street east	392
	Bendooley Street north	to	Bendooley Street north	0
	Bowral Street east	to	Bendooley Street north	323
	Bowral Street east	to	Bowral Street west	238
	Bowral Street east	to	Bendooley Street south	18
	Bowral Street east	to	Bowral Street east	0
	Bendooley Street south	to	Bowral Street east	6
	Bendooley Street south	to	Bendooley Street north	101
	Bendooley Street south	to	Bowral Street west	42
	Bendooley Street south	to	Bendooley Street south	0
	Bowral Street west	to	Bendooley Street south	6
	Bowral Street west	to	Bowral Street east	128
	Bowral Street west	to	Bendooley Street north	188
	Bowral Street west	to	Bowral Street west	0

Scenario 1B - Oxley Mall plus 100 public spaces plus extra retail plus 115 spaces in Merrigang Street	turning movements - 15:00 to 16:00			Model
Kirkham Road and Centennial Road	Kirkham Road north	to	Centennial Road west	26
	Kirkham Road north	to	Kirkham Road south	73
	Kirkham Road south	to	Kirkham Road north	40
	Kirkham Road south	to	Centennial Road west	118
	Centennial Road west	to	Kirkham Road south	82
	Centennial Road west	to	Kirkham Road north	41
Kirkham Road and Mount Road	Kirkham Road north	to	Mount Road west	1
	Kirkham Road north	to	Kirkham Road south	153
	Kirkham Road south	to	Kirkham Road north	151
	Kirkham Road south	to	Mount Road west	31
	Mount Road west	to	Kirkham Road south	53
	Mount Road west	to	Kirkham Road north	8
Kirkham Road and Sherwood Avenue	Kirkham Road north	to	Sherwood Avenue west	5
	Kirkham Road north	to	Kirkham Road south	214
	Kirkham Road south	to	Kirkham Road north	186
	Kirkham Road south	to	Sherwood Avenue west	43
	Sherwood Avenue west	to	Kirkham Road south	37
	Sherwood Avenue west	to	Kirkham Road north	6
Kirkham Road and Wingecarribee Street	Kirkham Road north	to	Kirkham Road south	51
	Kirkham Road north	to	Wingecarribee Street east	200
	Wingecarribee Street east	to	Kirkham Road north	165
	Wingecarribee Street east	to	Kirkham Road south	159
	Kirkham Road south	to	Wingecarribee Street east	208
	Kirkham Road south	to	Kirkham Road north	66
Oxleys Hill Road and Kiama Street	Oxleys Hill Road east	to	Oxleys Hill Road west	76
	Oxleys Hill Road east	to	Kiama Street south	16
	Kiama Street south	to	Oxleys Hill Road east	9
	Kiama Street south	to	Oxleys Hill Road west	1
	Oxleys Hill Road west	to	Kiama Street south	0
	Oxleys Hill Road west	to	Oxleys Hill Road east	105
<b>Car parks</b>				
Bundaroo Street egress from car park	Egress	to	Bundaroo Street east	22
	Egress	to	Bundaroo Street west	31
Merrigang Street and Post Office Lane	Merrigang Street east	to	Post Office Lane south	5
	Post Office Lane south	to	Merrigang Street east	31
	Post Office Lane south	to	Merrigang Street west	97
	Merrigang Street west	to	Post Office Lane south	12
Merrigang Street and public car park (nr Fire Station)	Car park egress	to	Merrigang Street west	16
	Car park egress	to	Merrigang Street east	117
	Merrigang Street east	to	Car park access	94
	Merrigang Street west	to	Car park access	126
Wingecarribee Street and Oxley Mall east	Wingecarribee Street east	to	Oxley Mall access	218
	Wingecarribee Street west	to	Oxley Mall access	6
Wingecarribee Street and Oxley Mall west	Wingecarribee Street east	to	Oxley Mall access	171
	Oxley Mall egress	to	Wingecarribee Street east	246
	Oxley Mall egress	to	Wingecarribee Street west	107
	Wingecarribee Street west	to	Oxley Mall access	7

Scenario 1B - Oxley Mall plus 100 public spaces plus extra retail plus 115 spaces in Merrigang Street	turning movements - 15:00 to 16:00			Model
Boolwey Street and Oxley Mall/Woolworths Access	Oxley Mall	to	Boolwey Street west	209
	Oxley Mall	to	Woolworths Access	23
	Oxley Mall	to	Boolwey Street east	248
	Oxley Mall	to	Oxley Mall	12
	Boolwey Street east	to	Oxley Mall	131
	Boolwey Street east	to	Boolwey Street west	84
	Boolwey Street east	to	Woolworths Access	86
	Boolwey Street east	to	Boolwey Street east	1
	Woolworths Access	to	Boolwey Street east	97
	Woolworths Access	to	Oxley Mall	28
	Woolworths Access	to	Boolwey Street west	100
	Woolworths Access	to	Woolworths Access	6
	Boolwey Street west	to	Woolworths Access	46
	Boolwey Street west	to	Boolwey Street east	62
	Boolwey Street west	to	Oxley Mall	156
	Boolwey Street west	to	Boolwey Street west	14
Banyette Street and Woolworths Access east	Banyette Street east	to	Woolworths Access	47
	Banyette Street west	to	Woolworths Access	76
Banyette Street and Woolworths Access west	Woolworths Access	to	Banyette Street west	47
	Woolworths Access	to	Banyette Street east	28
	Banyette Street east	to	Woolworths Access	17
	Banyette Street west	to	Woolworths Access	44
Bowral Street and Medical Centre east	Medical Centre	to	Bowral Street west	3
	Medical Centre	to	Bowral Street east	20
	Bowral Street east	to	Medical Centre	14
	Bowral Street west	to	Medical Centre	0
Bowral Street and Medical Centre east	Medical Centre	to	Bowral Street west	10
	Medical Centre	to	Bowral Street east	17
	Bowral Street east	to	Medical Centre	8
	Bowral Street west	to	Medical Centre	10
Bowral Street and Holmhale Street	Bowral Street east	to	Holmhale Street	15
	Holmhale Street	to	Bowral Street east	22
	Holmhale Street	to	Bowral Street west	22
	Bowral Street west	to	Holmhale Street	11
Bong Bong Street and Petrol Station Access	Bong Bong Street north	to	Petrol Station Access	44
	Petrol Station Access	to	Bong Bong Street north	6
	Petrol Station Access	to	Bong Bong Street south	13
	Bong Bong Street south	to	Petrol Station Access	8
Argyle Ln Car Park	Argyle Ln north	to	Car park	9
	Car park	to	Argyle Ln south	27
Wattle Ln Car Park	Wattle Ln south	to	Car park	20
	Car park	to	Wattle Ln south	30
	Car park	to	Wattle Ln north	7
Banyette Street and ALDI access	Banyette St east	to	ALDI	60
	ALDI	to	Banyette St east	65
	ALDI	to	Banyette St west	79
	Banyette Street west	to	ALDI	96

Scenario 1B - Oxley Mall plus 100 public spaces plus extra retail plus 115 spaces in Merrigang Street	turning movements - 15:00 to 16:00			Model
Station Street and Petrol Station access	Station Street north	to	Petrol Station	39
Banyette Street and Petrol Station egress	Petrol Station egress	to	Banyette Street west	23
	Petrol Station egress	to	Banyette Street east	44
Bowral Street and The Intersection access	Bowral Street east	to	The Intersection access	51
	The Intersection access	to	Bowral Street east	71
	The Intersection access	to	Bowral Street west	8
	Bowral Street west	to	The Intersection access	103
Station Street and Car Park (west side south of Boolwey Street)	Station Street north	to	Car park	3
	Station Street south	to	Car park	22
	Car park	to	Station Street south	8
	Car park	to	Station Street north	7
Station Street and Car park behind Empire	Station Street north	to	Car park	52
	Car park	to	Station Street north	1
	Car park	to	Station Street south	77
	Station Street south	to	Car park	8
Station Street and Car park at station (Z57)	Station Street north	to	Car park	0
	Station Street south	to	Car park	14
	Car park	to	Station Street south	0
	Car park	to	Station Street north	0
Station Street and Car park at station (Z69)	Station Street north	to	Car park	0
	Station Street south	to	Car park	6
	Car park	to	Station Street south	14
	Car park	to	Station Street north	14
Station Street and Car park at station (Z58)	Station Street north	to	Car park	6
	Station Street south	to	Car park	3
	Car park	to	Station Street south	0
	Car park	to	Station Street north	3
Banyette Street and Argyle Lane	Argyle Lane north	to	Banyette Street west	18
	Argyle Lane north	to	Argyle Lane south	10
	Argyle Lane north	to	Banyette Street east	44
	Banyette Street east	to	Argyle Lane south	28
	Argyle Lane south	to	Banyette Street east	2
	Argyle Lane south	to	Banyette Street west	9
	Banyette Street west	to	Argyle Lane south	25
Banyette Street and Wattle Lane	Wattle Lane	to	Banyette Street west	0
	Wattle Lane	to	Banyette Street east	30
	Banyette Street east	to	Wattle Lane north	20
	Banyette Street west	to	Wattle Lane north	24



Scenario 2A - OLSH	turning movements - 15:00 to 16:00			
				Model
Mittagong Road and Kirkham Road	Mittagong Road nth	to	Kirkham Road west	51
	Mittagong Road nth	to	Mittagong Road south	1072
	Mittagong Road south	to	Mittagong Road north	1034
	Mittagong Road south	to	Kirkham Road west	7
	Kirkham Road west	to	Mittagong Road south	17
	Kirkham Road west	to	Mittagong Road north	51
Mittagong Road and Cliff Street	Mittagong Road north	to	Mittagong Road south	1063
	Mittagong Road north	to	Cliff Street east	19
	Cliff Street east	to	Mittagong Road north	21
	Cliff Street east	to	Mittagong Road south	5
	Mittagong Road south	to	Cliff Street east	17
	Mittagong Road south	to	Mittagong Road north	1015
Mittagong Road and Oxley Street	Mittagong Road north	to	Mittagong Road south	1026
	Mittagong Road north	to	Oxley Drive east	37
	Oxley Drive east	to	Mittagong Road north	21
	Oxley Drive east	to	Mittagong Road south	36
	Mittagong Road south	to	Oxley Drive east	42
	Mittagong Road south	to	Mittagong Road north	1012
Mittagong Road and Victoria Street	Mittagong Road north	to	Mittagong Road south	1033
	Mittagong Road north	to	Victoria Street east	26
	Victoria Street east	to	Mittagong Road north	5
	Victoria Street east	to	Mittagong Road south	74
	Mittagong Road south	to	Victoria Street east	65
	Mittagong Road south	to	Mittagong Road north	1045
Mittagong Road and Bundaroo Street				
	Mittagong Road north	to	Bundaroo Street east	85
	Bundaroo Street east	to	Mittagong Road north	89
Bong Bong Street and Station Street	Mittagong Road north	to	Station Street	565
	Mittagong Road	to	Bong Bong Street	465
	Bong Bong Street	to	Mittagong Road north	452
	Station Street	to	Mittagong Road north	661
Station Street and Merrigang Street	Merrigang Street east	to	Station Street south	51
	Station Street south	to	Merrigang Street east	101
Station Street and Wingecarribee Street	Station Street north	to	Wingecarribee Street west	128
	Station Street north	to	Station Street south	495
	Wingecarribee Street east	to	Station Street north	19
	Wingecarribee Street east	to	Wingecarribee Street west	56
	Wingecarribee Street east	to	Station Street south	50
	Station Street south	to	Station Street north	526
	Station Street south	to	Wingecarribee Street west	200
	Wingecarribee Street west	to	Station Street south	231
	Wingecarribee Street west	to	Station Street north	194

Scenario 2A - OLSH	turning movements - 15:00 to 16:00			
Station Street and Boolwey Street	Station Street north	to	Station Street south	701
	Station Street north	to	Boolwey Street east	104
	Station Street north	to	Station Street north	10
	Boolwey Street east	to	Station Street north	137
	Boolwey Street east	to	Station Street south	43
	Boolwey Street east	to	Boolwey Street east	0
	Station Street south	to	Boolwey Street east	7
	Station Street south	to	Station Street north	609
	Station Street south	to	Station Street south	1
Station Street and Banyette Street	Station Street north	to	Station Street south	553
	Station Street north	to	Banyette Street east	140
	Banyette Street east	to	Station Street north	143
	Banyette Street east	to	Station Street south	62
	Station Street south	to	Banyette Street east	12
	Station Street south	to	Station Street north	493
Station Street and Bowral Street	Station Street north	to	Station Street south	511
	Station Street north	to	Bowral Street east	106
	Bowral Street east	to	Station Street north	0
	Bowral Street east	to	Station Street south	36
	Station Street south	to	Bowral Street east	21
	Station Street south	to	Station Street north	505
Station Street and Funston Street	Station Street north	to	Funston Street west	55
	Station Street north	to	Funston Street east	488
	Funston Street east	to	Station Street north	507
	Funston Street east	to	Funston Street west	16
	Funston Street west	to	Funston Street east	8
	Funston Street west	to	Station Street north	17
Funston Street and Belmore Street	Funston Street east	to	Funston Street west	521
	Funston Street east	to	Belmore Street south	13
	Belmore Street south	to	Funston Street west	2
	Funston Street west	to	Funston Street east	496
Funston Street and Moss Vale Road	Moss Vale Road north	to	Funston Street west	5
	Moss Vale Road north	to	Moss Vale Road south	457
	Moss Vale Road north	to	Kangaloon Road east	126
	Moss Vale Road north	to	Moss Vale Road north	0
	Kangaloon Road east	to	Moss Vale Road north	131
	Kangaloon Road east	to	Funston Street west	121
	Kangaloon Road east	to	Moss Vale Road south	28
	Kangaloon Road east	to	Kangaloon Road east	0
	Moss Vale Road south	to	Kangaloon Road east	15
	Moss Vale Road south	to	Moss Vale Road north	363
	Moss Vale Road south	to	Funston Street west	407
	Moss Vale Road south	to	Funston Street west	69
	Moss Vale Road south	to	Moss Vale Road south	2
	Funston Street west	to	Moss Vale Road south	374
	Funston Street west	to	Kangaloon Road east	148
	Funston Street west	to	Moss Vale Road north	0
	Funston Street west	to	Funston Street west	0
Moss Vale Road and Carrington Street	Moss Vale Road north	to	Carrington Street	9
	Moss Vale Road north	to	Moss Vale Road south	851
	Moss Vale Road south	to	Moss Vale Road north	783
	Moss Vale Road south	to	Carrington Street	9
	Carrington Street	to	Moss Vale Road south	0
	Carrington Street	to	Moss Vale Road north	5

Scenario 2A - OLSH	turning movements - 15:00 to 16:00			
Moss Vale Road and Alcorn Street	Moss Vale Road north	to	Alcorn Street west	37
	Moss Vale Road north	to	Moss Vale Road south	815
	Moss Vale Road north	to	Beavan Place east	0
	Beavan Place east	to	Moss Vale Road north	5
	Beavan Place east	to	Alcorn Street west	0
	Beavan Place east	to	Moss Vale Road south	0
	Moss Vale Road south	to	Beavan Place east	0
	Moss Vale Road south	to	Moss Vale Road north	772
	Moss Vale Road south	to	Alcorn Street west	14
	Alcorn Street west	to	Moss Vale Road south	6
	Alcorn Street west	to	Beavan Place east	0
	Alcorn Street west	to	Moss Vale Road north	19
Moss Vale Road and Links Road	Moss Vale Road north	to	Moss Vale Road south	781
	Moss Vale Road north	to	Links Road east	43
	Links Road east	to	Moss Vale Road north	17
	Links Road east	to	Moss Vale Road south	16
	Moss Vale Road south	to	Links Road east	11
	Moss Vale Road south	to	Moss Vale Road north	766
Bong Bong Street and Merrigang Street				
	Bong Bong Street north	to	Merrigang Street west	21
	Bong Bong Street north	to	Bong Bong Street south	314
	Bong Bong Street north	to	Merrigang Street east	169
	Bong Bong Street north	to	Bong Bong Street north	44
	Merrigang Street east	to	Bong Bong Street north	183
	Merrigang Street east	to	Merrigang Street west	31
	Merrigang Street east	to	Bong Bong Street south	61
	Merrigang Street east	to	Merrigang Street east	0
	Bong Bong Street south	to	Merrigang Street east	39
	Bong Bong Street south	to	Bong Bong Street north	226
	Bong Bong Street south	to	Merrigang Street west	0
	Bong Bong Street south	to	Bong Bong Street south	0
	Merrigang Street west	to	Bong Bong Street south	11
	Merrigang Street west	to	Merrigang Street east	84
	Merrigang Street west	to	Bong Bong Street north	0
	Merrigang Street west	to	Merrigang Street west	0
Bong Bong Street and Wingecarribee Street	Bong Bong Street north	to	Wingecarribee Street west	53
	Bong Bong Street north	to	Bong Bong Street south	352
	Bong Bong Street south	to	Bong Bong Street north	255
	Bong Bong Street south	to	Wingecarribee Street west	72
Bong Bong Street and Boolwey Street	Bong Bong Street north	to	Boolwey Street west	0
	Bong Bong Street north	to	Bong Bong Street south	264
	Bong Bong Street north	to	Boolwey Street east	89
	Boolwey Street east	to	Bong Bong Street north	91
	Boolwey Street east	to	Boolwey Street west	124
	Boolwey Street east	to	Bong Bong Street south	204
	Bong Bong Street south	to	Boolwey Street east	87
	Bong Bong Street south	to	Bong Bong Street north	212
	Bong Bong Street south	to	Boolwey Street west	54
	Boolwey Street west	to	Bong Bong Street south	0
	Boolwey Street west	to	Boolwey Street east	60
	Boolwey Street west	to	Bong Bong Street north	23

Scenario 2A - OLSH	turning movements - 15:00 to 16:00			
Bong Bong Street and Banyette Street	Bong Bong Street north	to	Banyette Street west	18
	Bong Bong Street north	to	Bong Bong Street south	367
	Bong Bong Street north	to	Banyette Street east	78
	Bong Bong Street north	to	Bong Bong Street north	0
	Banyette Street east	to	Bong Bong Street north	40
	Banyette Street east	to	Banyette Street west	72
	Banyette Street east	to	Bong Bong Street south	47
	Banyette Street east	to	Banyette Street east	0
	Bong Bong Street south	to	Banyette Street east	82
	Bong Bong Street south	to	Bong Bong Street north	287
	Bong Bong Street south	to	Banyette Street west	70
	Bong Bong Street south	to	Bong Bong Street south	0
	Banyette Street west	to	Bong Bong Street south	40
	Banyette Street west	to	Banyette Street east	96
	Banyette Street west	to	Bong Bong Street north	46
	Banyette Street west	to	Banyette Street west	0
Bong Bong Street and Bowral Street	Bong Bong Street north	to	Bowral Street west	6
	Bong Bong Street north	to	Moss Vale Road south	422
	Bong Bong Street north	to	Bowral Street east	21
	Bong Bong Street north	to	Bong Bong Street north	0
	Bowral Street east	to	Bong Bong Street north	84
	Bowral Street east	to	Bowral Street west	108
	Bowral Street east	to	Moss Vale Road south	145
	Bowral Street east	to	Bowral Street east	0
	Moss Vale Road south	to	Bowral Street east	236
	Moss Vale Road south	to	Bong Bong Street north	252
	Moss Vale Road south	to	Bowral Street west	6
	Moss Vale Road south	to	Moss Vale Road south	0
	Bowral Street west	to	Moss Vale Road south	13
	Bowral Street west	to	Bowral Street east	94
	Bowral Street west	to	Bong Bong Street north	110
	Bowral Street west	to	Bowral Street west	0
Bendooley Street and Bundaroo Street	Bundaroo Street east	to	Bundaroo Street west	9
	Bundaroo Street east	to	Bendooley Street south	40
	Bendooley Street south	to	Bundaroo Street east	68
	Bendooley Street south	to	Bundaroo Street west	127
	Bundaroo Street west	to	Bendooley Street south	116
	Bundaroo Street west	to	Bundaroo Street east	31
Bendooley Street and Merrigang Street	Bendooley Street north	to	Merrigang Street west	10
	Bendooley Street north	to	Bendooley Street south	155
	Bendooley Street north	to	Merrigang Street east	1
	Bendooley Street north	to	Bendooley Street north	0
	Merrigang Street east	to	Bendooley Street north	43
	Merrigang Street east	to	Merrigang Street west	82
	Merrigang Street east	to	Bendooley Street south	89
	Merrigang Street east	to	Merrigang Street east	0
	Bendooley Street south	to	Merrigang Street east	138
	Bendooley Street south	to	Bendooley Street north	92
	Bendooley Street south	to	Merrigang Street west	139
	Bendooley Street south	to	Bendooley Street south	2
	Merrigang Street west	to	Bendooley Street south	180
	Merrigang Street west	to	Merrigang Street east	73
	Merrigang Street west	to	Bendooley Street north	58
	Merrigang Street west	to	Merrigang Street west	0

Scenario 2A - OLSH	turning movements - 15:00 to 16:00			
Bendooley Street and Wingecarribee Street	Bendooley Street north	to	Wingecarribee Street west	113
	Bendooley Street north	to	Bendooley Street south	277
	Bendooley Street north	to	Wingecarribee Street east	31
	Wingecarribee Street east	to	Bendooley Street north	19
	Wingecarribee Street east	to	Wingecarribee Street west	7
	Wingecarribee Street east	to	Bendooley Street south	46
	Bendooley Street south	to	Wingecarribee Street east	50
	Bendooley Street south	to	Bendooley Street north	260
	Bendooley Street south	to	Wingecarribee Street west	151
	Wingecarribee Street west	to	Bendooley Street south	43
	Wingecarribee Street west	to	Wingecarribee Street east	14
	Wingecarribee Street west	to	Bendooley Street north	92
Bendooley Street and Boolwey Street	Bendooley Street north	to	Boolwey Street west	91
	Bendooley Street north	to	Bendooley Street south	253
	Bendooley Street north	to	Boolwey Street east	34
	Bendooley Street north	to	Bendooley Street north	0
	Boolwey Street east	to	Bendooley Street north	50
	Boolwey Street east	to	Boolwey Street west	58
	Boolwey Street east	to	Bendooley Street south	22
	Boolwey Street east	to	Boolwey Street east	0
	Bendooley Street south	to	Boolwey Street east	49
	Bendooley Street south	to	Bendooley Street north	316
	Bendooley Street south	to	Boolwey Street west	127
	Bendooley Street south	to	Bendooley Street south	0
	Boolwey Street west	to	Bendooley Street south	141
	Boolwey Street west	to	Boolwey Street east	58
	Boolwey Street west	to	Bendooley Street north	94
	Boolwey Street west	to	Boolwey Street west	0
Bendooley Street and Banyette Street	Bendooley Street north	to	Banyette Street west	64
	Bendooley Street north	to	Bendooley Street south	349
	Bendooley Street north	to	Driveway east	6
	Driveway east	to	Bendooley Street north	8
	Driveway east	to	Banyette Street west	14
	Driveway east	to	Bendooley Street south	22
	Bendooley Street south	to	Driveway east	8
	Bendooley Street south	to	Bendooley Street north	453
	Bendooley Street south	to	Banyette Street west	81
	Banyette Street west	to	Bendooley Street south	114
	Banyette Street west	to	Driveway east	2
	Banyette Street west	to	Bendooley Street north	25
Bendooley Street and Bowral Street	Bendooley Street north	to	Bowral Street west	94
	Bendooley Street north	to	Bendooley Street south	183
	Bendooley Street north	to	Bowral Street east	207
	Bendooley Street north	to	Bendooley Street north	0
	Bowral Street east	to	Bendooley Street north	251
	Bowral Street east	to	Bowral Street west	205
	Bowral Street east	to	Bendooley Street south	21
	Bowral Street east	to	Bowral Street east	0
	Bendooley Street south	to	Bowral Street east	4
	Bendooley Street south	to	Bendooley Street north	110
	Bendooley Street south	to	Bowral Street west	31
	Bendooley Street south	to	Bendooley Street south	0
	Bowral Street west	to	Bendooley Street south	2
	Bowral Street west	to	Bowral Street east	229
	Bowral Street west	to	Bendooley Street north	189
	Bowral Street west	to	Bowral Street west	0

Scenario 2A - OLSH	turning movements - 15:00 to 16:00			
Kirkham Road and Centennial Road	Kirkham Road north	to	Centennial Road west	23
	Kirkham Road north	to	Kirkham Road south	23
	Kirkham Road south	to	Kirkham Road north	31
	Kirkham Road south	to	Centennial Road west	140
	Centennial Road west	to	Kirkham Road south	79
	Centennial Road west	to	Kirkham Road north	25
Kirkham Road and Mount Road	Kirkham Road north	to	Mount Road west	4
	Kirkham Road north	to	Kirkham Road south	97
	Kirkham Road south	to	Kirkham Road north	160
	Kirkham Road south	to	Mount Road west	80
	Mount Road west	to	Kirkham Road south	120
	Mount Road west	to	Kirkham Road north	12
Kirkham Road and Sherwood Avenue	Kirkham Road north	to	Sherwood Avenue west	13
	Kirkham Road north	to	Kirkham Road south	214
	Kirkham Road south	to	Kirkham Road north	247
	Kirkham Road south	to	Sherwood Avenue west	41
	Sherwood Avenue west	to	Kirkham Road south	34
	Sherwood Avenue west	to	Kirkham Road north	10
Kirkham Road and Wingecarribee Street	Kirkham Road north	to	Kirkham Road south	51
	Kirkham Road north	to	Wingecarribee Street east	197
	Wingecarribee Street east	to	Kirkham Road north	216
	Wingecarribee Street east	to	Kirkham Road south	170
	Kirkham Road south	to	Wingecarribee Street east	222
	Kirkham Road south	to	Kirkham Road north	72
Oxleys Hill Road and Kiama Street	Oxleys Hill Road east	to	Oxleys Hill Road west	76
	Oxleys Hill Road east	to	Kiama Street south	31
	Kiama Street south	to	Oxleys Hill Road east	21
	Kiama Street south	to	Oxleys Hill Road west	1
	Oxleys Hill Road west	to	Kiama Street south	0
	Oxleys Hill Road west	to	Oxleys Hill Road east	112
<b>Car parks</b>				
Bundaroo Street egress from car park	Egress	to	Bundaroo Street east	10
	Egress	to	Bundaroo Street west	16
Merrigang Street and Post Office Lane	Merrigang Street east	to	Post Office Lane south	6
	Post Office Lane south	to	Merrigang Street east	43
	Post Office Lane south	to	Merrigang Street west	82
	Merrigang Street west	to	Post Office Lane south	29
Merrigang Street and public car park (nr Fire Station)	Car park egress	to	Merrigang Street west	6
	Car park egress	to	Merrigang Street east	53
	Merrigang Street east	to	Car park access	39
	Merrigang Street west	to	Car park access	50
Wingecarribee Street and Oxley Mall east	Wingecarribee Street east	to	Oxley Mall access	129
	Wingecarribee Street west	to	Oxley Mall access	3
Wingecarribee Street and Oxley Mall west	Wingecarribee Street east	to	Oxley Mall access	104
	Oxley Mall egress	to	Wingecarribee Street east	125
	Oxley Mall egress	to	Wingecarribee Street west	77
	Wingecarribee Street west	to	Oxley Mall access	6

Scenario 2A - OLSH	turning movements - 15:00 to 16:00			
Boolwey Street and Oxley Mall/Woolworths Access	Oxley Mall	to	Boolwey Street west	163
	Oxley Mall	to	Woolworths Access	15
	Oxley Mall	to	Boolwey Street east	145
	Oxley Mall	to	Oxley Mall	9
	Boolwey Street east	to	Oxley Mall	93
	Boolwey Street east	to	Boolwey Street west	100
	Boolwey Street east	to	Woolworths Access	76
	Boolwey Street east	to	Boolwey Street east	2
	Woolworths Access	to	Boolwey Street east	87
	Woolworths Access	to	Oxley Mall	17
	Woolworths Access	to	Boolwey Street west	107
	Woolworths Access	to	Woolworths Access	5
	Boolwey Street west	to	Woolworths Access	53
	Boolwey Street west	to	Boolwey Street east	61
	Boolwey Street west	to	Oxley Mall	105
	Boolwey Street west	to	Boolwey Street west	18
Banyette Street and Woolworths Access east	Banyette Street east	to	Woolworths Access	48
	Banyette Street west	to	Woolworths Access	93
Banyette Street and Woolworths Access west	Woolworths Access	to	Banyette Street west	53
	Woolworths Access	to	Banyette Street east	22
	Banyette Street east	to	Woolworths Access	6
	Banyette Street west	to	Woolworths Access	45
Bowral Street and Medical Centre east	Medical Centre	to	Bowral Street west	9
	Medical Centre	to	Bowral Street east	12
	Bowral Street east	to	Medical Centre	13
	Bowral Street west	to	Medical Centre	0
Bowral Street and Medical Centre east	Medical Centre	to	Bowral Street west	2
	Medical Centre	to	Bowral Street east	17
	Bowral Street east	to	Medical Centre	4
	Bowral Street west	to	Medical Centre	19
Bowral Street and Holmhale Street	Bowral Street east	to	Holmhale Street	15
	Holmhale Street	to	Bowral Street east	32
	Holmhale Street	to	Bowral Street west	23
	Bowral Street west	to	Holmhale Street	8
Bong Bong Street and Petrol Station Access	Bong Bong Street north	to	Petrol Station Access	29
	Petrol Station Access	to	Bong Bong Street north	4
	Petrol Station Access	to	Bong Bong Street south	20
	Bong Bong Street south	to	Petrol Station Access	11
Argyle Ln Car Park	Argyle Ln north	to	Car park	7
	Car park	to	Argyle Ln south	20
Wattle Ln Car Park	Wattle Ln south	to	Car park	20
	Car park	to	Wattle Ln south	19
	Car park	to	Wattle Ln north	5
Banyette Street and ALDI access	Banyette St east	to	ALDI	42
	ALDI	to	Banyette St east	55
	ALDI	to	Banyette St west	76
	Banyette Street west	to	ALDI	86

Scenario 2A - OLSH	turning movements - 15:00 to 16:00			
Station Street and Petrol Station access	Station Street north	to	Petrol Station	41
Banyette Street and Petrol Station egress	Petrol Station egress	to	Banyette Street west	26
	Petrol Station egress	to	Banyette Street east	41
Bowral Street and The Intersection access	Bowral Street east	to	The Intersection access	46
	The Intersection access	to	Bowral Street east	48
	The Intersection access	to	Bowral Street west	6
	Bowral Street west	to	The Intersection access	96
Station Street and Car Park (west side south of Boolwey Street)	Station Street north	to	Car park	10
	Station Street south	to	Car park	27
	Car park	to	Station Street south	5
	Car park	to	Station Street north	5
Station Street and Car park behind Empire	Station Street north	to	Car park	46
	Car park	to	Station Street north	3
	Car park	to	Station Street south	82
	Station Street south	to	Car park	14
Station Street and Car park at station (Z57)	Station Street north	to	Car park	0
	Station Street south	to	Car park	8
	Car park	to	Station Street south	0
	Car park	to	Station Street north	0
Station Street and Car park at station (Z69)	Station Street north	to	Car park	0
	Station Street south	to	Car park	2
	Car park	to	Station Street south	22
	Car park	to	Station Street north	16
Station Street and Car park at station (Z58)	Station Street north	to	Car park	5
	Station Street south	to	Car park	0
	Car park	to	Station Street south	0
	Car park	to	Station Street north	7
Banyette Street and Argyle Lane	Argyle Lane north	to	Banyette Street west	13
	Argyle Lane north	to	Argyle Lane south	5
	Argyle Lane north	to	Banyette Street east	37
	Banyette Street east	to	Argyle Lane south	25
	Argyle Lane south	to	Banyette Street east	2
	Argyle Lane south	to	Banyette Street west	10
	Banyette Street west	to	Argyle Lane south	17
Banyette Street and Wattle Lane	Wattle Lane	to	Banyette Street west	0
	Wattle Lane	to	Banyette Street east	19
	Banyette Street east	to	Wattle Lane north	12
	Banyette Street west	to	Wattle Lane north	19



Scenario 2 - Sherwood Village plus 250 spaces - no extra retail	turning movements - 15:00 to 16:00			
				Model
Mittagong Road and Kirkham Road	Mittagong Road nth	to	Kirkham Road west	129
	Mittagong Road nth	to	Mittagong Road south	950
	Mittagong Road south	to	Mittagong Road north	992
	Mittagong Road south	to	Kirkham Road west	39
	Kirkham Road west	to	Mittagong Road south	32
	Kirkham Road west	to	Mittagong Road north	95
Mittagong Road and Cliff Street	Mittagong Road north	to	Mittagong Road south	937
	Mittagong Road north	to	Cliff Street east	17
	Cliff Street east	to	Mittagong Road north	8
	Cliff Street east	to	Mittagong Road south	6
	Mittagong Road south	to	Cliff Street east	24
	Mittagong Road south	to	Mittagong Road north	998
Mittagong Road and Oxley Street	Mittagong Road north	to	Mittagong Road south	911
	Mittagong Road north	to	Oxley Drive east	39
	Oxley Drive east	to	Mittagong Road north	18
	Oxley Drive east	to	Mittagong Road south	35
	Mittagong Road south	to	Oxley Drive east	48
	Mittagong Road south	to	Mittagong Road north	1002
Mittagong Road and Victoria Street	Mittagong Road north	to	Mittagong Road south	925
	Mittagong Road north	to	Victoria Street east	19
	Victoria Street east	to	Mittagong Road north	4
	Victoria Street east	to	Mittagong Road south	80
	Mittagong Road south	to	Victoria Street east	49
	Mittagong Road south	to	Mittagong Road north	1046
Mittagong Road, Bundaroo Street, Station Street and Bong Bong Street				
	Mittagong Road north	to	Bundaroo Street east	281
	Mittagong Road north	to	Bong Bong Street south	322
	Mittagong Road north	to	Station Street south	395
	Bundaroo Street east	to	Mittagong Road north	261
	Bundaroo Street east	to	Bong Bong Street south	26
	Bundaroo Street east	to	Station Street south	0
	Bong Bong Street south	to	Mittagong Road north	256
	Station Street south	to	Mittagong Road north	575
Station Street and Merrigang Street	Merrigang Street east	to	Station Street south	48
	Station Street south	to	Merrigang Street east	121
Station Street and Wingecarribee Street	Station Street north	to	Wingecarribee Street west	101
	Station Street north	to	Station Street south	349
	Wingecarribee Street east	to	Station Street north	13
	Wingecarribee Street east	to	Wingecarribee Street west	106
	Wingecarribee Street east	to	Station Street south	94
	Station Street south	to	Station Street north	495
	Station Street south	to	Wingecarribee Street west	253
	Wingecarribee Street west	to	Station Street south	391
	Wingecarribee Street west	to	Station Street north	176
Station Street and Boolwey Street	Station Street north	to	Station Street south	694
	Station Street north	to	Boolwey Street east	176
	Station Street north	to	Station Street north	15
	Boolwey Street east	to	Station Street north	191
	Boolwey Street east	to	Station Street south	52
	Boolwey Street east	to	Boolwey Street east	24
	Station Street south	to	Boolwey Street east	11
	Station Street south	to	Station Street north	573
	Station Street south	to	Station Street south	4

Scenario 2 - Sherwood Village plus 250 spaces - no extra retail	turning movements - 15:00 to 16:00			
Station Street and Banyette Street	Station Street north	to	Station Street south	527
	Station Street north	to	Banyette Street east	162
	Banyette Street east	to	Station Street north	139
	Banyette Street east	to	Station Street south	78
	Station Street south	to	Banyette Street east	20
	Station Street south	to	Station Street north	450
Station Street and Bowral Street	Station Street north	to	Station Street south	485
	Station Street north	to	Bowral Street east	122
	Bowral Street east	to	Station Street north	0
	Bowral Street east	to	Station Street south	47
	Station Street south	to	Bowral Street east	32
	Station Street south	to	Station Street north	469
Station Street and Funston Street	Station Street north	to	Funston Street west	59
	Station Street north	to	Funston Street east	451
	Funston Street east	to	Station Street north	460
	Funston Street east	to	Funston Street west	19
	Funston Street west	to	Funston Street east	9
	Funston Street west	to	Station Street north	28
Funston Street and Belmore Street	Funston Street east	to	Funston Street west	476
	Funston Street east	to	Belmore Street south	12
	Belmore Street south	to	Funston Street west	3
	Funston Street west	to	Funston Street east	459
Funston Street and Moss Vale Road	Moss Vale Road north	to	Funston Street west	4
	Moss Vale Road north	to	Moss Vale Road south	464
	Moss Vale Road north	to	Kangaloon Road east	136
	Moss Vale Road north	to	Moss Vale Road north	0
	Kangaloon Road east	to	Moss Vale Road north	159
	Kangaloon Road east	to	Funston Street west	84
	Kangaloon Road east	to	Moss Vale Road south	23
	Kangaloon Road east	to	Kangaloon Road east	0
	Moss Vale Road south	to	Kangaloon Road east	18
	Moss Vale Road south	to	Moss Vale Road north	441
	Moss Vale Road south	to	Funston Street west	335
	Moss Vale Road south	to	Funston Street west	83
	Moss Vale Road south	to	Moss Vale Road south	5
	Funston Street west	to	Moss Vale Road south	363
	Funston Street west	to	Kangaloon Road east	126
	Funston Street west	to	Moss Vale Road north	0
	Funston Street west	to	Funston Street west	0
Moss Vale Road and Carrington Street	Moss Vale Road north	to	Carrington Street	9
	Moss Vale Road north	to	Moss Vale Road south	836
	Moss Vale Road south	to	Moss Vale Road north	866
	Moss Vale Road south	to	Carrington Street	3
	Carrington Street	to	Moss Vale Road south	0
	Carrington Street	to	Moss Vale Road north	9
Moss Vale Road and Alcorn Street	Moss Vale Road north	to	Alcorn Street west	41
	Moss Vale Road north	to	Moss Vale Road south	791
	Moss Vale Road north	to	Beavan Place east	0
	Beavan Place east	to	Moss Vale Road north	6
	Beavan Place east	to	Alcorn Street west	0
	Beavan Place east	to	Moss Vale Road south	2
	Moss Vale Road south	to	Beavan Place east	6
	Moss Vale Road south	to	Moss Vale Road north	833
	Moss Vale Road south	to	Alcorn Street west	13
	Alcorn Street west	to	Moss Vale Road south	9
	Alcorn Street west	to	Beavan Place east	0
	Alcorn Street west	to	Moss Vale Road north	26

Scenario 2 - Sherwood Village plus 250 spaces - no extra retail	turning movements - 15:00 to 16:00			
Moss Vale Road and Links Road	Moss Vale Road north	to	Moss Vale Road south	762
	Moss Vale Road north	to	Links Road east	40
	Links Road east	to	Moss Vale Road north	28
	Links Road east	to	Moss Vale Road south	14
	Moss Vale Road south	to	Links Road east	11
	Moss Vale Road south	to	Moss Vale Road north	819
Bong Bong Street and Merrigang Street				
	Bong Bong Street north	to	Merrigang Street west	11
	Bong Bong Street north	to	Bong Bong Street south	301
	Bong Bong Street north	to	Merrigang Street east	48
	Bong Bong Street north	to	Bong Bong Street north	0
	Merrigang Street east	to	Bong Bong Street north	32
	Merrigang Street east	to	Merrigang Street west	33
	Merrigang Street east	to	Bong Bong Street south	77
	Merrigang Street east	to	Merrigang Street east	0
	Bong Bong Street south	to	Merrigang Street east	91
	Bong Bong Street south	to	Bong Bong Street north	219
	Bong Bong Street south	to	Merrigang Street west	3
	Bong Bong Street south	to	Bong Bong Street south	2
	Merrigang Street west	to	Bong Bong Street south	11
	Merrigang Street west	to	Merrigang Street east	107
	Merrigang Street west	to	Bong Bong Street north	0
	Merrigang Street west	to	Merrigang Street west	1
Bong Bong Street and Wingecarribee Street	Bong Bong Street north	to	Wingecarribee Street west	61
	Bong Bong Street north	to	Bong Bong Street south	346
	Bong Bong Street south	to	Bong Bong Street north	311
	Bong Bong Street south	to	Wingecarribee Street west	149
Bong Bong Street and Boolwey Street	Bong Bong Street north	to	Boolwey Street west	0
	Bong Bong Street north	to	Bong Bong Street south	275
	Bong Bong Street north	to	Boolwey Street east	75
	Boolwey Street east	to	Bong Bong Street north	63
	Boolwey Street east	to	Boolwey Street west	121
	Boolwey Street east	to	Bong Bong Street south	167
	Bong Bong Street south	to	Boolwey Street east	0
	Bong Bong Street south	to	Bong Bong Street north	355
	Bong Bong Street south	to	Boolwey Street west	112
	Boolwey Street west	to	Bong Bong Street south	0
	Boolwey Street west	to	Boolwey Street east	140
	Boolwey Street west	to	Bong Bong Street north	38
Bong Bong Street and Banyette Street	Bong Bong Street north	to	Banyette Street west	15
	Bong Bong Street north	to	Bong Bong Street south	349
	Bong Bong Street north	to	Banyette Street east	66
	Bong Bong Street north	to	Bong Bong Street north	0
	Banyette Street east	to	Bong Bong Street north	51
	Banyette Street east	to	Banyette Street west	99
	Banyette Street east	to	Bong Bong Street south	84
	Banyette Street east	to	Banyette Street east	0
	Bong Bong Street south	to	Banyette Street east	214
	Bong Bong Street south	to	Bong Bong Street north	357
	Bong Bong Street south	to	Banyette Street west	90
	Bong Bong Street south	to	Bong Bong Street south	21
	Banyette Street west	to	Bong Bong Street south	52
	Banyette Street west	to	Banyette Street east	115
	Banyette Street west	to	Bong Bong Street north	68
	Banyette Street west	to	Banyette Street west	0

Scenario 2 - Sherwood Village plus 250 spaces - no extra retail	turning movements - 15:00 to 16:00			
Bong Bong Street and Bowral Street	Bong Bong Street north	to	Bowral Street west	17
	Bong Bong Street north	to	Moss Vale Road south	428
	Bong Bong Street north	to	Bowral Street east	40
	Bong Bong Street north	to	Bong Bong Street north	0
	Bowral Street east	to	Bong Bong Street north	63
	Bowral Street east	to	Bowral Street west	153
	Bowral Street east	to	Moss Vale Road south	163
	Bowral Street east	to	Bowral Street east	0
	Moss Vale Road south	to	Bowral Street east	91
	Moss Vale Road south	to	Bong Bong Street north	502
	Moss Vale Road south	to	Bowral Street west	13
	Moss Vale Road south	to	Moss Vale Road south	0
	Bowral Street west	to	Moss Vale Road south	18
	Bowral Street west	to	Bowral Street east	89
	Bowral Street west	to	Bong Bong Street north	117
	Bowral Street west	to	Bowral Street west	0
Bendooley Street and Bundaroo Street	Bundaroo Street east	to	Bundaroo Street west	9
	Bundaroo Street east	to	Bendooley Street south	64
	Bendooley Street south	to	Bundaroo Street east	78
	Bendooley Street south	to	Bundaroo Street west	351
	Bundaroo Street west	to	Bendooley Street south	329
	Bundaroo Street west	to	Bundaroo Street east	29
Bendooley Street and Merrigang Street	Bendooley Street north	to	Merrigang Street west	28
	Bendooley Street north	to	Bendooley Street south	357
	Bendooley Street north	to	Merrigang Street east	18
	Bendooley Street north	to	Bendooley Street north	0
	Merrigang Street east	to	Bendooley Street north	65
	Merrigang Street east	to	Merrigang Street west	57
	Merrigang Street east	to	Bendooley Street south	90
	Merrigang Street east	to	Merrigang Street east	0
	Bendooley Street south	to	Merrigang Street east	130
	Bendooley Street south	to	Bendooley Street north	272
	Bendooley Street south	to	Merrigang Street west	50
	Bendooley Street south	to	Bendooley Street south	0
	Merrigang Street west	to	Bendooley Street south	145
	Merrigang Street west	to	Merrigang Street east	59
	Merrigang Street west	to	Bendooley Street north	92
	Merrigang Street west	to	Merrigang Street west	2
Bendooley Street and Wingecarribee Street	Bendooley Street north	to	Wingecarribee Street west	119
	Bendooley Street north	to	Bendooley Street south	428
	Bendooley Street north	to	Wingecarribee Street east	35
	Wingecarribee Street east	to	Bendooley Street north	24
	Wingecarribee Street east	to	Wingecarribee Street west	17
	Wingecarribee Street east	to	Bendooley Street south	51
	Bendooley Street south	to	Wingecarribee Street east	29
	Bendooley Street south	to	Bendooley Street north	337
	Bendooley Street south	to	Wingecarribee Street west	144
	Wingecarribee Street west	to	Bendooley Street south	33
	Wingecarribee Street west	to	Wingecarribee Street east	18
	Wingecarribee Street west	to	Bendooley Street north	87

Scenario 2 - Sherwood Village plus 250 spaces - no extra retail	turning movements - 15:00 to 16:00			
Bendooley Street and Boolwey Street	Bendooley Street north	to	Boolwey Street west	130
	Bendooley Street north	to	Bendooley Street south	350
	Bendooley Street north	to	Boolwey Street east	38
	Bendooley Street north	to	Bendooley Street north	1
	Boolwey Street east	to	Bendooley Street north	66
	Boolwey Street east	to	Boolwey Street west	57
	Boolwey Street east	to	Bendooley Street south	42
	Boolwey Street east	to	Boolwey Street east	0
	Bendooley Street south	to	Boolwey Street east	39
	Bendooley Street south	to	Bendooley Street north	355
	Bendooley Street south	to	Boolwey Street west	134
	Bendooley Street south	to	Bendooley Street south	0
	Boolwey Street west	to	Bendooley Street south	150
	Boolwey Street west	to	Boolwey Street east	60
	Boolwey Street west	to	Bendooley Street north	85
	Boolwey Street west	to	Boolwey Street west	0
Bendooley Street and Banyette Street	Bendooley Street north	to	Banyette Street west	138
	Bendooley Street north	to	Bendooley Street south	400
	Bendooley Street north	to	Driveway east	5
	Driveway east	to	Bendooley Street north	11
	Driveway east	to	Banyette Street west	10
	Driveway east	to	Bendooley Street south	20
	Bendooley Street south	to	Driveway east	4
	Bendooley Street south	to	Bendooley Street north	443
	Bendooley Street south	to	Banyette Street west	111
	Banyette Street west	to	Bendooley Street south	212
	Banyette Street west	to	Driveway east	10
	Banyette Street west	to	Bendooley Street north	69
Bendooley Street and Bowral Street	Bendooley Street north	to	Bowral Street west	123
	Bendooley Street north	to	Bendooley Street south	189
	Bendooley Street north	to	Bowral Street east	318
	Bendooley Street north	to	Bendooley Street north	0
	Bowral Street east	to	Bendooley Street north	309
	Bowral Street east	to	Bowral Street west	218
	Bowral Street east	to	Bendooley Street south	10
	Bowral Street east	to	Bowral Street east	0
	Bendooley Street south	to	Bowral Street east	2
	Bendooley Street south	to	Bendooley Street north	107
	Bendooley Street south	to	Bowral Street west	34
	Bendooley Street south	to	Bendooley Street south	0
	Bowral Street west	to	Bendooley Street south	3
	Bowral Street west	to	Bowral Street east	132
	Bowral Street west	to	Bendooley Street north	150
	Bowral Street west	to	Bowral Street west	0
Kirkham Road and Centennial Road	Kirkham Road north	to	Centennial Road west	23
	Kirkham Road north	to	Kirkham Road south	144
	Kirkham Road south	to	Kirkham Road north	89
	Kirkham Road south	to	Centennial Road west	85
	Centennial Road west	to	Kirkham Road south	88
	Centennial Road west	to	Kirkham Road north	27
Kirkham Road and Mount Road	Kirkham Road north	to	Mount Road west	6
	Kirkham Road north	to	Kirkham Road south	226
	Kirkham Road south	to	Kirkham Road north	160
	Kirkham Road south	to	Mount Road west	88
	Mount Road west	to	Kirkham Road south	94
	Mount Road west	to	Kirkham Road north	17

Scenario 2 - Sherwood Village plus 250 spaces - no extra retail	turning movements - 15:00 to 16:00			
Kirkham Road and Sherwood Avenue	Kirkham Road north	to	Sherwood Avenue west	34
	Kirkham Road north	to	Kirkham Road south	296
	Kirkham Road south	to	Kirkham Road north	232
	Kirkham Road south	to	Sherwood Avenue west	81
	Sherwood Avenue west	to	Kirkham Road south	79
	Sherwood Avenue west	to	Kirkham Road north	25
Kirkham Road and Wingecarribee Street	Kirkham Road north	to	Car park west	0
	Kirkham Road north	to	Kirkham Road south	61
	Kirkham Road north	to	Wingecarribee Street east	314
	Wingecarribee Street east	to	Kirkham Road north	217
	Wingecarribee Street east	to	Car park west	99
	Wingecarribee Street east	to	Kirkham Road south	149
	Kirkham Road south	to	Wingecarribee Street east	150
	Kirkham Road south	to	Kirkham Road north	94
	Kirkham Road south	to	Car park west	6
Oxleys Hill Road and Kiama Street	Oxleys Hill Road east	to	Oxleys Hill Road west	82
	Oxleys Hill Road east	to	Kiama Street south	19
	Kiama Street south	to	Oxleys Hill Road east	15
	Kiama Street south	to	Oxleys Hill Road west	2
	Oxleys Hill Road west	to	Kiama Street south	0
	Oxleys Hill Road west	to	Oxleys Hill Road east	119
<b>Car parks</b>				
Bundaroo Street egress from car park	Egress	to	Bundaroo Street east	12
	Egress	to	Bundaroo Street west	13
Merrigang Street and Post Office Lane	Merrigang Street east	to	Post Office Lane south	5
	Post Office Lane south	to	Merrigang Street east	62
	Post Office Lane south	to	Merrigang Street west	56
	Merrigang Street west	to	Post Office Lane south	23
Merrigang Street and public car park (nr Fire Station)	Car park egress	to	Merrigang Street west	6
	Car park egress	to	Merrigang Street east	41
	Merrigang Street east	to	Car park access	57
	Merrigang Street west	to	Car park access	28
Wingecarribee Street and Oxley Mall east	Wingecarribee Street east	to	Oxley Mall access	125
	Wingecarribee Street west	to	Oxley Mall access	3
Wingecarribee Street and Oxley Mall west	Wingecarribee Street east	to	Oxley Mall access	110
	Oxley Mall egress	to	Wingecarribee Street east	115
	Oxley Mall egress	to	Wingecarribee Street west	80
	Wingecarribee Street west	to	Oxley Mall access	8
Boolwey Street and Oxley Mall/Woolworths Access	Oxley Mall	to	Boolwey Street west	122
	Oxley Mall	to	Woolworths Access	12
	Oxley Mall	to	Boolwey Street east	135
	Oxley Mall	to	Oxley Mall	6
	Boolwey Street east	to	Oxley Mall	120
	Boolwey Street east	to	Boolwey Street west	99
	Boolwey Street east	to	Woolworths Access	91
	Boolwey Street east	to	Boolwey Street east	5
	Woolworths Access	to	Boolwey Street east	83
	Woolworths Access	to	Oxley Mall	16
	Woolworths Access	to	Boolwey Street west	101
	Woolworths Access	to	Woolworths Access	4
	Boolwey Street west	to	Woolworths Access	34
	Boolwey Street west	to	Boolwey Street east	71
	Boolwey Street west	to	Oxley Mall	93
	Boolwey Street west	to	Boolwey Street west	13

Scenario 2 - Sherwood Village plus 250 spaces - no extra retail	turning movements - 15:00 to 16:00			
Banyette Street and Woolworths Access east	Banyette Street east	to	Woolworths Access	55
	Banyette Street west	to	Woolworths Access	79
Banyette Street and Woolworths Access west	Woolworths Access	to	Banyette Street west	48
	Woolworths Access	to	Banyette Street east	31
	Banyette Street east	to	Woolworths Access	16
	Banyette Street west	to	Woolworths Access	55
Bowral Street and Medical Centre east	Medical Centre	to	Bowral Street west	2
	Medical Centre	to	Bowral Street east	14
	Bowral Street east	to	Medical Centre	8
	Bowral Street west	to	Medical Centre	0
Bowral Street and Medical Centre east	Medical Centre	to	Bowral Street west	8
	Medical Centre	to	Bowral Street east	19
	Bowral Street east	to	Medical Centre	5
	Bowral Street west	to	Medical Centre	11
Bowral Street and Holmhale Street	Bowral Street east	to	Holmhale Street	9
	Holmhale Street	to	Bowral Street east	24
	Holmhale Street	to	Bowral Street west	16
	Bowral Street west	to	Holmhale Street	9
Bong Bong Street and Petrol Station Access	Bong Bong Street north	to	Petrol Station Access	40
	Petrol Station Access	to	Bong Bong Street north	9
	Petrol Station Access	to	Bong Bong Street south	20
	Bong Bong Street south	to	Petrol Station Access	7
Argyle Ln Car Park	Argyle Ln north	to	Car park	6
	Car park	to	Argyle Ln south	24
Wattle Ln Car Park	Wattle Ln south	to	Car park	16
	Car park	to	Wattle Ln south	31
	Car park	to	Wattle Ln north	3
Banyette Street and ALDI access	Banyette St east	to	ALDI	67
	ALDI	to	Banyette St east	62
	ALDI	to	Banyette St west	72
	Banyette Street west	to	ALDI	81
Station Street and Petrol Station access	Station Street north	to	Petrol Station	55
Banyette Street and Petrol Station egress	Petrol Station egress	to	Banyette Street west	35
	Petrol Station egress	to	Banyette Street east	40
Bowral Street and The Intersection access	Bowral Street east	to	The Intersection access	61
	The Intersection access	to	Bowral Street east	53
	The Intersection access	to	Bowral Street west	3
	Bowral Street west	to	The Intersection access	112
Station Street and Car Park (west side south of Boolwey Street)	Station Street north	to	Car park	1
	Station Street south	to	Car park	26
	Car park	to	Station Street south	3
	Car park	to	Station Street north	15
Station Street and Car park behind Empire	Station Street north	to	Car park	52
	Car park	to	Station Street north	4
	Car park	to	Station Street south	101
	Station Street south	to	Car park	15

Scenario 2 - Sherwood Village plus 250 spaces - no extra retail	turning movements - 15:00 to 16:00			
Station Street and Car park at station (Z57)	Station Street north	to	Car park	0
	Station Street south	to	Car park	7
	Car park	to	Station Street south	0
	Car park	to	Station Street north	0
Station Street and Car park at station (Z69)	Station Street north	to	Car park	0
	Station Street south	to	Car park	4
	Car park	to	Station Street south	21
	Car park	to	Station Street north	19
Station Street and Car park at station (Z58)	Station Street north	to	Car park	8
	Station Street south	to	Car park	5
	Car park	to	Station Street south	0
	Car park	to	Station Street north	4
Banyette Street and Argyle Lane	Argyle Lane north	to	Banyette Street west	17
	Argyle Lane north	to	Argyle Lane south	7
	Argyle Lane north	to	Banyette Street east	49
	Banyette Street east	to	Argyle Lane south	19
	Argyle Lane south	to	Banyette Street east	2
	Argyle Lane south	to	Banyette Street west	6
	Banyette Street west	to	Argyle Lane south	22
Banyette Street and Wattle Lane	Wattle Lane	to	Banyette Street west	3
	Wattle Lane	to	Banyette Street east	28
	Banyette Street east	to	Wattle Lane north	35
	Banyette Street west	to	Wattle Lane north	24



Scenario 3	turning movements - 15:00 to 16:00				
					Model
Mittagong Road and Kirkham Road	Mittagong Road nth	to	Kirkham Road west		81
	Mittagong Road nth	to	Mittagong Road south		1015
	Mittagong Road south	to	Mittagong Road north		1018
	Mittagong Road south	to	Kirkham Road west		29
	Kirkham Road west	to	Mittagong Road south		19
	Kirkham Road west	to	Mittagong Road north		113
Mittagong Road and Cliff Street	Mittagong Road north	to	Mittagong Road south		998
	Mittagong Road north	to	Cliff Street east		15
	Cliff Street east	to	Mittagong Road north		18
	Cliff Street east	to	Mittagong Road south		5
	Mittagong Road south	to	Cliff Street east		15
	Mittagong Road south	to	Mittagong Road north		1015
Mittagong Road and Oxley Street	Mittagong Road north	to	Mittagong Road south		964
	Mittagong Road north	to	Oxley Drive east		42
	Oxley Drive east	to	Mittagong Road north		16
	Oxley Drive east	to	Mittagong Road south		38
	Mittagong Road south	to	Oxley Drive east		32
	Mittagong Road south	to	Mittagong Road north		1014
Mittagong Road and Victoria Street	Mittagong Road north	to	Mittagong Road south		971
	Mittagong Road north	to	Victoria Street east		26
	Victoria Street east	to	Mittagong Road north		10
	Victoria Street east	to	Mittagong Road south		62
	Mittagong Road south	to	Victoria Street east		51
	Mittagong Road south	to	Mittagong Road north		1028
Mittagong Road, Bundaroo Street, Station Street and Bong Bong Street	Mittagong Road north	to	Bundaroo Street east		229
	Mittagong Road north	to	Bong Bong Street south		338
	Mittagong Road north	to	Station Street south		483
	Mittagong Road north	to	Mittagong Road north		0
	Bundaroo Street east	to	Mittagong Road north		159
	Bundaroo Street east	to	Bong Bong Street south		13
	Bundaroo Street east	to	Station Street south		43
	Bundaroo Street east	to	Bundaroo Street east		0
	Bong Bong Street south	to	Bundaroo Street east		14
	Bong Bong Street south	to	Mittagong Road north		369
	Bong Bong Street south	to	Station Street south		24
	Bong Bong Street south	to	Bong Bong Street south		0
	Station Street south	to	Mittagong Road north		551
	Station Street south	to	Bundaroo Street east		79
	Station Street south	to	Bong Bong Street south		25
	Station Street south	to	Station Street south		3
Station Street and Wingecarribee Street	Station Street north	to	Wingecarribee Street west		120
	Station Street north	to	Station Street south		439
	Wingecarribee Street east	to	Station Street north		17
	Wingecarribee Street east	to	Wingecarribee Street west		173
	Wingecarribee Street east	to	Station Street south		39
	Station Street south	to	Station Street north		453
	Station Street south	to	Wingecarribee Street west		187
	Wingecarribee Street west	to	Station Street south		363
	Wingecarribee Street west	to	Station Street north		154
Station Street and Boolwey Street	Station Street north	to	Station Street south		652
	Station Street north	to	Boolwey Street east		230
	Boolwey Street east	to	Station Street north		0
	Boolwey Street east	to	Station Street south		74
	Station Street south	to	Boolwey Street east		0
	Station Street south	to	Station Street north		662

Scenario 3	turning movements - 15:00 to 16:00				
Station Street and Banyette Street	Station Street north - now easts	to	Station Street south - now eastside service		0
	Station Street north - now easts	to	Banyette Street east		47
	Banyette Street east	to	Station Street south - now eastside service		0
Station Street and eastside service road (north of Banyette Street)	Station Street north	to	Eastside service road		96
Station Street and eastside service road (north of Bowral Street)	Eastside service road	to	Station Street south		0
	Eastside service road	to	Station Street north		0
Station Street and Funston Street	Station Street north	to	Funston Street west		74
	Station Street north	to	Funston Street east		171
	Funston Street east	to	Station Street north		124
	Funston Street east	to	Funston Street west		62
	Funston Street west	to	Funston Street east		0
	Funston Street west	to	Station Street north		31
Funston Street and Belmore Street	Funston Street east	to	Funston Street west		185
	Funston Street east	to	Belmore Street south		12
	Belmore Street south	to	Funston Street west		1
	Funston Street west	to	Funston Street east		171
Funston Street and Moss Vale Road	Moss Vale Road north	to	Funston Street west		2
	Moss Vale Road north	to	Moss Vale Road south		394
	Moss Vale Road north	to	Kangaloon Road east		139
	Moss Vale Road north	to	Moss Vale Road north		0
	Kangaloon Road east	to	Moss Vale Road north		149
	Kangaloon Road east	to	Funston Street west		110
	Kangaloon Road east	to	Moss Vale Road south		19
	Kangaloon Road east	to	Kangaloon Road east		0
	Moss Vale Road south	to	Kangaloon Road east		13
	Moss Vale Road south	to	Moss Vale Road north		320
	Moss Vale Road south	to	Funston Street west		66
	Moss Vale Road south	to	Funston Street west		11
	Moss Vale Road south	to	Moss Vale Road south		6
	Funston Street west	to	Moss Vale Road south		46
	Funston Street west	to	Kangaloon Road east		135
	Funston Street west	to	Moss Vale Road north		3
	Funston Street west	to	Funston Street west		0
Moss Vale Road and Carrington Street	Moss Vale Road north	to	Carrington Street		10
	Moss Vale Road north	to	Moss Vale Road south		453
	Moss Vale Road south	to	Moss Vale Road north		405
	Moss Vale Road south	to	Carrington Street		9
	Carrington Street	to	Moss Vale Road south		0
	Carrington Street	to	Moss Vale Road north		10
Moss Vale Road and Alcorn Street	Moss Vale Road north	to	Alcorn Street west		33
	Moss Vale Road north	to	Moss Vale Road south		418
	Moss Vale Road north	to	Beavan Place east		0
	Beavan Place east	to	Moss Vale Road north		4
	Beavan Place east	to	Alcorn Street west		0
	Beavan Place east	to	Moss Vale Road south		1
	Moss Vale Road south	to	Beavan Place east		2
	Moss Vale Road south	to	Moss Vale Road north		386
	Moss Vale Road south	to	Alcorn Street west		12
	Alcorn Street west	to	Moss Vale Road south		6
	Alcorn Street west	to	Beavan Place east		0
	Alcorn Street west	to	Moss Vale Road north		21

Scenario 3	turning movements - 15:00 to 16:00			
Moss Vale Road and Links Road	Moss Vale Road north	to	Moss Vale Road south	409
	Moss Vale Road north	to	Links Road east	18
	Moss Vale Road north	to	New Link Road	0
	Moss Vale Road north	to	Moss Vale Road north	0
	Links Road east	to	Moss Vale Road north	7
	Links Road east	to	Moss Vale Road south	19
	Links Road east	to	New Link Road	8
	Links Road east	to	Links Road east	0
	Moss Vale Road south	to	Links Road east	6
	Moss Vale Road south	to	Moss Vale Road north	399
	Moss Vale Road south	to	New Link Road	391
	Moss Vale Road south	to	Moss Vale Road south	0
	New Link Road	to	Moss Vale Road north	0
	New Link Road	to	Links Road east	18
	New Link Road	to	Moss Vale Road south	346
	New Link Road	to	New Link Road	0
Bong Bong Street and Merrigang Street	Bong Bong Street north	to	Merrigang Street west	0
	Bong Bong Street north	to	Bong Bong Street south	282
	Bong Bong Street north	to	Merrigang Street east	93
	Bong Bong Street north	to	Bong Bong Street north	0
	Merrigang Street east	to	Bong Bong Street north	122
	Merrigang Street east	to	Merrigang Street west	0
	Merrigang Street east	to	Bong Bong Street south	115
	Merrigang Street east	to	Merrigang Street east	0
	Bong Bong Street south	to	Merrigang Street east	33
	Bong Bong Street south	to	Bong Bong Street north	281
	Bong Bong Street south	to	Merrigang Street west	1
	Bong Bong Street south	to	Bong Bong Street south	3
	Merrigang Street west	to	Bong Bong Street south	0
	Merrigang Street west	to	Merrigang Street east	0
	Merrigang Street west	to	Bong Bong Street north	3
	Merrigang Street west	to	Merrigang Street west	0
Bong Bong Street and Wingecarribee Street	Bong Bong Street north	to	Wingecarribee Street west	63
	Bong Bong Street north	to	Bong Bong Street south	336
	Bong Bong Street south	to	Bong Bong Street north	317
	Bong Bong Street south	to	Wingecarribee Street west	164
Bong Bong Street and Boolwey Street	Bong Bong Street north	to	Boolwey Street west	0
	Bong Bong Street north	to	Bong Bong Street south	249
	Bong Bong Street north	to	Boolwey Street east	69
	Boolwey Street east	to	Bong Bong Street north	101
	Boolwey Street east	to	Boolwey Street west	86
	Boolwey Street east	to	Bong Bong Street south	182
	Bong Bong Street south	to	Boolwey Street east	101
	Bong Bong Street south	to	Bong Bong Street north	329
	Bong Bong Street south	to	Boolwey Street west	16
	Boolwey Street west	to	Bong Bong Street south	0
	Boolwey Street west	to	Boolwey Street east	140
	Boolwey Street west	to	Bong Bong Street north	53

Scenario 3	turning movements - 15:00 to 16:00				
Bong Bong Street and Banyette Street	Bong Bong Street north	to	Banyette Street west		46
	Bong Bong Street north	to	Bong Bong Street south		321
	Bong Bong Street north	to	Banyette Street east		55
	Bong Bong Street north	to	Bong Bong Street north		0
	Banyette Street east	to	Bong Bong Street north		42
	Banyette Street east	to	Banyette Street west		48
	Banyette Street east	to	Bong Bong Street south		72
	Banyette Street east	to	Banyette Street east		0
	Bong Bong Street south	to	Banyette Street east		188
	Bong Bong Street south	to	Bong Bong Street north		278
	Bong Bong Street south	to	Banyette Street west		32
	Bong Bong Street south	to	Bong Bong Street south		6
	Banyette Street west	to	Bong Bong Street south		44
	Banyette Street west	to	Banyette Street east		79
	Banyette Street west	to	Bong Bong Street north		138
	Banyette Street west	to	Banyette Street west		0
Bong Bong Street and Bowral Street	Bong Bong Street north	to	Bowral Street west		22
	Bong Bong Street north	to	Moss Vale Road south		396
	Bong Bong Street north	to	Bowral Street east		12
	Bong Bong Street north	to	Bong Bong Street north		0
	Bowral Street east	to	Bong Bong Street north		60
	Bowral Street east	to	Bowral Street west		178
	Bowral Street east	to	Moss Vale Road south		138
	Bowral Street east	to	Bowral Street east		0
	Moss Vale Road south	to	Bowral Street east		91
	Moss Vale Road south	to	Bong Bong Street north		374
	Moss Vale Road south	to	Bowral Street west		8
	Moss Vale Road south	to	Moss Vale Road south		0
	Bowral Street west	to	Moss Vale Road south		2
	Bowral Street west	to	Bowral Street east		107
	Bowral Street west	to	Bong Bong Street north		67
	Bowral Street west	to	Bowral Street west		0
Bendooley Street and Bundaroo Street	Bundaroo Street east	to	Bundaroo Street west		9
	Bundaroo Street east	to	Bendooley Street south		47
	Bendooley Street south	to	Bundaroo Street east		67
	Bendooley Street south	to	Bundaroo Street west		226
	Bundaroo Street west	to	Bendooley Street south		302
	Bundaroo Street west	to	Bundaroo Street east		56
Bendooley Street and Merrigang Street	Bendooley Street north	to	Merrigang Street west		7
	Bendooley Street north	to	Bendooley Street south		321
	Bendooley Street north	to	Merrigang Street east		29
	Bendooley Street north	to	Bendooley Street north		0
	Merrigang Street east	to	Bendooley Street north		63
	Merrigang Street east	to	Merrigang Street west		69
	Merrigang Street east	to	Bendooley Street south		115
	Merrigang Street east	to	Merrigang Street east		0
	Bendooley Street south	to	Merrigang Street east		131
	Bendooley Street south	to	Bendooley Street north		224
	Bendooley Street south	to	Merrigang Street west		91
	Bendooley Street south	to	Bendooley Street south		1
	Merrigang Street west	to	Bendooley Street south		91
	Merrigang Street west	to	Merrigang Street east		34
	Merrigang Street west	to	Bendooley Street north		7
	Merrigang Street west	to	Merrigang Street west		4

Scenario 3	turning movements - 15:00 to 16:00			
Bendooley Street and Wingecarabee Street	Bendooley Street north	to	Wingecarabee Street west	110
	Bendooley Street north	to	Bendooley Street south	371
	Bendooley Street north	to	Wingecarabee Street east	39
	Wingecarabee Street east	to	Bendooley Street north	27
	Wingecarabee Street east	to	Wingecarabee Street west	22
	Wingecarabee Street east	to	Bendooley Street south	28
	Bendooley Street south	to	Wingecarabee Street east	47
	Bendooley Street south	to	Bendooley Street north	340
	Bendooley Street south	to	Wingecarabee Street west	153
	Wingecarabee Street west	to	Bendooley Street south	34
	Wingecarabee Street west	to	Wingecarabee Street east	10
	Wingecarabee Street west	to	Bendooley Street north	80
Bendooley Street and Boolwey Street	Bendooley Street north	to	Boolwey Street west	100
	Bendooley Street north	to	Bendooley Street south	292
	Bendooley Street north	to	Boolwey Street east	52
	Bendooley Street north	to	Bendooley Street north	1
	Boolwey Street east	to	Bendooley Street north	53
	Boolwey Street east	to	Boolwey Street west	53
	Boolwey Street east	to	Bendooley Street south	44
	Boolwey Street east	to	Boolwey Street east	0
	Bendooley Street south	to	Boolwey Street east	45
	Bendooley Street south	to	Bendooley Street north	339
	Bendooley Street south	to	Boolwey Street west	120
	Bendooley Street south	to	Bendooley Street south	0
	Boolwey Street west	to	Bendooley Street south	180
	Boolwey Street west	to	Boolwey Street east	77
	Boolwey Street west	to	Bendooley Street north	150
	Boolwey Street west	to	Boolwey Street west	0
Bendooley Street and Banyette Street	Bendooley Street north	to	Banyette Street west	82
	Bendooley Street north	to	Bendooley Street south	416
	Bendooley Street north	to	Driveway east	20
	Driveway east	to	Bendooley Street north	13
	Driveway east	to	Banyette Street west	8
	Driveway east	to	Bendooley Street south	16
	Bendooley Street south	to	Driveway east	10
	Bendooley Street south	to	Bendooley Street north	425
	Bendooley Street south	to	Banyette Street west	83
	Banyette Street west	to	Bendooley Street south	183
	Banyette Street west	to	Driveway east	7
	Banyette Street west	to	Bendooley Street north	60
Bendooley Street and Bowral Street	Bendooley Street north	to	Bowral Street west	119
	Bendooley Street north	to	Bendooley Street south	189
	Bendooley Street north	to	Bowral Street east	307
	Bendooley Street north	to	Bendooley Street north	0
	Bowral Street east	to	Bendooley Street north	265
	Bowral Street east	to	Bowral Street west	230
	Bowral Street east	to	Bendooley Street south	19
	Bowral Street east	to	Bowral Street east	0
	Bendooley Street south	to	Bowral Street east	3
	Bendooley Street south	to	Bendooley Street north	99
	Bendooley Street south	to	Bowral Street west	28
	Bendooley Street south	to	Bendooley Street south	0
	Bowral Street west	to	Bendooley Street south	5
	Bowral Street west	to	Bowral Street east	98
	Bowral Street west	to	Bendooley Street north	160
	Bowral Street west	to	Bowral Street west	0

Scenario 3	turning movements - 15:00 to 16:00				
Kirkham Road and Centennial Road	Kirkham Road north	to	Centennial Road west		33
	Kirkham Road north	to	Kirkham Road south		78
	Kirkham Road south	to	Kirkham Road north		84
	Kirkham Road south	to	Centennial Road west		107
	Centennial Road west	to	Kirkham Road south		96
	Centennial Road west	to	Kirkham Road north		38
Kirkham Road and Mount Road	Kirkham Road north	to	Mount Road west		8
	Kirkham Road north	to	Kirkham Road south		166
	Kirkham Road south	to	Kirkham Road north		183
	Kirkham Road south	to	Mount Road west		80
	Mount Road west	to	Kirkham Road south		129
	Mount Road west	to	Kirkham Road north		10
Kirkham Road and Sherwood Avenue	Kirkham Road north	to	Sherwood Avenue west		37
	Kirkham Road north	to	Kirkham Road south		268
	Kirkham Road south	to	Kirkham Road north		262
	Kirkham Road south	to	Sherwood Avenue west		80
	Sherwood Avenue west	to	Kirkham Road south		71
	Sherwood Avenue west	to	Kirkham Road north		17
Kirkham Road and Wingecarribee Street	Kirkham Road north	to	Car park west		0
	Kirkham Road north	to	Kirkham Road south		76
	Kirkham Road north	to	Wingecarribee Street east		260
	Wingecarribee Street east	to	Kirkham Road north		218
	Wingecarribee Street east	to	Car park west		98
	Wingecarribee Street east	to	Kirkham Road south		166
	Kirkham Road south	to	Wingecarribee Street east		145
	Kirkham Road south	to	Kirkham Road north		124
	Kirkham Road south	to	Car park west		2
Oxleys Hill Road and Kiama Street	Oxleys Hill Road east	to	Oxleys Hill Road west		103
	Oxleys Hill Road east	to	Kiama Street south		23
	Kiama Street south	to	Oxleys Hill Road east		14
	Kiama Street south	to	Oxleys Hill Road west		1
	Oxleys Hill Road west	to	Kiama Street south		0
	Oxleys Hill Road west	to	Oxleys Hill Road east		115
<b>Car parks</b>					
Bundaroo Street egress from car park	Egress	to	Bundaroo Street east		14
	Egress	to	Bundaroo Street west		7
Merrigang Street and Post Office Lane	Merrigang Street east	to	Post Office Lane south		1
	Post Office Lane south	to	Merrigang Street east		28
	Post Office Lane south	to	Merrigang Street west		92
	Merrigang Street west	to	Post Office Lane south		23
Merrigang Street and public car park (nr Fire Station)	Car park egress	to	Merrigang Street west		18
	Car park egress	to	Merrigang Street east		57
	Merrigang Street east	to	Car park access		43
	Merrigang Street west	to	Car park access		50
Wingecarribee Street and Oxley Mall east	Wingecarribee Street east	to	Oxley Mall access		134
	Wingecarribee Street west	to	Oxley Mall access		6
Wingecarribee Street and Oxley Mall west	Wingecarribee Street east	to	Oxley Mall access		95
	Oxley Mall egress	to	Wingecarribee Street east		112
	Oxley Mall egress	to	Wingecarribee Street west		73
	Wingecarribee Street west	to	Oxley Mall access		6

Scenario 3	turning movements - 15:00 to 16:00				
Boolwey Street and Oxley Mall/Woolworths Access	Oxley Mall	to	Boolwey Street west		160
	Oxley Mall	to	Woolworths Access		18
	Oxley Mall	to	Boolwey Street east		167
	Oxley Mall	to	Oxley Mall		3
	Boolwey Street east	to	Oxley Mall		90
	Boolwey Street east	to	Boolwey Street west		83
	Boolwey Street east	to	Woolworths Access		94
	Boolwey Street east	to	Boolwey Street east		5
	Woolworths Access	to	Boolwey Street east		109
	Woolworths Access	to	Oxley Mall		16
	Woolworths Access	to	Boolwey Street west		71
	Woolworths Access	to	Woolworths Access		8
	Boolwey Street west	to	Woolworths Access		34
	Boolwey Street west	to	Boolwey Street east		138
	Boolwey Street west	to	Oxley Mall		112
	Boolwey Street west	to	Boolwey Street west		32
Banyette Street and Woolworths Access east	Banyette Street east	to	Woolworths Access		57
	Banyette Street west	to	Woolworths Access		56
Banyette Street and Woolworths Access west	Woolworths Access	to	Banyette Street west		59
	Woolworths Access	to	Banyette Street east		34
	Banyette Street east	to	Woolworths Access		13
	Banyette Street west	to	Woolworths Access		47
Bowral Street and Medical Centre east	Medical Centre	to	Bowral Street west		4
	Medical Centre	to	Bowral Street east		9
	Bowral Street east	to	Medical Centre		10
	Bowral Street west	to	Medical Centre		2
Bowral Street and Medical Centre east	Medical Centre	to	Bowral Street west		3
	Medical Centre	to	Bowral Street east		17
	Bowral Street east	to	Medical Centre		3
	Bowral Street west	to	Medical Centre		10
Bowral Street and Holmhale Street	Bowral Street east	to	Holmhale Street		13
	Holmhale Street	to	Bowral Street east		25
	Holmhale Street	to	Bowral Street west		14
	Bowral Street west	to	Holmhale Street		10
Bong Bong Street and Petrol Station Access	Bong Bong Street north	to	Petrol Station Access		32
	Petrol Station Access	to	Bong Bong Street north		4
	Petrol Station Access	to	Bong Bong Street south		16
	Bong Bong Street south	to	Petrol Station Access		7
Argyle Ln Car Park	Argyle Ln north	to	Car park		6
	Car park	to	Argyle Ln south		25
Wattle Ln Car Park	Wattle Ln south	to	Car park		16
	Car park	to	Wattle Ln south		32
	Car park	to	Wattle Ln north		5
Banyette Street and ALDI access	Banyette St east	to	ALDI		98
	ALDI	to	Banyette St east		121
	ALDI	to	Banyette St west		0
	Banyette Street west	to	ALDI		48
Station Street and Petrol Station access	Station Street north	to	Petrol Station		49
Banyette Street and Petrol Station egress	Petrol Station egress	to	Banyette Street west		0
	Petrol Station egress	to	Banyette Street east		76

Scenario 3	turning movements - 15:00 to 16:00				
Bowral Street and The Intersection access	Bowral Street east	to	The Intersection access		56
	The Intersection access	to	Bowral Street east		19
	The Intersection access	to	Bowral Street west		39
	Bowral Street west	to	The Intersection access		99
Station Street and Car park behind Empire	Station Street north	to	Car park		51
	Car park	to	Station Street north		0
	Car park	to	Station Street south		92
	Station Street south	to	Car park		13
Station Street and Car park at station (Z57)	Station Street north	to	Car park		0
	Station Street south	to	Car park		13
	Car park	to	Station Street south		0
	Car park	to	Station Street north		0
Station Street and Car park at station (Z69)	Station Street north	to	Car park		0
	Station Street south	to	Car park		0
	Car park	to	Station Street south		18
	Car park	to	Station Street north		24
Station Street and Car park at station (Z58)	Bong Bong Street north	to	Car park		4
	Bong Bong Street south	to	Car park		0
Banyette Street and Argyle Lane	Argyle Lane north	to	Banyette Street west		4
	Argyle Lane north	to	Argyle Lane south		3
	Argyle Lane north	to	Banyette Street east		78
	Banyette Street east	to	Argyle Lane south		31
	Argyle Lane south	to	Banyette Street east		9
	Argyle Lane south	to	Banyette Street west		0
	Banyette Street west	to	Argyle Lane south		27
Banyette Street and Wattle Lane	Wattle Lane	to	Banyette Street west		3
	Wattle Lane	to	Banyette Street east		29
	Banyette Street east	to	Wattle Lane north		4
	Banyette Street west	to	Wattle Lane north		19
Station Street westside car park near milk factory	Station Street north	to	car park		0
	Station Street south	to	car park		25
	car park	to	Station Street north		20
	car park	to	Station Street south		0