LAND REZONING FOR NEW RESIDENTIAL SUBDIVISION, BRIDGEWATER

TRAFFIC ASSESSMENT

Hubble Traffic

April 2024

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1. Introduction

Brighton Council (Council) has engaged Hubble Traffic to undertake an independent traffic assessment, to consider the traffic impact of additional residential traffic generated from rezoning of land, which is situated around Sorell Street and Cobbs Hill Road, Bridgewater.

The purpose of this traffic assessment is to quantify the current Level of Service on the surrounding local road network and determine the traffic capacity for the network to absorb additional traffic flow generated by the land rezoning. This assessment considers the change in road layout caused by the construction of the new Bridgewater Bridge.

This traffic assessment considers the traffic impact from rezoning land from Rural Living Zone A to General Residential, with the development using existing road infrastructure it can be considered as an infill residential project.

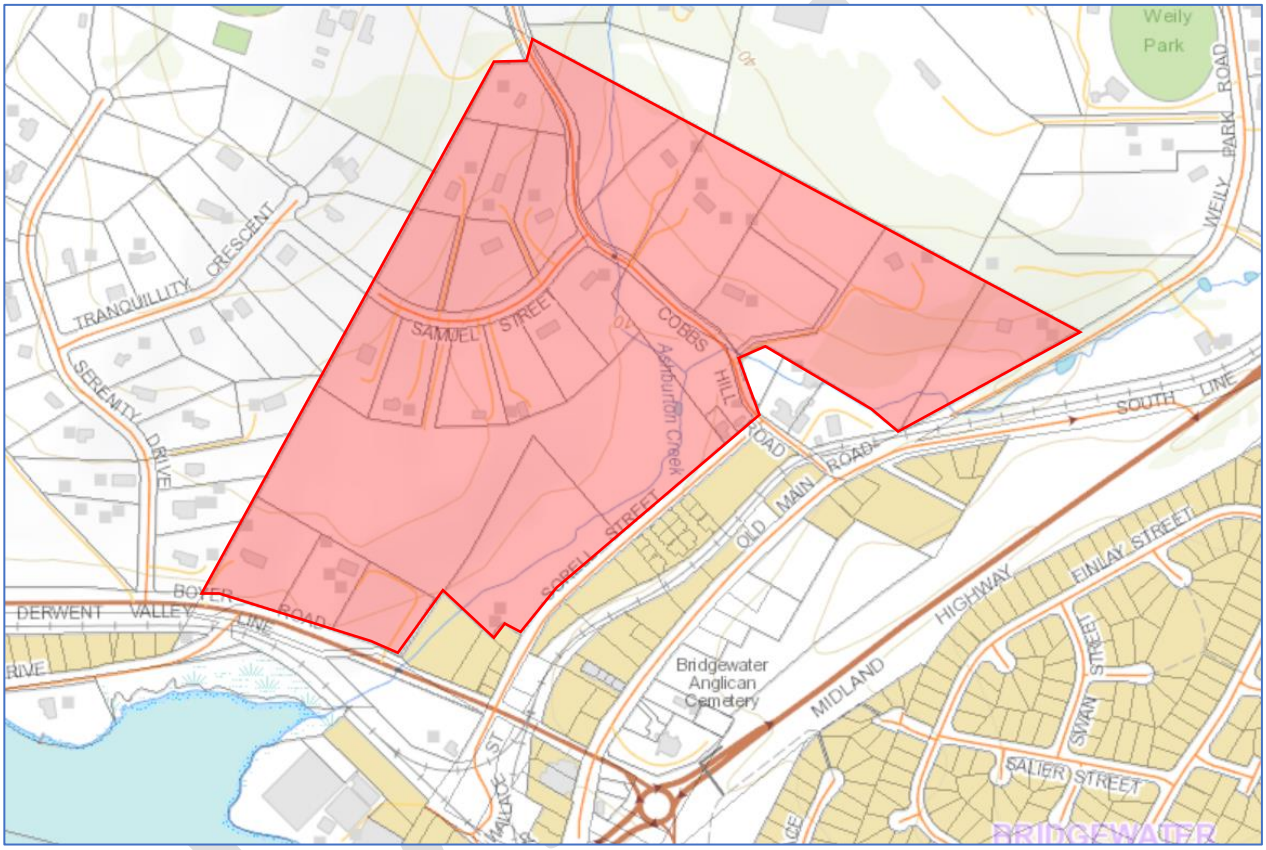
The State Government has advised that land located outside the Urban Growth Boundary, which shares a common boundary with the Urban Growth Boundary can be considered for rezoning. Stipulations of the extension of the urban growth boundary include; a logical extension, can be accommodated by the existing transport system, does not reduce the level of service of the existing road network, and would provide for an efficient and connected extension of the existing passenger and active transport services network.

2. Project site and description

The land under consideration for rezoning is highlighted red in diagram 2, and includes areas west of Sorell Street, north of Boyer Road, and north of Cobbs Hill Road and Samuel Street. For the purpose of this assessment this area will be the development site.

This development site is situated within undulating terrain, with existing rural residential properties, and vacant land that is mostly cleared of trees.

Diagram 2.0 – Development site



3. Traffic terminology used within this analysis

Austroads Guide to Traffic Management Part 12 – Traffic Impacts of Developments (Published 2020), defines the contents of traffic impact assessments, and recognises the Roads and Traffic Authority RTA Guideline for Traffic Generating Developments (RTA Guide), as a comprehensive reference guide on traffic generation within Australia.

The RTA Guide is the primary document used in this traffic impact assessment and specifies that traffic assessments are based on evaluating the traffic performance during the weekday peak hour periods.

Traffic performance at junctions, intersections, and roundabouts, can be quantified using traffic modelling software, with SIDRA the recommended software package in Australia.

3.1 Level of service for road links

Traffic performance of mid-block road links can be quantified by Level of Service (LOS), which is a qualitative measure describing operational conditions within a traffic stream, including perception by road users. The RTA Guide contains six levels from A to F, with LOS A representing the best operating conditions and LOS F the worst, with table 3.1 providing a brief description of each level.

Table 3.1 – Level of service for links

LOS A	Level of service A is a condition of free flow in which individual drivers are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to manoeuvre within the traffic stream is extremely high, and the general level of comfort and convenience provided is excellent.
LOS B	Level of service B is in the zone of stable flow and drivers still have reasonable freedom to select their desired speed and to manoeuvre within the traffic stream, although the general level of comfort and convenience is a little less than with level of service A.
LOS C	Level of service C is also in the zone of stable flow, but most drivers are restricted to some extent in their freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience declines noticeably at this level.
LOS D	Level of service D is close to the limit of stable flow and is approaching unstable flow. All drivers are severely restricted in their freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience is poor, and small increases in traffic flow will generally cause operational problems.
LOS E	Level of service E occurs when traffic volumes are at or close to capacity, and there is virtually no freedom to select their desired speeds and to manoeuvre within the traffic stream. Flow is unstable and minor disturbances within the traffic stream will cause flow breakdown.
LOS F	Level of service F is in the zone of forced flow. Flow breakdown occurs, and excessive queuing and delays result.

3.2 Performance criteria for urban links

Traffic performance of urban roads can be assessed using directional peak hour traffic flows, with the RTA Guide providing a table of LOS performance based on peak hour traffic flow, as shown in extract 3.2. For the surrounding local road network, there is one traffic lane in each direction, which means directional hourly flow under 200 vehicles per hour, represents the highest level of traffic performance, at LOS A.

Extract 3.2 – RTA Guide for urban roads

Urban road peak hour flows per direction

Level of Service	One Lane (veh/hr)	Two Lanes (veh/hr)
A	200	900
B	380	1400
C	600	1800
D	900	2200
E	1400	2800

3.3 Performance criteria for highway links

Boyer Road between the Midland Highway and Sorell Street is part of the State Road network, and for the purpose of this assessment will be assessed as being a highway link. For non-urban roads, the RTA Guide quantifies the traffic performance based on two-way peak hour flows, with lane capacity effected by the terrain and presence of heavy vehicles.

For the purpose of this analysis, Boyer Road terrain is considered flat, and a maximum heavy vehicle content is assumed, with columns highlighted red representing the LOS to be used for this road.

Extract 3.3 – RTA Guide for non-urban links

Table 4.5
peak hour flow on two-lane rural roads (veh/hr)
(Design speed of 100km/hr)

Terrain	Level of Service	Percent of Heavy Vehicles			
		0	5	10	15
Level	B	630	590	560	530
	C	1030	970	920	870
	D	1630	1550	1480	1410
	E	2630	2500	2390	2290
Rolling	B	500	420	360	310
	C	920	760	650	570
	D	1370	1140	970	700
	E	2420	2000	1720	1510
Mountainous	B	340	230	180	150
	C	600	410	320	260
	D	1050	680	500	400
	E	2160	1400	1040	820

3.4 Performance criteria for multi-lane road links

Austroads Guide to Road Design part 3 on Transport Study and Analysis Methods (AGRD), provides information on traffic capacity for multi-lane roads.

Multi-lane roads have two or more lanes for use by traffic in each direction, the lanes can either be divided by a physical barrier, or undivided where there is no physical separation. Intersections are generally controlled, with roundabouts or traffic signals, and have typical lane width of 3.6 metres.

A freeway is a divided road with two or more lanes for traffic travelling in each direction, with no at-grade intersections, and full control access from abutting property.

The traffic performance of Bridgewater Bridge will be assessed as part of this analysis, as the bridge has a relatively short length of road it will be assessed as a multi-lane road and not a freeway.

Traffic capacity is strongly influenced by flowing traffic conditions, as the Bridgewater Bridge will operate with grade separated interchanges, the highest traffic flow conditions can be expected. For the purposed of this analysis, the highest lane capacity will be used, as shown in red in Extract 3.4. The flow rate in the table represents the flow for each individual traffic lane.

Extract 3.4 – Lane capacity for multi-lane links with uninterrupted flow

Table 5.5: LOS criteria for multi-lane highways

Free-flow speed	Criteria	A	B	C	D	E
100 km/h	Maximum density (pc/km/ln)	7	11	16	22	25
	Average speed (km/h)	100.0	100.0	98.4	91.5	88.0
	Maximum volume to capacity ratio (v/c)	0.32	0.50	0.72	0.92	1.00
	Maximum service flow rate (pc/h/ln)	660	1080	1550	1980	2200
90 km/h	Maximum density (pc/km/ln)	7	11	16	22	26
	Average speed (km/h)	90.0	90.0	89.8	84.7	80.8
	Maximum volume to capacity ratio (v/c)	0.30	0.47	0.68	0.89	1.00
	Maximum service flow rate (pc/h/ln)	600	990	1430	1850	2100
80 km/h	Maximum density (pc/km/ln)	7	11	16	22	27
	Average speed (km/h)	80.0	80.0	80.0	77.6	74.1
	Maximum volume to capacity ratio (v/c)	0.28	0.44	0.64	0.85	1.00
	Maximum service flow rate (pc/h/ln)	550	900	1300	1710	2000
70 km/h	Maximum density (pc/km/ln)	7	11	16	22	28
	Average speed (km/h)	70.0	70.0	70.0	69.6	67.9
	Maximum volume to capacity ratio (v/c)	0.26	0.41	0.59	0.81	1.00
	Maximum service flow rate (pc/h/ln)	290	810	1170	1550	1900

3.5 Traffic performance for interchange ramps

Traffic performance of interchange ramps is assessed as an uninterrupted flow, where traffic is not impacted by abutting properties. While interrupted flow is significantly lower, as it takes in to consideration the impact generated from properties that have direct road frontage, such as vehicles entering and leaving driveways, on-street parking or unparking, with both causing inconvenience to through traffic.

The flow rate of ramps is influenced by the geometric configuration, with curved ramps reducing the operating speed and lane capacity. The AGRD provides flow rates for free flowing ramps based on the operating speed and represents maximum capacity. With both the southbound on-ramp and northbound off-ramp having a curved alignment, the operating speed is expected to be in the range of 30 to 50 km/h, with Extract 3.5 indicating the maximum flow rate is expected to be 1900 vehicles per hour for a single ramp.

Extract 3.5 – AGRD flow rate for interchange ramps

Table 5.7: Approximate capacity of ramp roadways in passenger cars/hour

Free-flow speed of ramp, SFR (km/h)	Capacity (pc/h)[1]	
	Single-lane ramps	Two-lane ramps
> 80	2200	4400
> 65–80	2100	4200
> 50–65	2000	4000
≥ 30–50	1900	3800
< 30	1800	3600

Extract 3.5 provides a maximum flow capacity for ramps but does not provide a level of service for the ramps. Therefore, the lane flows within Extract 3.4 for a 70 km/h operating speed will be used.

For the purpose of assessing the traffic performance (LOS) of the ramps, the single lane ramp flows in the table below will be used.

Table 3.5 – Estimated flow rates for single lane ramps

Level of service	A	B	C	D	E
Flow rate	290	810	1170	1550	1900

3.6 Traffic performance of ramp junctions

Section 5.4.2 of AGRD provides advice on evaluating the traffic performance of both off and on-ramp junctions, in respect to diverge and merge areas. The traffic performance (LOS) can be quantified by using density of the merge area, which is calculated using a linear relationship with the peak 15 minute ramp flow (V_R), with the flow in the two kerb-side lanes (V_{12}), and the acceleration lane length (L_A).

Merge density is calculated as $D_R=3.402 + 0.00456V_R + 0.0048V12 – 0.01278L_A$

The merge density relates to LOS, as specified in table 3.6, which will be used in this analysis.

Table 3.6 – LOS for freeway merge and diverges

Table 5.9: LOS criteria for freeway merge and diverge segments

LOS	Density (pc/km/ln)
A	≤ 6
B	> 6–12
C	> 12–17
D	> 17–22
E	> 22
F	Demand exceeds capacity

3.7 Traffic performance at junctions, intersections, and roundabouts

The traffic performance of junctions, intersections, and roundabouts can be estimated using a variety of analytical and computational techniques, with this assessment using the SIDRA software package. The performance of intersections is commonly described by the Degree of Saturation (DOS) of the critical traffic movements, a measure of the volume/capacity ratio or degree, to which the available intersection capacity is utilised. Other terms used, Level of service (LOS) which is based on the average stopped delay in seconds, and maximum queue length in metres. The table below provides a reference to the level of service for the various traffic controls based on the RTA Guide.

Table 3.7 - Level of service for intersections and roundabouts

Level of service	Average delay per vehicle (secs/vehicle)	Traffic Signals and Roundabouts	Give Way and Stop controls
A	<14	Good operation	Good operation
B	15 to <28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to <42	Satisfactory	Satisfactory, but crash study required
D	43 to <56	Operating near capacity, acceptable for State Roads	Near capacity and crash study required
E	57 to <70	At capacity for signals, will cause excessive delays. Roundabouts require other control mode	At capacity, requires other control modes

*Average delay per vehicle exceeding 70 seconds indicates traffic exceeds the site capacity.

3.8 Impact to residential amenity

A new development, or extension to residential development in urban areas can be concerning to local residents, and it can be difficult to argue that a traffic increase is reasonable. The RTA Guide has considered this matter and provided an environmental performance standard, which can be used to evaluate the likely impact on residential amenity. The extract below is from the RTA Guide and relates to urban environments, providing acceptable and maximum peak hour goals, based on two-way peak hour flows.

Extract 3.8 – RTA Guide on residential amenity

Environmental capacity performance standards on residential streets

Road class	Road type	Maximum Speed (km/hr)	Maximum peak hour volume (veh/hr)
Local	Access way	25	100
	Street	40	200 environmental goal
			300 maximum
Collector	Street	50	300 environmental goal
			500 maximum

Note: Maximum speed relates to the appropriate design maximum speeds in new residential developments. In existing areas maximum speed relates to 85th percentile speed.

3.9 Preferred level of service for safe and efficient traffic performance

Road authorities generally design new road projects to open and be operational at LOS A or B, with traffic performance reducing as incremental traffic growth occurs.

As new road infrastructure is expensive, it is important to maximise the available road capacity, and it is acceptable for State Roads to operate at LOS C and D during weekday peak periods.

LOS A and B at give way control junctions provides for acceptable delays, with the junctions operating with spare capacity.

4. Existing traffic flows on the surrounding local road network

It is important to understand the traffic performance of the surrounding road network, this is best achieved by undertaking peak hour traffic surveys at key junctions and intersections. Peak hour traffic surveys were conducted during January 2024, to determine the current level of service for the links and intersections of the surrounding road network, likely to be affected by traffic generated by the proposed rezoning.

In addition to manual peak hour surveys collected, traffic data was collected from other resources including the Traffic Impact Assessment for the Bridgewater Bridge upgrade, and Department of State Growth (Department) State Road network traffic database. Data obtained from these sources, provided traffic flow at each of the key junctions and intersections for both the morning and evening weekday peak hours, and is available in appendix A.

From this data directional traffic flows for links within the network was established for both peak hour periods. The link data indicates the local streets (Sorell, Samuel, and Cobbs Hill Road) are lightly trafficked, with less than 50 two-way vehicle movements in the peak hour periods.

During the manual surveys, it was observed:

- MacDonalds fast food outlet located on the northeast corner of the intersection of Old Main Road and Boyer Road roundabout generated significant traffic movements in both the peak hour periods, estimated between 100 and 140 trips in each peak hour period.
- The temporary office and works depot for the Bridgewater Bridge is located off Old Main Road north of Boyer Road and generated a moderate number of vehicle movements. Although these movements will cease once the bridge is completed, the traffic flows have not been adjusted for this reduced activity.
- The bottle Shop located on the southwest corner of the Old Main Road and Boyer Road roundabout, was a moderate traffic generator in the evening peak hour period, estimated to generate 80 two-way trips in the evening peak hour period.

All these traffic generators increased the traffic flow using the Old Main Road and Boyer Road roundabout.

5. Analysis of the traffic performance of the local road network

The traffic performance of the links on the surrounding road network has been quantified using the RTA Guide for urban links (extract 3.2), with the results provided in table 5.0A.

Traffic analysis determined the local roads are lightly trafficked during the peak periods, operating at the highest level of traffic performance LOS A. While traffic flows on Boyer Road (State Road) are slightly higher, they are still providing a high level of traffic performance. The section of Boyer Road between Old Main Road and the Midland Highway has the highest traffic flows, and is operating at LOS B.

This analysis demonstrates that the surrounding road network has spare traffic capacity to accommodate an increase in traffic from future developments. LOS A and B means the traffic flow is stable, motorists are virtually unaffected by the presence of others in the traffic flow, and there are sufficient gaps for vehicles to enter and leave the road, without impacting other vehicles. This level of service provides motorists with excellent driving conditions.

Table 5.0A – Level of Service of the surrounding links

Road owner	Road	Criteria	Morning peak hour			Evening Peak hour		
			EB or NB	WB or SB	Two-way	EB or NB	WB or SB	Two-way
Local road network	Sorell Street	Flow	**10**	**13**	**23**	**26**	**16**	**42**
		LOS	A	A		A	A	
	Cobbs Hill Road	Flow	**2**	**5**	**7**	**3**	**4**	**7**
		LOS	A	A		A	A	
	Old Main Road (north of Boyer Road)	Flow	**151**	**101**	**252**	**108**	**157**	**265**
		LOS	A	A		A	A	
	Old Main Road (south of Boyer Road)	Flow	**2**	**1**	**3**	**38**	**40**	**78**
		LOS	A	A		A	A	
State Road	Boyer Road (west of Sorell Street)	Flow	**193**	**91**	**284**	**135**	**261**	**396**
		LOS	A			A		
	Boyer Road (east of Sorell Street)	Flow	**207**	**106**	**320**	**169**	**289**	**458**
		LOS	A			A		
	Boyer Rd (Old Main Rd to Highway)	Flow	**317**	**260**	**577**	**287**	**383**	**670**
		LOS	B			B		

SIDRA traffic modelling has been used to quantify the traffic performance of intersections, junctions, and roundabouts within the surrounding road network. Modelling has not been provided for the junctions of Cobbs Hill Road with Sorell Street, and Old Main Road with Cobbs Hill Road, as both are very lightly trafficked and assumed to be operating at the highest level of traffic performance, LOS A.

Traffic modelling demonstrates all junctions, intersections and roundabouts are providing motorists with the highest level of traffic performance, with all movements operating at LOS A. This demonstrates there is spare traffic capacity to absorb additional traffic movements from future development.

Table 5.0B – Traffic modelling of the State Road junctions

Junction intersection roundabout	Period	Total	DOS	Worst Delay	Worst LOS	Max queue length
Sorell Street with Boyer Road	Morning	311	0.100	6.9 secs	A	0.5 metres
	Evening	448	0.151	7.8 secs	A	1.4 metres
Old Main Rd and Boyer Road roundabout	Morning	550	0.180	8.9 secs	A	6.6 metres
	Evening	760	0.268	9.8 secs	A	11.5 metres
Boyer Road with Midland Highway	Morning	2085	0.385	12.5 secs	A	16.5 metres
	Evening	2102	0.417	12.2 secs	A	18.2 metres

The third method to quantify traffic performance is residential amenity of local streets, using the RTA Guide extract 3.5. The RTA Guide indicates that a local street carrying less than 300 two-way traffic movements in the peak hour, is not considered to be causing adverse amenity to the surrounding residential properties.

Table 5.0C demonstrates the two-way traffic flow on the current local streets is well below the threshold to cause adverse impact, with spare traffic capacity. State Roads are not considered a local street and have been excluded from this part of the assessment.

Table 5.0C – Level of traffic flow for residential amenity for local roads

Road and link	Road type	Maximum	Morning	Evening	Comment
Sorell Street	Local	300 two-way vehicles per peak hour	23	42	All local roads comply with RTA environment standards
Cobbs Hill Road			7	7	

This analysis demonstrates motorists are currently receiving a high level of traffic performance, with all nodes and links operating at LOS A or B. This traffic performance is shown in a diagrammatic format in diagrams 5.0A and 5.0B.

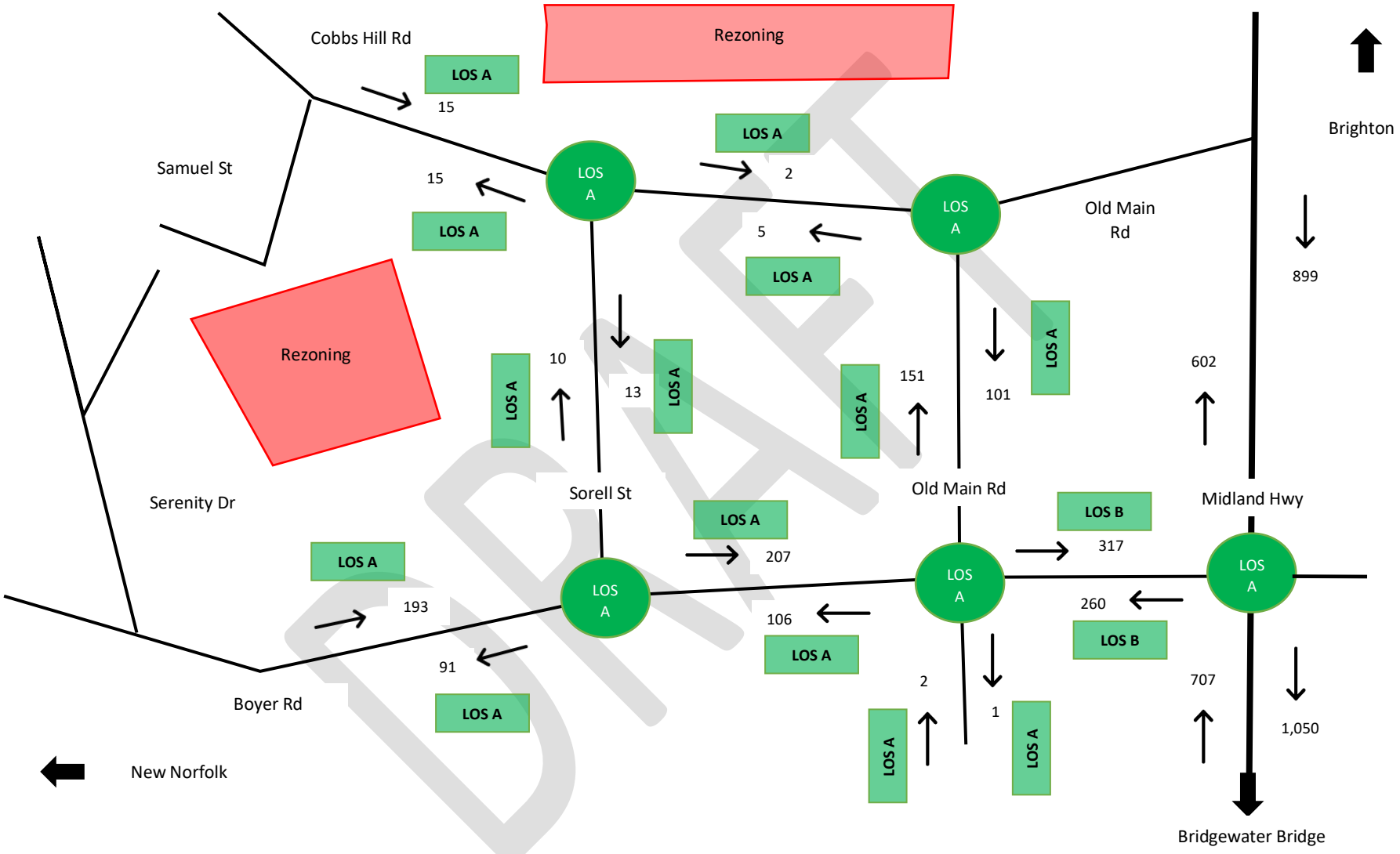


Diagram 5.0A – Morning peak hour traffic performance

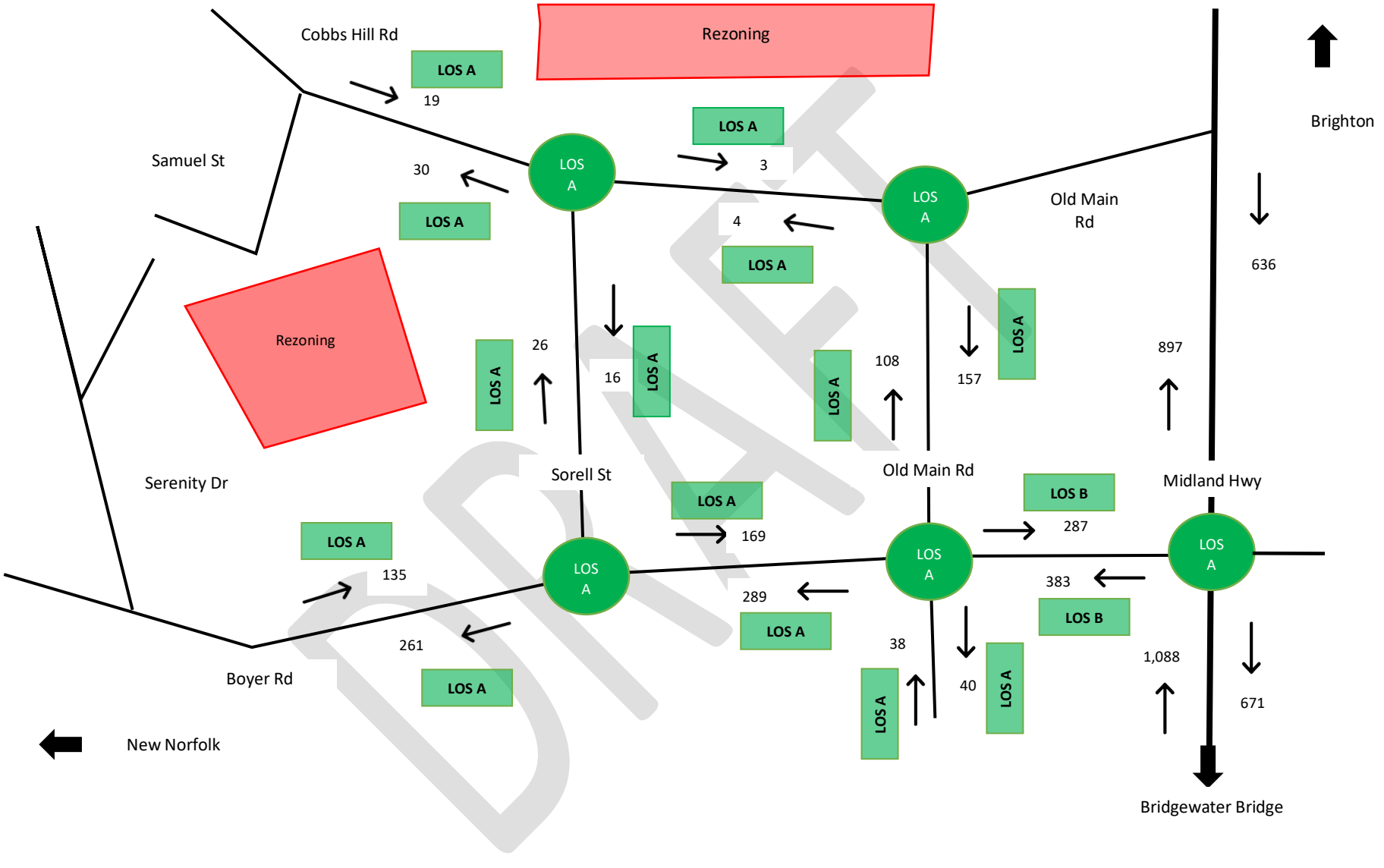


Diagram 5.0B – Evening peak hour traffic performance

6. Alternative transport modes

The surrounding road network east of Sorell Street has footpaths that connect to the Midland Highway and a pedestrian overpass to the residential area east of the highway. As the land has a relatively flat terrain, walking and cycling are a viable transport option.

Public transport services operate within the Bridgewater and Brighton area, with the closest bus stops to the development site located along Midland Highway, opposite McDonalds. High frequency bus services are provided along this bus route, making public transport an alternative transport option, reducing the reliance on private vehicles.

Diagram 6.0A – Public transport service

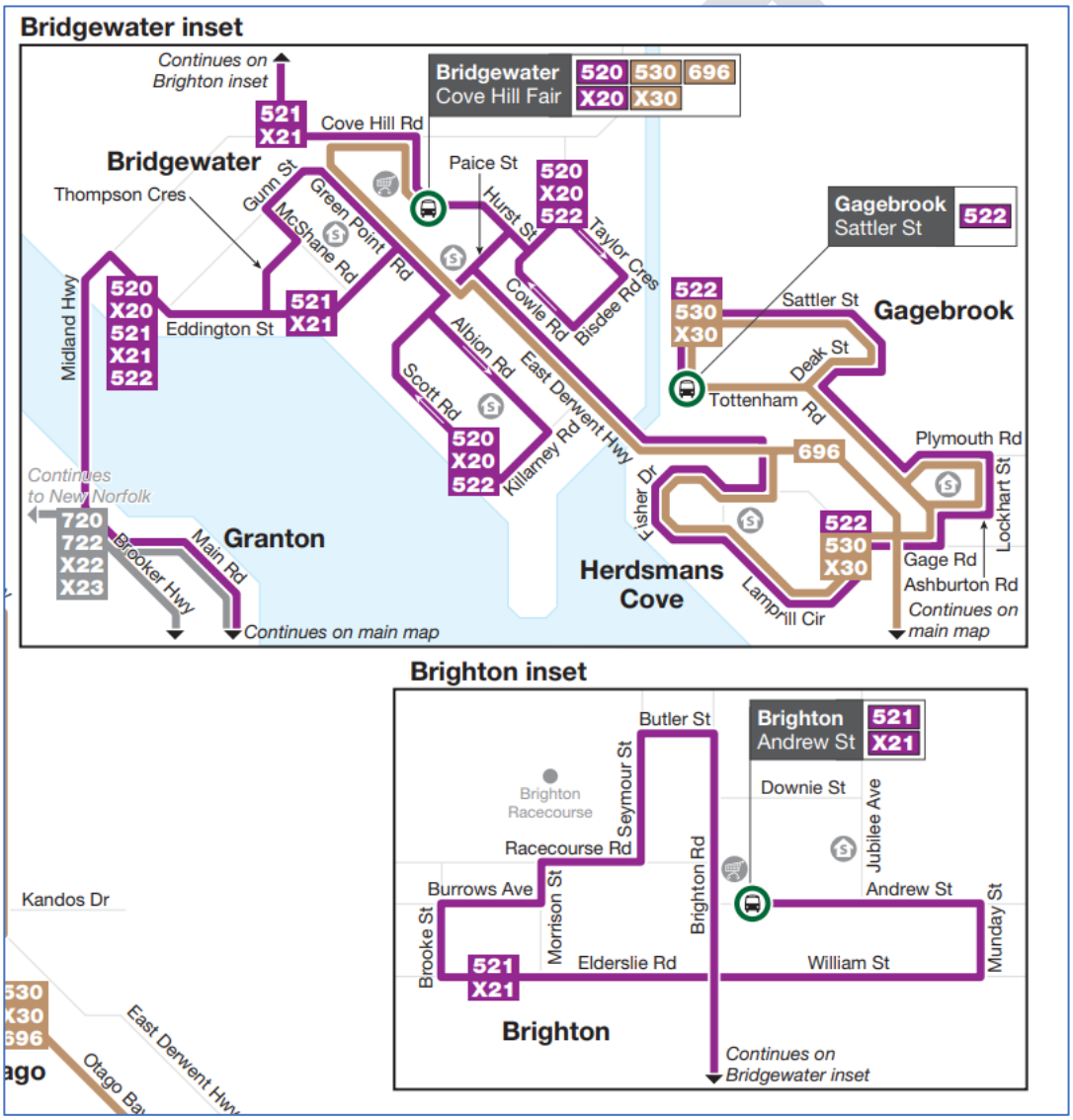


Diagram 6.0B – Timetable of services

MONDAY TO THURSDAY																			
ROUTE NUMBER	522	X20	520	X21	X20	X21	X20	X21	X20	521	X20	X20	521	X20	521	X20	X20	521	**X20**
	am	am	am	am	am	am	am	am	am	am	am	am	am	am	am	am	am	am	**pm**
BRIGHTON TERMINUS (ANDREW ST)	-	-	-	6:39	-	7:06	-	7:39	-	8:45	-	-	9:45	-	10:45	-	-	11:45	**-**
BURROWS AVE / BROOKE ST IN	-	-	-	6:46	-	7:13	-	7:46	-	8:51	-	-	9:51	-	10:51	-	-	11:51	**-**
BRIGHTON CENTRAL	-	-	-	6:52	-	7:19	-	7:52	-	8:56	-	-	9:56	-	10:56	-	-	11:56	**-**
GAGEBROOK TERMINUS IN	5:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**
LAMPRILL CIRCLE/FISHER DR	5:38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**
BRIDGEWATER (COVE HILL SHOPS)	5:43	6:28	6:43	6:59	7:11	7:26	7:42	7:59	8:09	9:02	9:01	9:31	10:02	10:31	11:02	11:01	11:31	12:02	**12:01**
COWLE RD/BISDEE RD	5:45	6:31	6:46	-	7:14	-	7:45	-	8:12	-	9:04	9:34	-	10:34	-	11:04	11:34	-	**12:04**
SCOTT RD/KILLARNEY RD	5:49	6:36	6:51	-	7:19	-	7:50	-	8:17	-	9:09	9:39	-	10:39	-	11:09	11:39	-	**12:09**
BRIDGEWATER PLAZA GREENPOINT RD	5:51	6:39	6:54	7:01	7:22	7:28	7:53	8:01	8:20	x9:06	9:12	9:42	x10:06	10:42	x11:06	11:12	11:42	x12:06	**12:12**
GUNN ST/FINLAY ST	5:52	6:40	6:56	-	7:23	-	7:55	-	8:22	-	9:13	9:43	-	10:43	-	11:13	11:43	-	**12:13**
GRANTON (MAIN RD)	6:01	6:48	7:05	7:09	7:31	7:36	8:06	8:11	8:32	-	9:22	9:52	-	10:52	-	11:22	11:52	-	**12:22**
CLAREMONT, MAIN RD/AMBER ST	6:09	6:58	7:14	7:18	7:41	7:46	8:16	8:21	8:40	-	9:30	10:00	-	11:00	-	11:30	12:00	-	**12:30**
GLENORCHY STOP H	6:20	-	7:28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**
GLENORCHY STOP J	-	7:08	-	-	7:54	-	8:31	-	8:55	-	9:44	10:14	-	11:14	-	11:44	12:14	-	**12:44**

7. Construction of the new Bridgewater Bridge

The Bridgewater Bridge is currently being replaced with a dual divided carriageway structure that provides a higher river clearance, situated slightly east of the existing alignment. The new road layout will include a grade separated interchange to accommodate vehicles leaving and entering from the surrounding area. The new road layout incorporates the following ramps:

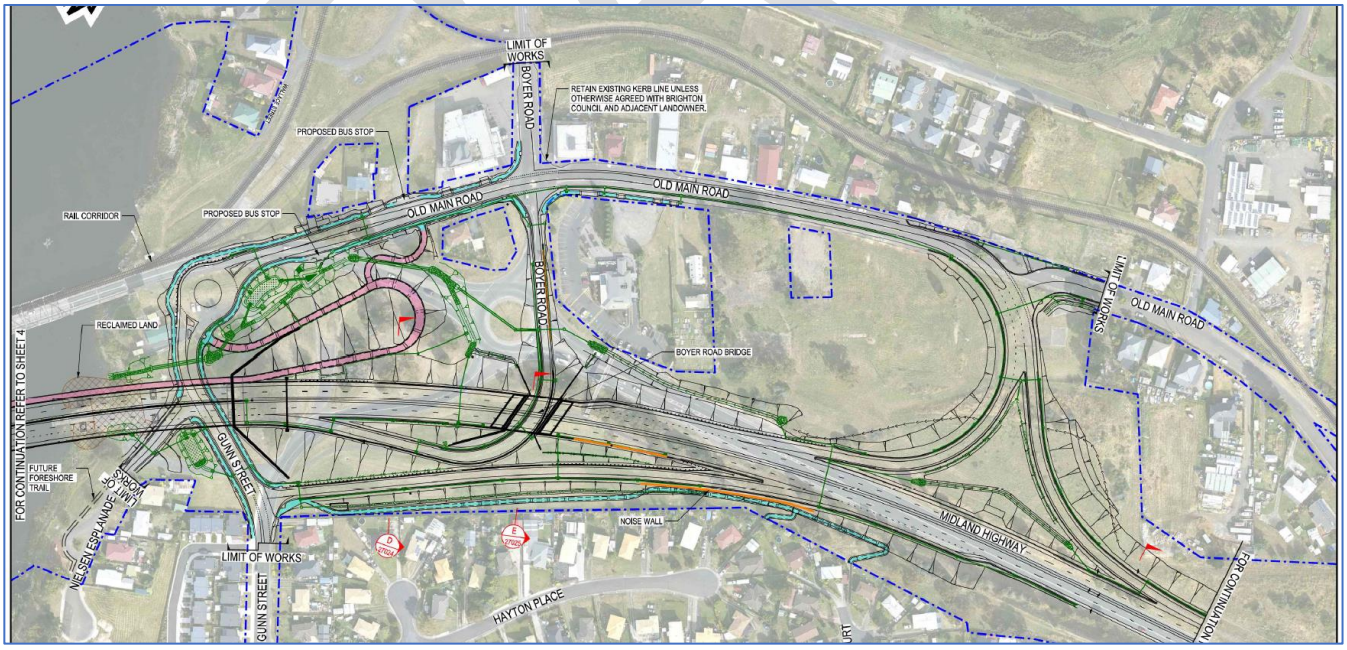
- northbound off-ramp connecting to Old Main Road,
- southbound off-ramp connecting to Gunn Street, with Gunn Street extended underneath the bridge to connect to the current Old Main Road cul-de-sac, and
- southbound on-ramp from Boyer Road joining the southbound carriageway as a merge lane.

These ramps form an integral part of the grade separated interchange and will significantly alter the traffic flows on the surrounding road network, particularly on Old Main Road. It would be logical for the roads forming the grade separated interchange to be become part of the State Road network. For example, Old Main Road and the extension of Gunn Street, commencing at the southbound off-ramp to Old Main Road.

The current traffic flow has been reassigned to the new Bridgewater Bridge layout, based on the layout shown in diagram 7.0, with the level of traffic performance for each of the links and nodes recalculated.

For the purpose of this traffic assessment, the reassigned traffic flows on the new road layout are considered as the base model. The predicted traffic flows, level of traffic performance for the links, and nodes is provided in diagrams 7.0A and 7.0B.

Diagram 7.0 – Department of State Growth proposed road layout for the new Bridgewater Bridge



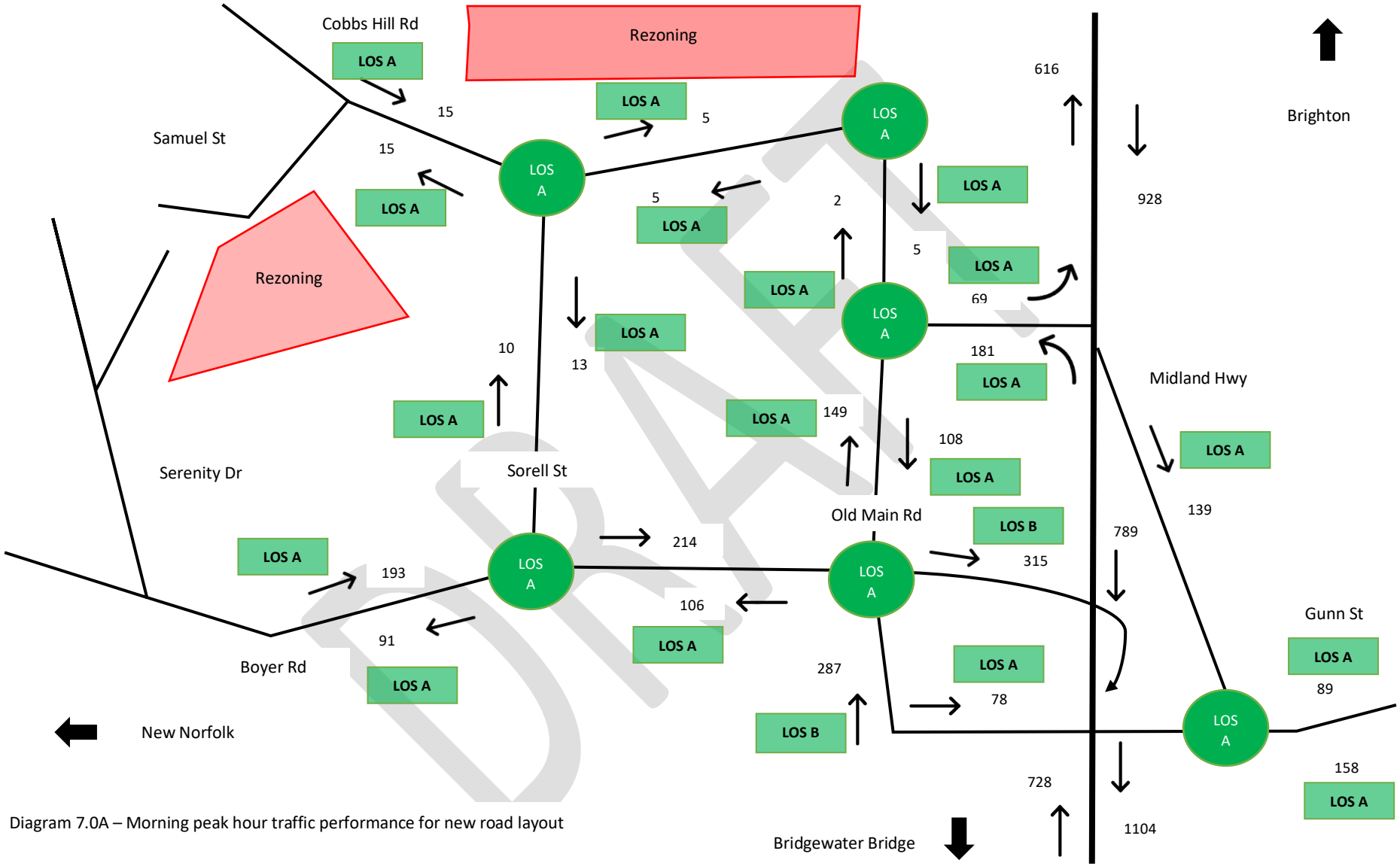


Diagram 7.0A – Morning peak hour traffic performance for new road layout

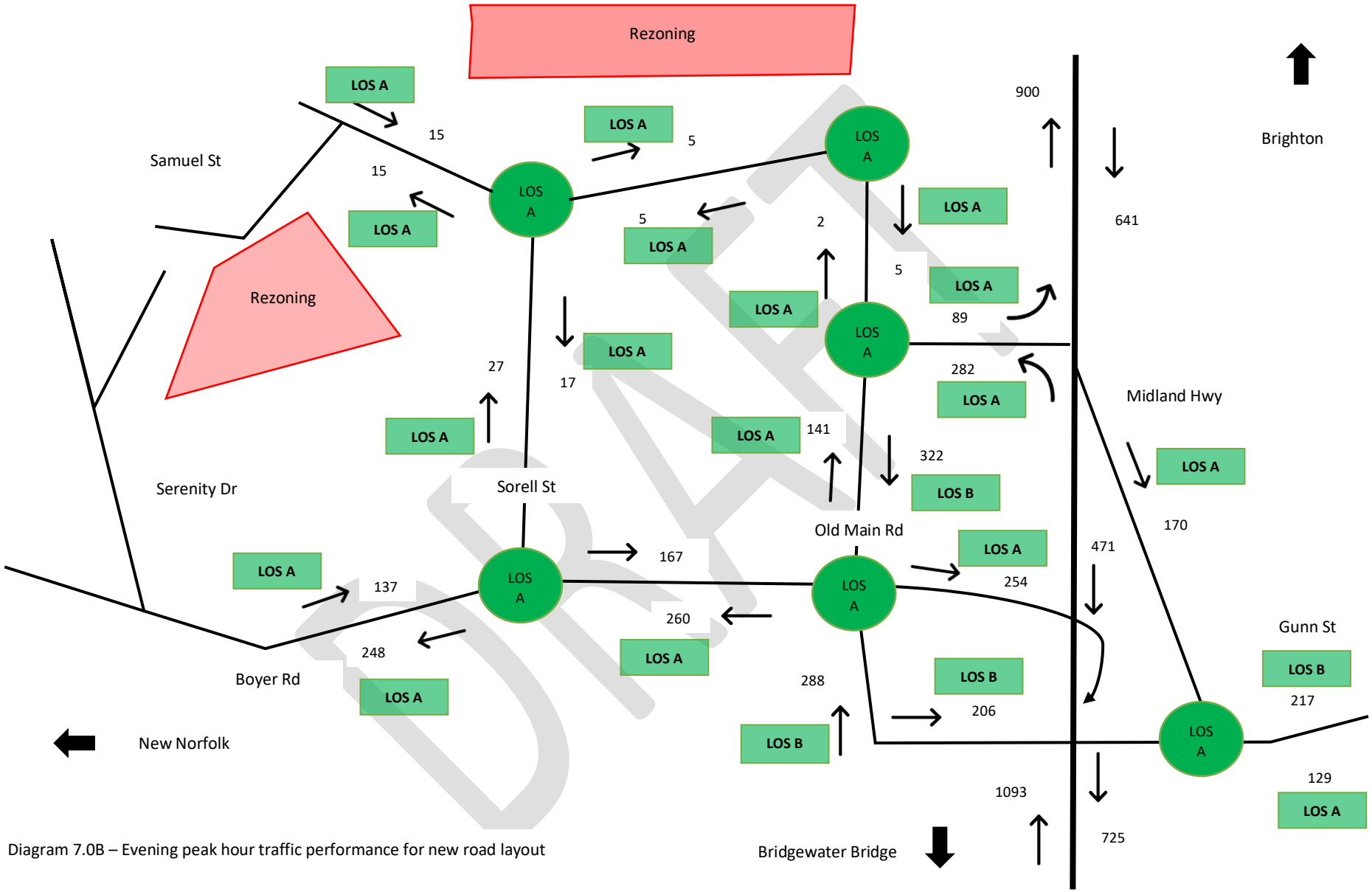


Diagram 7.0B – Evening peak hour traffic performance for new road layout

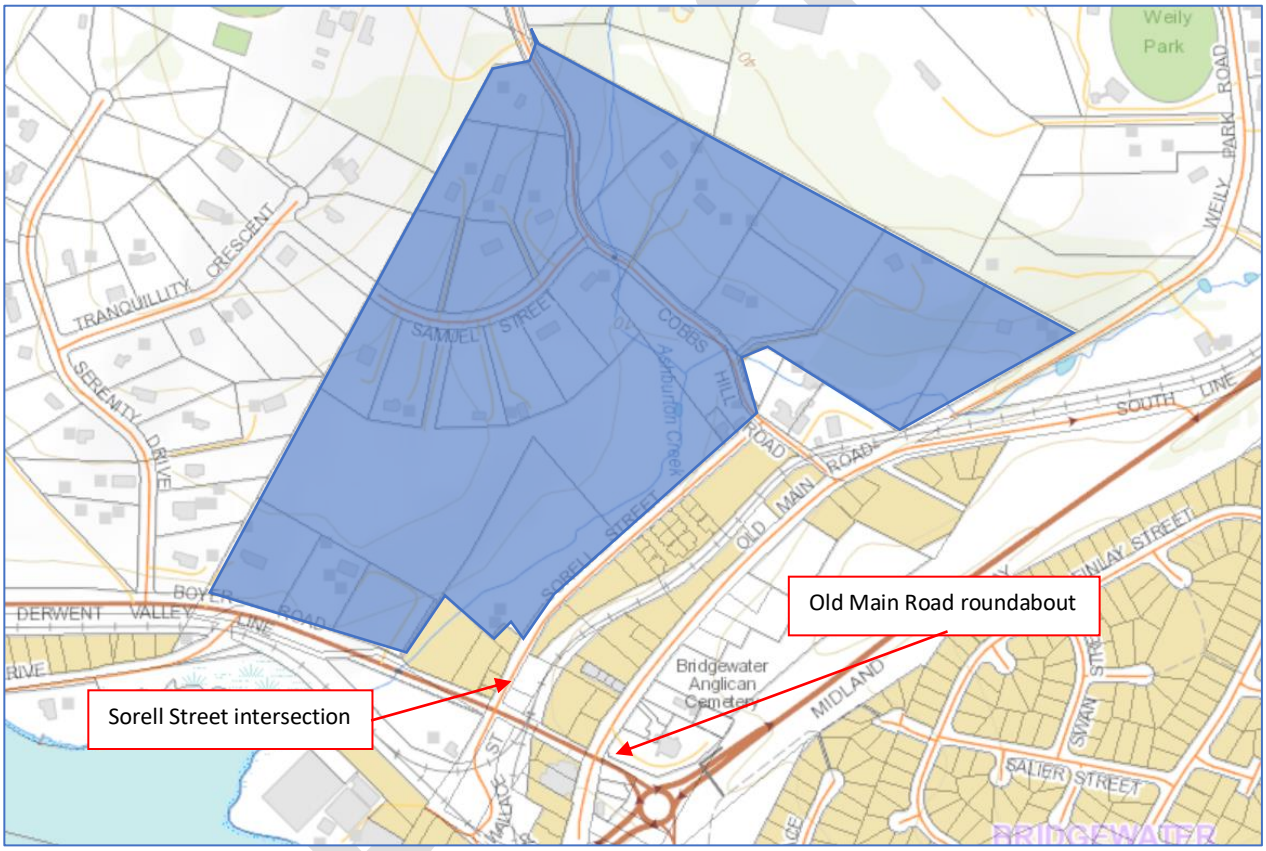
8. Traffic assessment of rezoning the development site

This section analyses the impact from additional traffic generated from rezoning of land within the development site, as shown in the diagram below.

There is approximately 28 hectares of land, which is expected to generate 10 urban dwellings per hectare, providing a total of 280 dwellings. This takes into consideration the land constraints, topography, current dwellings, and the need for future internal road infrastructure to service the new lots.

Additional traffic generated by the development will use the existing local street network and State Roads to connect to the Midland Highway, which includes the Bridgewater Bridge.

Diagram 8.0 – Development site, with connection to the surrounding road network



8.1 Traffic generation rate

The RTA Guide provides traffic generation rates for a residential dwelling, where section 3.3.1 indicates each urban residential property is likely to generate 7.4 daily vehicle trips, with 0.78 of these trips expected in each of the weekday peak hour periods. An additional 280 residential dwellings are predicted to generate 2,072 daily trips, with 218 of these trips expected in each of the weekday peak hour periods.

Table 8.1 – Prediction of vehicular trips

Type	Number of dwellings	Generation rate	Daily trips	Weekday peak hour trips
Residential	280	7.4 daily trips, with 0.78 trips in the peak hour periods	2,072	218

8.2 Assignment of peak hour trips to the surrounding road network

It is common with urban residential dwellings that 90 percent of trips leave the property in the morning peak, with the opposite occurring in the evening. The new trips have been assigned to the surrounding local road network, based on the new road layout associated with the new Bridgewater Bridge.

With the new road layout, the function of Old Main Road will change from a local road to a collector road, as an integral part of the grade separated interchange. The proximity of the northbound off-ramp to Cobbs Hill Road will reduce travel distance for local residents, which is expected to make Cobbs Hill Road the preferred route for motorists from Samual Street, Cobbs Hill Road, and a portion of Sorell Street. This assessment predicts that 56 percent of the additional traffic from the development site is likely to use Cobbs Hill Road in the morning peak, with a higher portion of 70 percent in the evening peak.

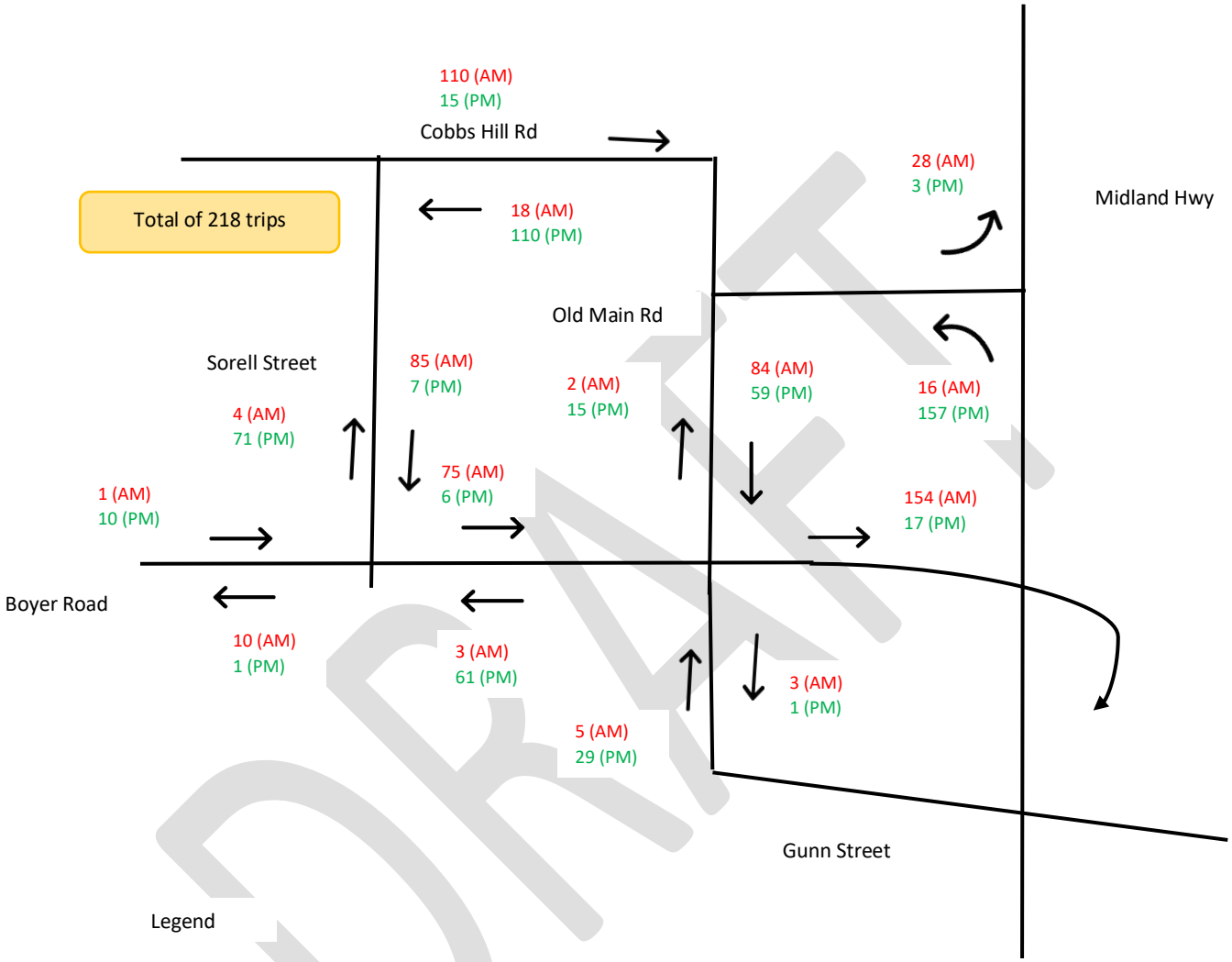
Based on the current trip distribution, the majority or 85 percent of the additional trips are likely to commute to the south, five percent of trips to the west towards New Norfolk, and ten percent to the north (which includes East Derwent Highway), as shown in Table 8.2A.

Table 8.2A – Predicted trip distribution to surrounding road network

Peak hour period	Sorell Street (56%)				Cobbs Hill Road				Total
	Leaving (56%)		Arriving		Leaving		Arriving		
	West	East	West	East	South	North	South	North	
Morning	10	76	1	3	84	26	16	2	218
Evening	1	6	10	61	12	3	15	110	218

Predicted trip distribution is also demonstrated in Diagram 8.2, with figures in red representing the morning peak hour and green the evening peak hour.

Diagram 8.2 – Assignment of additional trips from rezoning



8.3 Impact of new trips on the local road network

The increase in traffic flow on the new road layout has been analysed using the same traffic methodology, including traffic modelling at the nodes. Tables 8.3A and 8.3B demonstrate the increase in directional traffic flow, and the predicted level of traffic performance for the links, and table 8.3C demonstrates traffic modelling results for the nodes.

In the morning peak hour, the two-way traffic flow on Cobbs Hills Road is predicted to have the highest increase from 7 to 138, however the road will continue to operate LOS A. Similarly, the two-way traffic flow in Sorell Street is predicted to increase from 23 to 112, and continue to operate at LOS A.

Due to Old Main Road being an integral part of the grade separation, there will be an increase in traffic flow, with predicted two-way flow to increase from 252 to 344, with the road predicted to continue to operate at LOS A, based on directional flows being under 200 vehicles per hour.

The southbound off-ramp will not adversely impact the traffic flow along Gunn Street east of the ramp, which will continue to operate at LOS A in the morning and LOS B during the evening.

For the State Road network, the two-way traffic flow on Boyer Road between Sorell Street and Old Main Road is predicted to increase from 320 to 398, but not cause a reduction in traffic efficiency. The southbound on-ramp is predicted to carry 469 vehicles in the morning, with motorists provided with an efficient flow with this ramp expected to operate at LOS B.

Table 8.3A – Comparison of traffic conditions - existing with rezoning (morning)

Road	Criteria	Existing traffic conditions			Future traffic conditions		
		EB or NB	WB or SB	Two-way	EB or NB	WB or SB	Two-way
Sorell Street	Flow	10	13	23	**14**	**98**	**112**
	LOS	A	A		A	A	
Cobbs Hill Road	Flow	2	5	7	**115**	**23**	**138**
	LOS	A	A		A	A	
Old Main Road	Flow	152	101	252	**152**	**192**	**344**
	LOS	A	A		A	A	
Boyer Rd (Sorell to Old Main)	Flow	214	106	320	**289**	**109**	**398**
	LOS	A			A		
Boyer On-ramp	Flow	315			**469**		
	LOS	A			B		
Gunn Street (SB off-ramp to Boyer Rd)	Flow	287	78	365	**292**	**80**	**372**
	Los	B	A		B	A	

Table 8.3B – Comparison of traffic conditions - existing with rezoning (evening)

Road	Criteria	Existing traffic conditions			Future traffic conditions		
		EB or NB	WB or SB	Two-way	EB or NB	WB or SB	Two-way
Sorell Street	Flow	17	27	40	**98**	**74**	**172**
	LOS	A	A		**A**	**A**	
Cobbs Hill Road	Flow	5	5	10	**20**	**115**	**135**
	LOS	A	A		**A**	**A**	
Old Main Road	Flow	141	322	463	**156**	**381**	**537**
	LOS	A	B		A	B	
Boyer Rd (Sorell to Old Main)	Flow	169	276	445	**220**	**337**	**557**
	LOS	A			**B**		
Boyer On-ramp	Flow	254			**356**		
	LOS	A			B		
Gunn Street (SB off-ramp to Boyer Rd)	Flow	288	206	494	**302**	**208**	**510**
	Los	B	B		B	B	

Tables 8.3A and 8.3B compare the traffic flow and performance when the additional 218 vehicular trips are generated by the development site, demonstrating no adverse traffic impact is expected on the surrounding road links during the weekday peak hour periods. This analysis demonstrates the surrounding road network has spare traffic capacity.

Traffic modelling of the surrounding nodes demonstrates the additional 218 trips in the peak hour periods is not expected to cause any reduction in traffic performance, with motorists to continue to receive the highest level of traffic performance, LOS A.

Table 8.3C – Summary of traffic modelling with rezoning

Junction intersection roundabout	Period	Total	DOS	Worst Delay Delay	Worst LOS	Max queue length
Sorell Street with Boyer Road	Morning	399	0.100	7.3 secs	A	2.1 metres
	Evening	525	0.185	8.3 secs	A	4.3 metres
Old Main Rd and Boyer Road new layout	Morning	789	0.340	8.3 secs	A	11.4 metres
	Evening	945	0.301	10.3 secs	A	9.1 metres
Old Main Road and highway off-ramp	Morning	465	0.129	7.7 secs	A	3.6 metres
	Evening	612	0.172	9.6 sec	A	3.2 metres
Gunn Street and southbound off-ramp	Morning	380	0.132	6.7 Secs	A	3.2 metres
	Evening	531	0.206	7.3 secs	A	5.2 metres

8.4 Impact on residential amenity from new trips

The RTA Guide for residential amenity on locals streets indicates two-way traffic flow of less than 300 vehicles per peak hour is acceptable, from a residential amenity perspective. Table 8.4 compares the two-way trips between the existing conditions and when the rezoning is generating additional traffic trips.

Although the existing traffic flow on Gunn Street east of the southbound off-ramp is predicted to exceed 300 vehicles in the evening peak, the rezoning is not expected to increase the traffic flow on this road, and therefore will not cause adverse impact to residential amenity.

Table 8.4 demonstrates new trips from the rezoning is not expected to cause a deterioration in residential amenity to the surrounding local roads.

Table 8.4 – Comparison of two-way traffic flow between existing and future trips

Road and link	Maximum	Morning peak hour		Evening peak hour	
		Existing	Future	Existing	Future
Sorell Street	300	23	**112**	26	**172**
Cobbs Hill Road		7	**137**	7	**135**
Gunn Street east of the off-ramp		247	**249**	346	**350**

8.5 Summary of peak hour traffic performance of rezoned area

Results of the traffic analysis of the surrounding road network is provided in the following diagrams 8.5A and 8.5B.

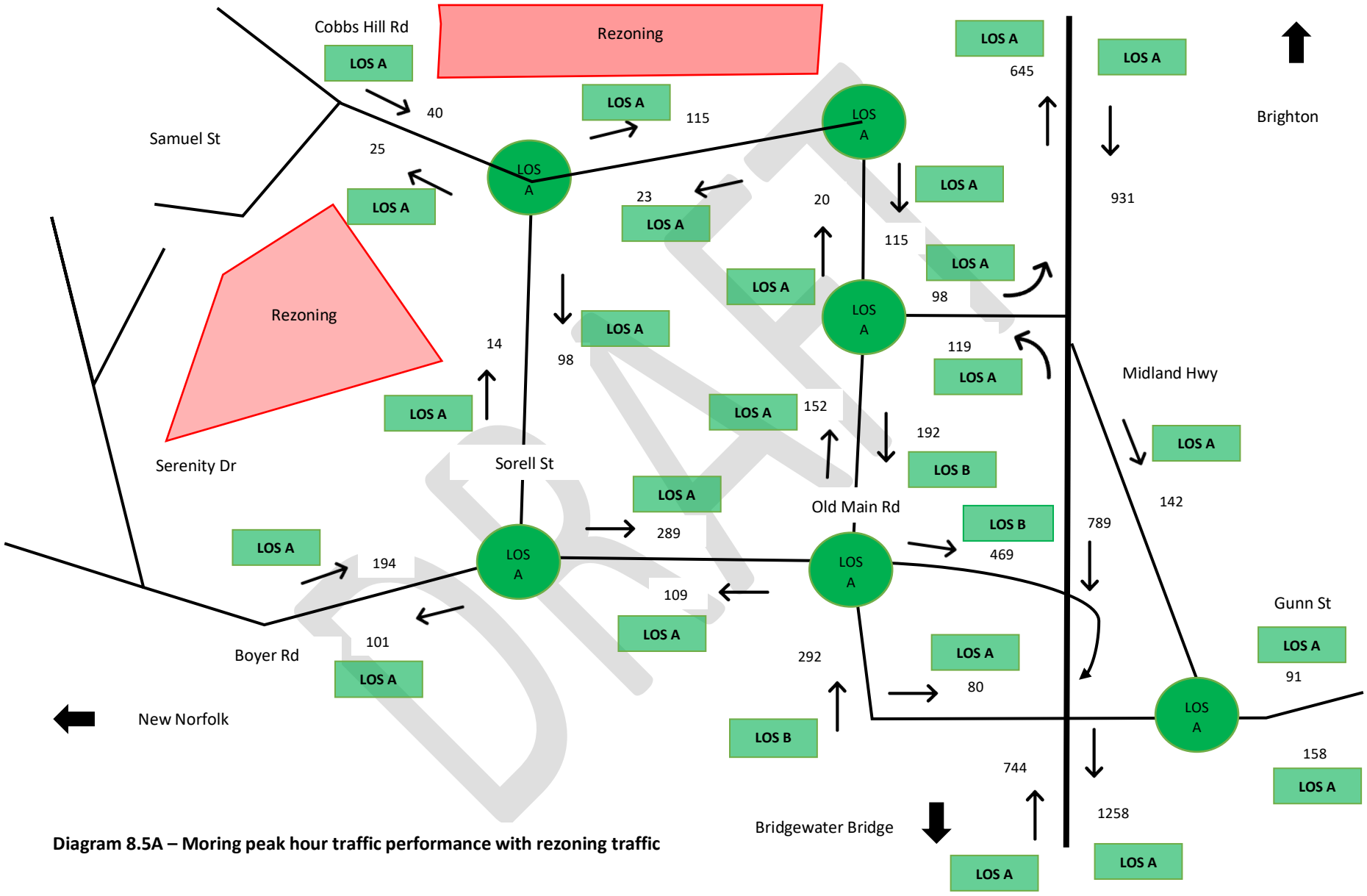


Diagram 8.5A – Moring peak hour traffic performance with rezoning traffic

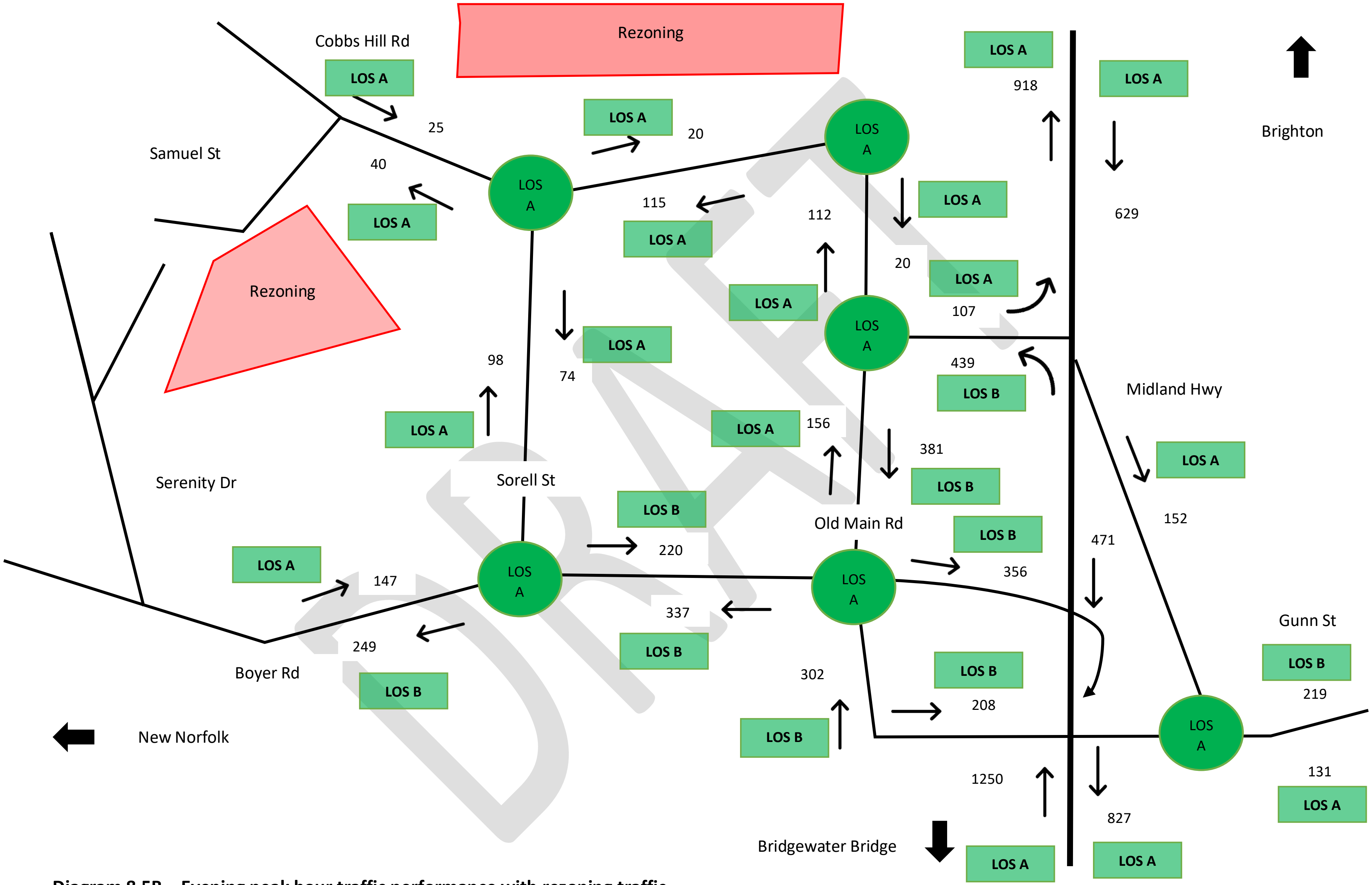


Diagram 8.5B – Evening peak hour traffic performance with rezoning traffic

9. Traffic efficiency impact to the State Road network

Rezoning of the land will intensify the traffic flow on the State Road network, along Boyer Road between the highway and Sorell Street and the Bridgewater Bridge. Table 9.0A demonstrates Boyer Road has sufficient spare traffic capacity to absorb the additional traffic, without adversely impacting traffic efficiency, with motorists continuing to receive an acceptable level of performance of LOS A or B.

Table 9.0A – Comparison of traffic conditions on Boyer Road

Peak hour period	Link	Existing traffic conditions		Future traffic conditions	
		Two-way flow	LOS	Two-way flow	LOS
Morning	Highway to Sorell St	313	A	398	A
	West of Sorell St	284	A	295	A
Evening	Highway to Sorell St	458	A	557	B
	West of Sorell St	396	A	396	A

Traffic capacity on the new Bridgewater Bridge will significantly increase, with the single traffic lane being replaced with dual lanes, all lanes will operate with uninterrupted traffic flow. The traffic performance on the bridge is expected to operate at LOS A, with sufficient spare traffic capacity to accommodate significant future traffic growth.

Table 9.0B – Comparison of traffic conditions on Bridgewater Bridge

Peak hour period	Existing conditions		Future traffic conditions with rezoning			
			Northbound carriageway		Southbound Carriageway	
	Northbound	Southbound	Flow	LOS	Flow	LOS
Morning	707	1058	744	A	1258	A
Evening	1088	671	1250	A	827	A

Density of traffic within the diverge and merge areas has been calculated using the formula in section 3.6, with the density ratio being less than 6. This means the merge and diverge areas are expected to operate at LOS A, providing motorists with the highest level of traffic performance.

10. Road standard of the surrounding local road network

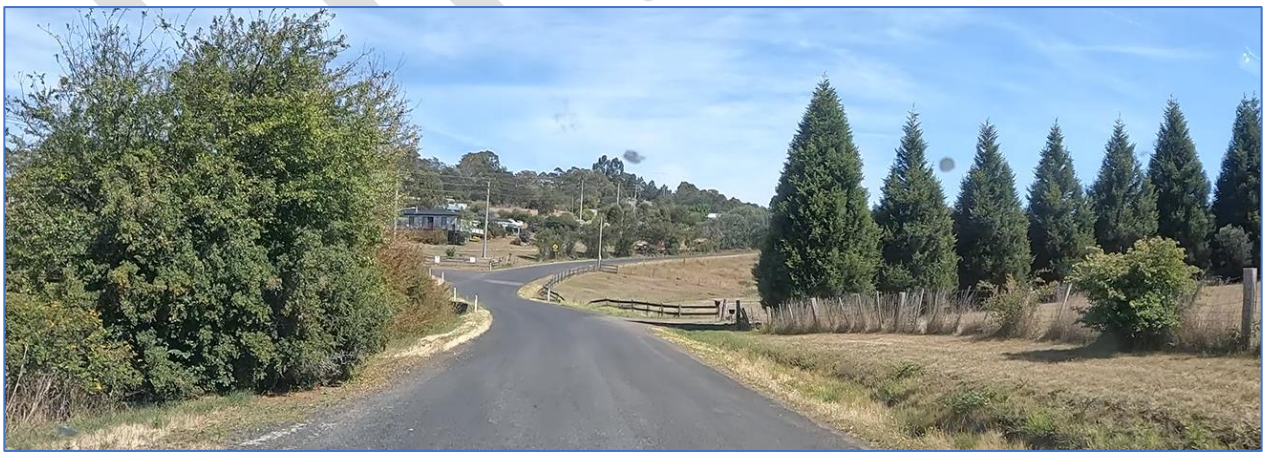
Sorell Street is built to a rural standard, with sealed pavement of sufficient width to accommodate two-way traffic, grassed verges, and gravel footpath along the eastern side. The road has a generally straight alignment and is situated on a mostly flat gradient. A posted speed limit of 50 km/h applies.

Along the eastern side of the road, where urban residential development has already occurred, the street has been upgraded to an urban standard, with concrete kerb and channelling, and a concrete footpath.

Photograph 10.0A – Sorell Street standard

Cobbs Hill Road has a rural road construction standard, and sealed bitumen surface of sufficient width to accommodate two-way traffic. The road has a generally straight alignment, with some long sweeping horizontal curves, and is situated within undulating terrain. A posted speed limit of 50 km/h applies.

Photograph 10.0B – Cobbs Hill Road standard



The road reserve of the section of Cobbs Hill Road between Sorell Street and Old Main Road is quite constrained, with established development along both sides. The road crosses a railway line that is controlled by flashing lights, there is no kerb and gutter, with the bitumen road surface in poor condition in some locations. The road alignment is generally straight, on relatively flat terrain.

Photograph 10.0C – Cobbs Hill Road between Sorell Street and Old Main Road

At the time of the site inspection, Old Main Road was undergoing road works to accommodate the infrastructure changes associated with the Bridgwater Bridge. At the completion of infrastructure changes, the road is expected to be constructed to an urban standard, with a sealed bitumen surface, concrete kerb and channel, concrete footpath, and sufficient road width to accommodate two-way traffic and on-street parking.

Photograph 10.0D – Old Main Road

Overall, the site inspection found no impediment with the surrounding local road network to prevent the rezoning to occur. It is assumed that the rezoning will include upgrading the local road network to urban standard, complying with LGAT standard drawings for an urban environment.

11. Road standard of Boyer Road

Boyer Road is part of the State Road Network and is classified as a Category 5 – Other Roads, which are primarily used as access roads for private properties and as low frequency heavy vehicle transport routes.

The road has been constructed to an urban standard from the signalised railway crossing to the Midland Highway, while between the signalised railway crossing to Sorell Street the road is or a rural standard.

Photograph 11.0A - Boyer Road standard between Midland Highway and Sorell Street

The site inspection found the road infrastructure no impediment to prevent the rezoning to occur. The intersection of Sorell Street and Boyer Road is controlled by give way signs and there is sufficient sight distance at the intersection for vehicles to turn in a safe and efficient manner. The intersection is covered by a 60 km/h speed limit.

Photograph 11.0B – Intersection of Sorell Street and Boyer Road

12. Conclusion

Rezoning the 28 hectares of land to general residential is predicted to generate an additional 218 vehicle trips in the weekday peak hour periods.

Extensive traffic analysis has demonstrated these additional peak hour trips can be accommodated within the surrounding road network, without causing a reduction in traffic performance, or adverse impact to residential amenity for the existing residential properties. The local road network will continue to operate at LOS A, which provides the highest level of traffic efficiency, with minimal traffic delays and queues. The State Highway network will also provide motorists with a high level of traffic efficiency of LOS A or B.

The traffic analysis has taken into consideration the road infrastructure changes that will occur with the completion of the new Bridgewater Bridge, and demonstrated the new traffic layout will have sufficient capacity to absorb the traffic increase. The dual traffic lanes on the bridge are expected to provide motorists will a high level of traffic efficiency, and there will be ample traffic capacity to accommodate significant future traffic growth.

The Bridgewater Bridge project includes grade separated interchanges, which will intensify the traffic flow at the Old Main Road and Boyer Road intersection, and its critical this intersection is managed by appropriate traffic control. As Old Main Road will become an integral part of the grade interchange, and be extended to Gunn Street, this road should become part of the State Road network.

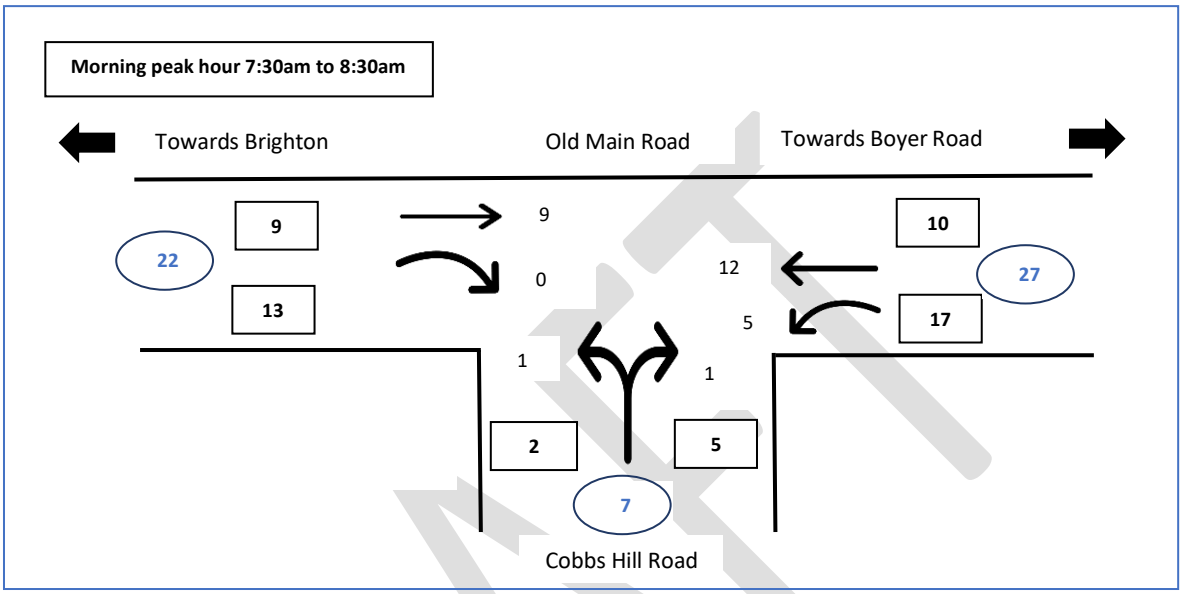
The Bridgewater Bridge project includes grade separated interchanges, which will intensify the traffic flow at the Old Main Road and Boyer Road intersection, with appropriate traffic control management necessary. Old Main Road will become an integral part of the grade interchange, which will be extended to Gunn Street, and it is recommended that this road become part of the State Road network.

This traffic assessment found no traffic engineering reason rezoning should not proceed.

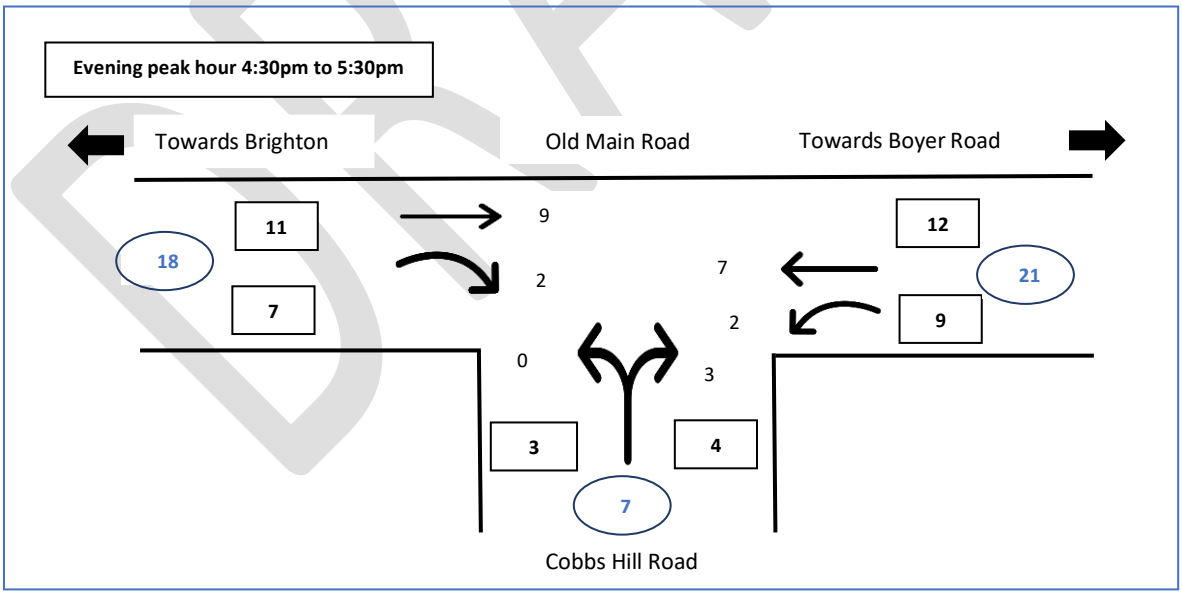
13. Appendix A – Existing traffic flows on surrounding road network

13.1 Old Main Road and Cobbs Hill Road

Morning peak hour traffic flow (7:30am to 8:30am)

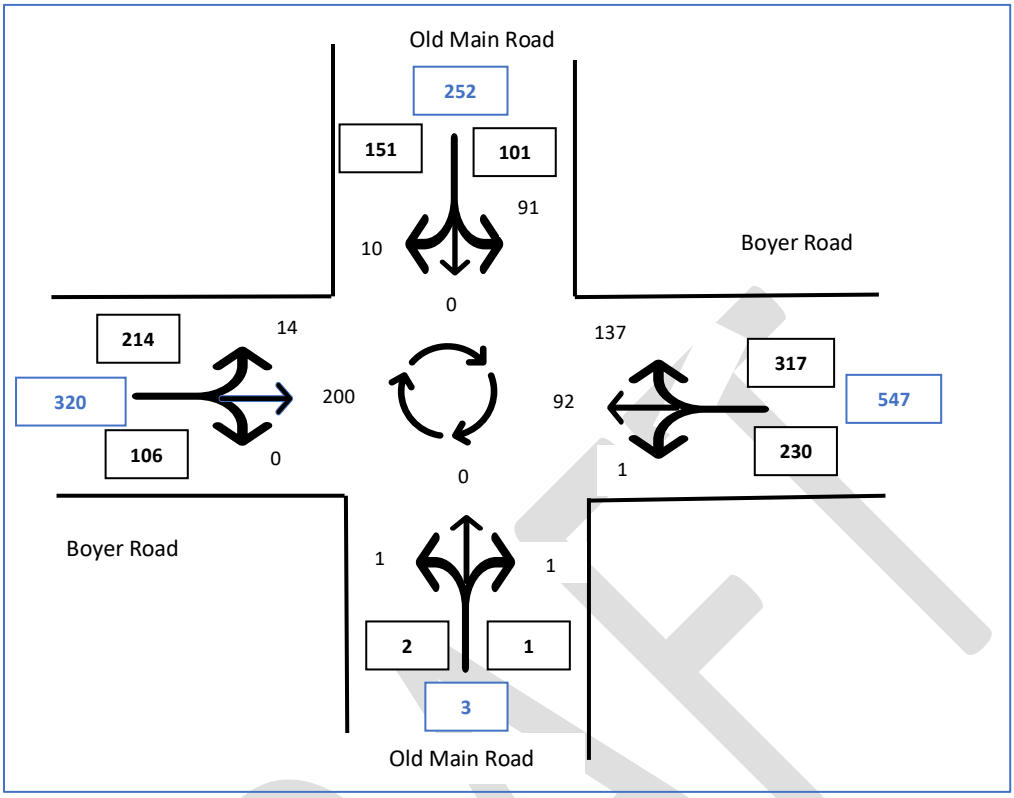


Evening peak hour traffic flow (4:30pm to 5:30pm)

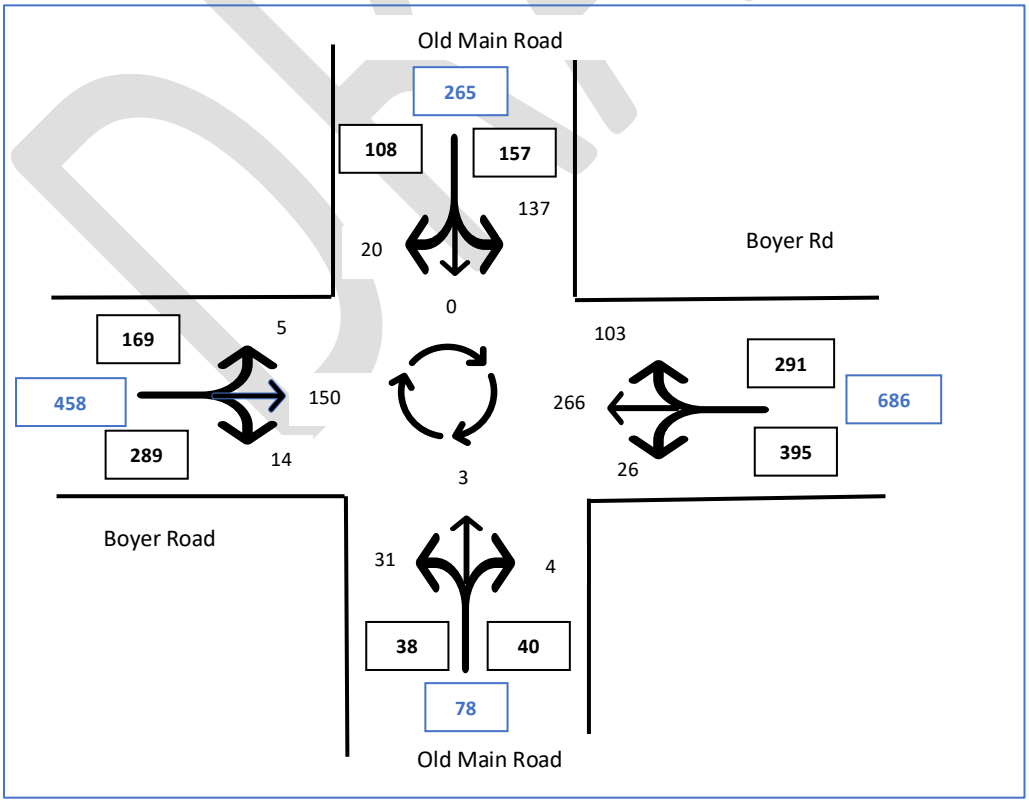


13.2 Boyer Road and Old Main Road adjusted

Morning peak hour traffic flow (7:45am to 8:45am)

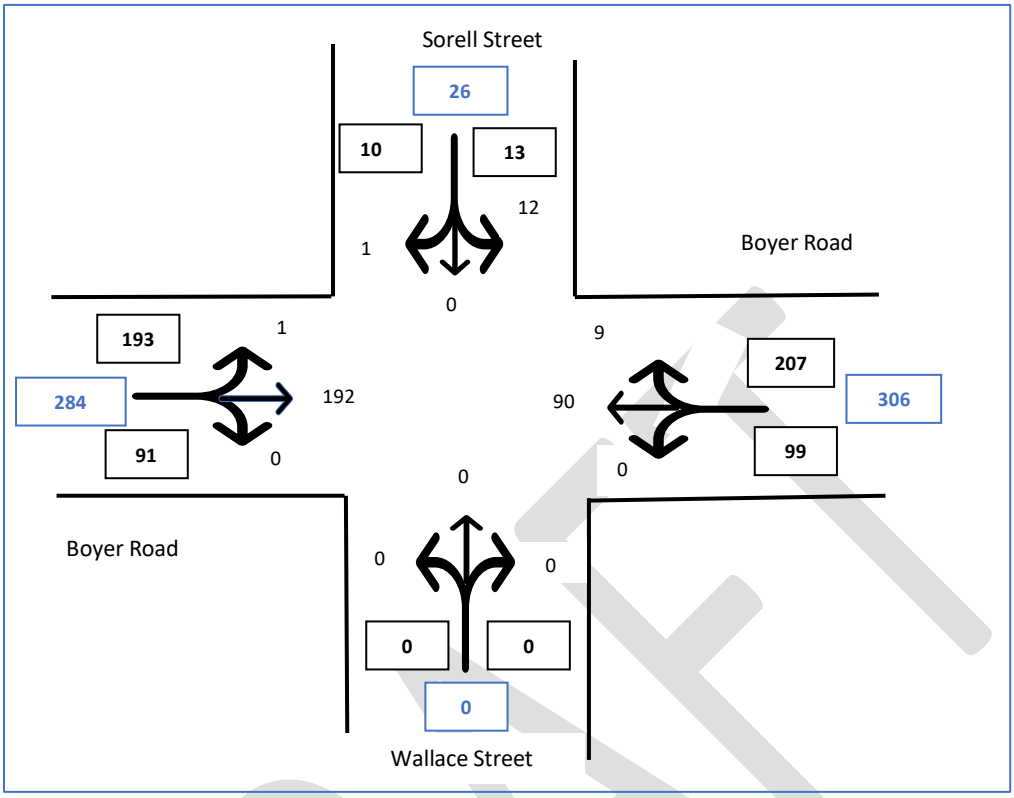


Evening peak hour traffic flow (4:30pm to 5:30pm)

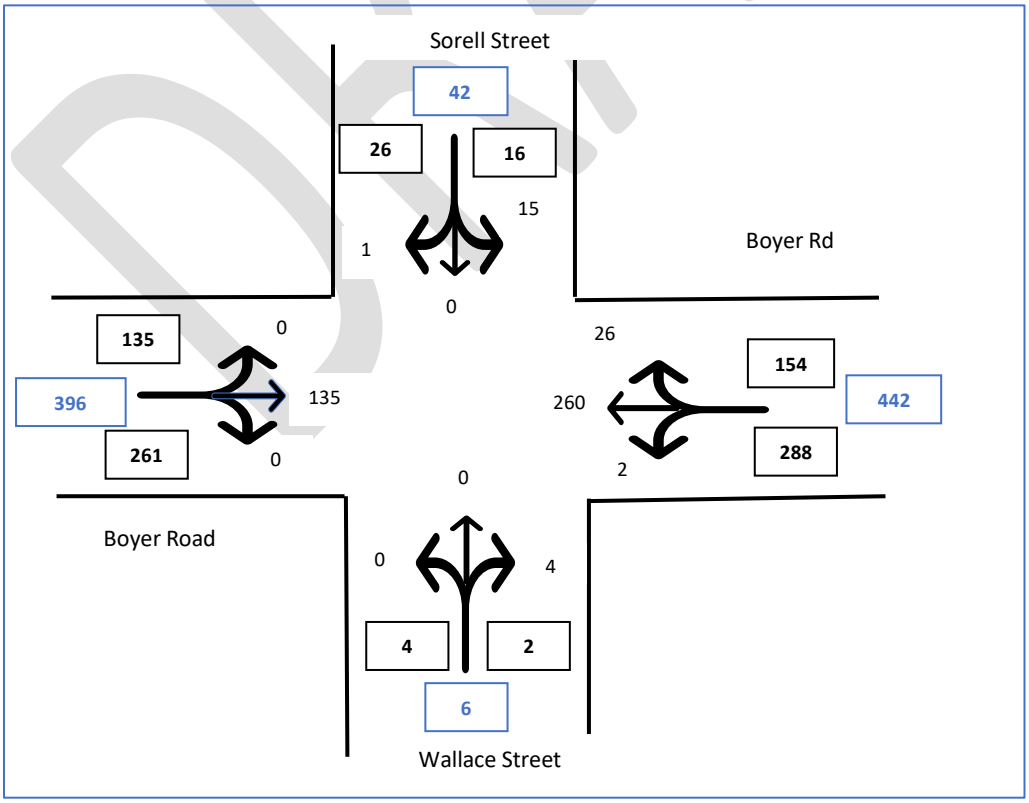


13.3 Boyer Road, Sorell Street and Wallace Street adjusted

Morning peak hour traffic flow (7:45am to 8:45am)

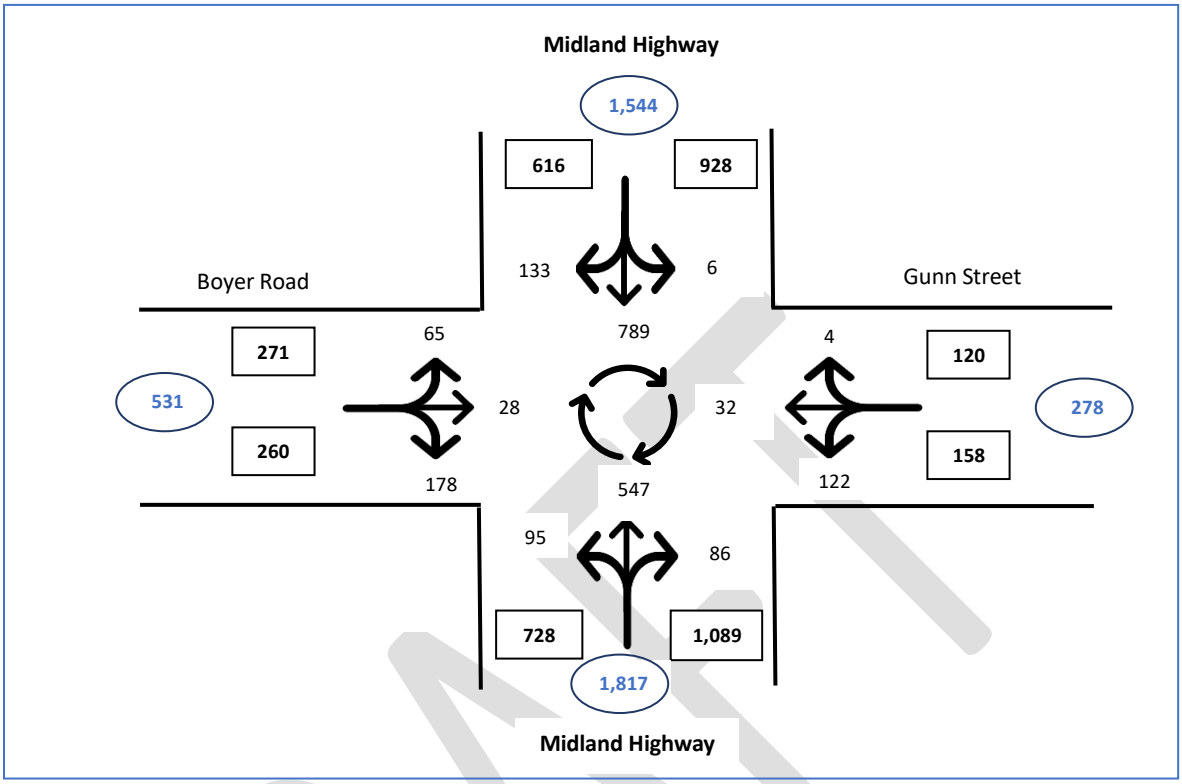


Evening peak hour traffic flow (4:30pm to 5:30pm)

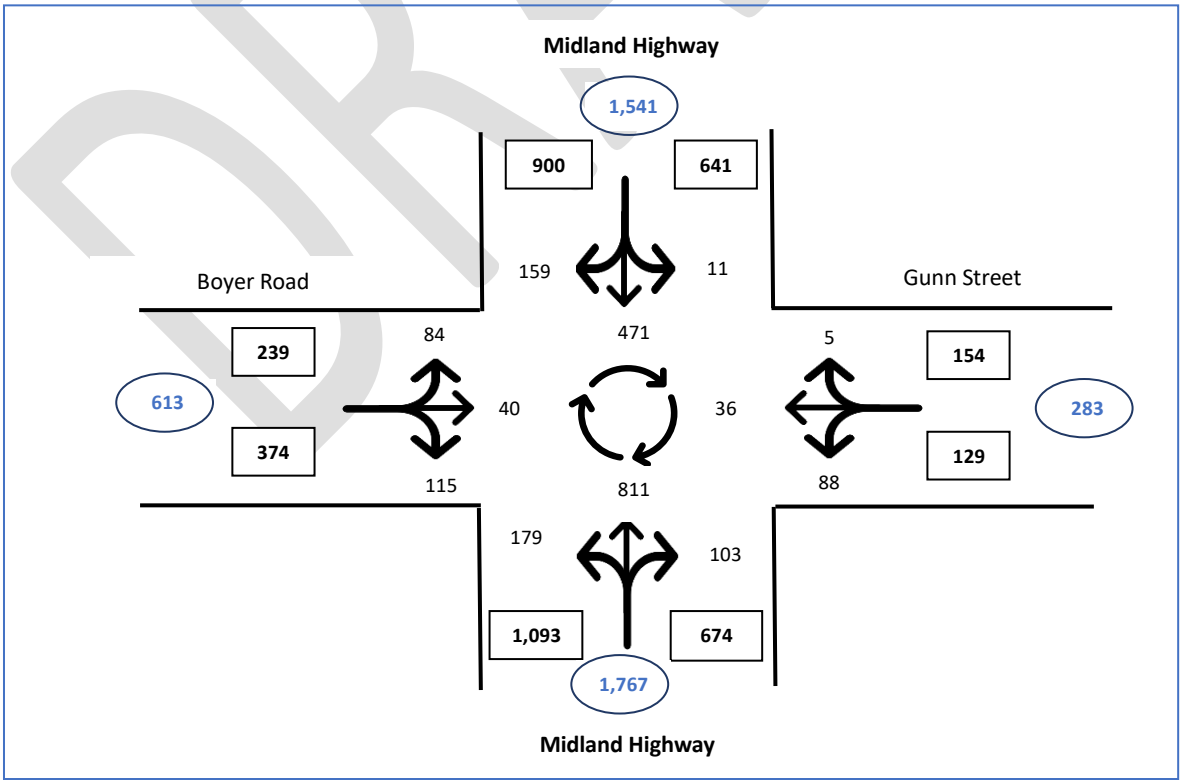


13.4 Midland Highway, Boyer Road and Gunn Street adjusted

Morning peak hour traffic flow (7:45am to 8:45am)



Evening peak hour traffic flow (4:30pm to 5:30pm)



14. Appendix B – Traffic modelling with rezoning traffic operating

Intersection of Sorell Street and Boyer Road

MOVEMENT SUMMARY

Site: 101 [Boyer Rd and Sorell St - Morning existing - with rezoning]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
South: Wallace Street								
1	L2	1	0.0	0.003	5.8	LOS A	0.0	0.1
2	T1	1	0.0	0.003	5.2	LOS A	0.0	0.1
3	R2	1	0.0	0.003	7.3	LOS A	0.0	0.1
Approach		3	0.0	0.003	6.1	LOS A	0.0	0.1
East: Boyer (Highway)								
4	L2	1	0.0	0.055	6.1	LOS A	0.1	0.6
5	T1	90	0.0	0.055	0.1	LOS A	0.1	0.6
6	R2	12	0.0	0.055	6.1	LOS A	0.1	0.6
Approach		103	0.0	0.055	0.9	NA	0.1	0.6
North: Sorell								
7	L2	87	0.0	0.076	6.1	LOS A	0.3	2.1
8	T1	1	0.0	0.076	5.4	LOS A	0.3	2.1
9	R2	10	0.0	0.076	7.0	LOS A	0.3	2.1
Approach		98	0.0	0.076	6.2	LOS A	0.3	2.1
West: Boyer (New Norfolk)								
10	L2	2	0.0	0.100	5.6	LOS A	0.0	0.1
11	T1	192	0.0	0.100	0.0	LOS A	0.0	0.1
12	R2	1	0.0	0.100	5.7	LOS A	0.0	0.1
Approach		195	0.0	0.100	0.1	NA	0.0	0.1
All Vehicles		399	0.0	0.100	1.8	NA	0.3	2.1

MOVEMENT SUMMARY

Site: 101 [Boyer Rd and Sorell St - Evening with rezoning]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
South: Wallace Street								
1	L2	1	0.0	0.008	6.3	LOS A	0.0	0.2
2	T1	1	0.0	0.008	6.3	LOS A	0.0	0.2
3	R2	4	0.0	0.008	8.3	LOS A	0.0	0.2
Approach		6	0.0	0.008	7.6	LOS A	0.0	0.2
East: Boyer (Highway)								
4	L2	2	0.0	0.185	6.1	LOS A	0.6	4.3
5	T1	247	0.0	0.185	0.2	LOS A	0.6	4.3
6	R2	87	0.0	0.185	6.0	LOS A	0.6	4.3
Approach		336	0.0	0.185	1.8	NA	0.6	4.3
North: Sorell								
7	L2	21	0.0	0.019	6.0	LOS A	0.1	0.5
8	T1	1	0.0	0.019	6.4	LOS A	0.1	0.5
9	R2	2	0.0	0.019	8.3	LOS A	0.1	0.5
Approach		24	0.0	0.019	6.2	LOS A	0.1	0.5
West: Boyer (New Norfolk)								
10	L2	11	0.0	0.082	5.6	LOS A	0.0	0.1
11	T1	147	0.0	0.082	0.0	LOS A	0.0	0.1
12	R2	1	0.0	0.082	6.3	LOS A	0.0	0.1
Approach		159	0.0	0.082	0.4	NA	0.0	0.1
All Vehicles		525	0.0	0.185	1.6	NA	0.6	4.3

MOVEMENT SUMMARY

▽ Site: 101 [New layout Old Main and Boyer - Morning with rezoning]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
South: Gunn Street								
1	L2	62	0.0	0.166	6.0	LOS A	0.8	5.6
2	T1	106	0.0	0.166	0.4	LOS A	0.8	5.6
3	R2	122	0.0	0.166	6.2	LOS A	0.8	5.6
Approach		290	0.0	0.166	4.0	NA	0.8	5.6
North: Old Main Road								
7	L2	89	0.0	0.108	5.8	LOS A	0.4	2.7
8	T1	54	0.0	0.108	0.3	LOS A	0.4	2.7
9	R2	49	0.0	0.108	6.0	LOS A	0.4	2.7
Approach		192	0.0	0.108	4.3	NA	0.4	2.7
West: Boyer (New Norfolk)								
10	L2	48	0.0	0.340	6.2	LOS A	1.6	11.4
11	T1	230	0.0	0.340	7.1	LOS A	1.6	11.4
12	R2	29	0.0	0.340	8.3	LOS A	1.6	11.4
Approach		307	0.0	0.340	7.1	LOS A	1.6	11.4
All Vehicles		789	0.0	0.340	5.3	NA	1.6	11.4

MOVEMENT SUMMARY

▽ Site: 101 [New layout Old Main and Boyer - Evening with rezoning]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
South: Gunn Street								
1	L2	144	0.0	0.182	6.0	LOS A	0.8	5.6
2	T1	73	0.0	0.182	0.6	LOS A	0.8	5.6
3	R2	100	0.0	0.182	6.4	LOS A	0.8	5.6
Approach		317	0.0	0.182	4.9	NA	0.8	5.6
North: Old Main Road								
7	L2	40	0.0	0.228	6.3	LOS A	1.2	8.4
8	T1	162	0.0	0.228	0.7	LOS A	1.2	8.4
9	R2	180	0.0	0.228	6.3	LOS A	1.2	8.4
Approach		382	0.0	0.228	3.9	NA	1.2	8.4
West: Boyer (New Norfolk)								
10	L2	85	0.0	0.301	5.9	LOS A	1.3	9.1
11	T1	120	0.0	0.301	8.4	LOS A	1.3	9.1
12	R2	41	0.0	0.301	10.3	LOS A	1.3	9.1
Approach		246	0.0	0.301	7.9	LOS A	1.3	9.1
All Vehicles		945	0.0	0.301	5.3	NA	1.3	9.1

Northbound off-ramp, Old Main Road and Cobbs Hill Road

MOVEMENT SUMMARY

▽ Site: 101 [NB Off-ramp -Old Main Rd - Morning with rezoning]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
South: Interchange off-ramp								
1a	L1	183	0.0	0.096	5.3	LOS A	0.0	0.0
3a	R1	14	0.0	0.008	5.0	LOS A	0.0	0.2
Approach		197	0.0	0.096	5.3	NA	0.0	0.2
NorthEast: RoadName								
24a	L1	26	0.0	0.129	5.5	LOS A	0.5	3.6
26	R2	89	0.0	0.129	7.7	LOS A	0.5	3.6
Approach		115	0.0	0.129	7.2	LOS A	0.5	3.6
NorthWest: RoadName								
27	L2	1	0.0	0.086	5.6	LOS A	0.4	2.9
29a	R1	152	0.0	0.086	4.8	LOS A	0.4	2.9
Approach		153	0.0	0.086	4.8	NA	0.4	2.9
All Vehicles		465	0.0	0.129	5.6	NA	0.5	3.6

MOVEMENT SUMMARY

▽ Site: 101 [NB Off-ramp -Old Main Rd - Evening with rezoning]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
South: Interchange off-ramp								
1a	L1	329	0.0	0.172	5.3	LOS A	0.0	0.0
3a	R1	110	0.0	0.061	5.0	LOS A	0.3	2.0
Approach		439	0.0	0.172	5.2	NA	0.3	2.0
NorthEast: RoadName								
24a	L1	4	0.0	0.023	5.4	LOS A	0.1	0.6
26	R2	12	0.0	0.023	9.6	LOS A	0.1	0.6
Approach		16	0.0	0.023	8.5	LOS A	0.1	0.6
NorthWest: RoadName								
27	L2	1	0.0	0.096	5.9	LOS A	0.5	3.2
29a	R1	156	0.0	0.096	5.1	LOS A	0.5	3.2
Approach		157	0.0	0.096	5.1	NA	0.5	3.2
All Vehicles		612	0.0	0.172	5.3	NA	0.5	3.2

Southbound off-ramp with Gunn Street

MOVEMENT SUMMARY

▽ Site: 101 [SB Off-ramp - Gunn St - Morning with rezoning]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
East: Gunn Street								
5	T1	158	0.0	0.081	0.0	LOS A	0.0	0.0
Approach		158	0.0	0.081	0.0	NA	0.0	0.0
North: SB off-ramp								
7	L2	11	0.0	0.132	5.8	LOS A	0.5	3.2
9	R2	131	0.0	0.132	6.7	LOS A	0.5	3.2
Approach		142	0.0	0.132	6.6	LOS A	0.5	3.2
West: Old Main Rd Extension								
11	T1	80	0.0	0.041	0.0	LOS A	0.0	0.0
Approach		80	0.0	0.041	0.0	NA	0.0	0.0
All Vehicles		380	0.0	0.132	2.5	NA	0.5	3.2

MOVEMENT SUMMARY

▽ Site: 101 [SB Off-ramp - Gunn St - Evening with rezoning]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
East: Gunn Street								
5	T1	131	0.0	0.067	0.0	LOS A	0.0	0.0
Approach		131	0.0	0.067	0.0	NA	0.0	0.0
North: SB off-ramp								
7	L2	11	0.0	0.206	6.3	LOS A	0.7	5.2
9	R2	188	0.0	0.206	7.3	LOS A	0.7	5.2
Approach		199	0.0	0.206	7.2	LOS A	0.7	5.2
West: Old Main Rd Extension								
11	T1	207	0.0	0.106	0.0	LOS A	0.0	0.0
Approach		207	0.0	0.106	0.0	NA	0.0	0.0
All Vehicles		537	0.0	0.206	2.7	NA	0.7	5.2