

## Proposed Rezoning for Industrial Uses 140 Bridge Street, Picton

### **Traffic and Parking Assessment Report**

Prepared for: Tebco Pty Ltd

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Report No: PT21001r01\_Final

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## 1. Introduction

This report has been prepared on behalf of Tebco Pty Ltd to present findings of a traffic and parking assessment of the proposed rezoning of the site known as 140 Bridge Street, Picton to allow industrial uses at the site.

The study has assessed existing traffic conditions, parking demands, access arrangements, future traffic conditions and design compliance.

The remainder of the report is set out as follows:

- Section 2 describes the existing traffic and parking conditions;
- Section 3 summarises the proposed development;
- Section 4 reviews the potential traffic impacts of the proposal;
- Section 5 reviews the design for compliance with relevant standards; and
- Section 6 presents the conclusions



## 2. Existing Development / Conditions

The following presents a summary of existing site and traffic conditions.

### 2.1 Site Location

The existing site is a greenfield site and includes a rear frontage to the Great Southern Railway Line and is located east of the Bridge Street Railway Overpass and west of an existing creek. The existing site is a greenfield site and its location is shown in **Figure 1**.

**Figure 1 - Site Location**



Source: Googlemaps

The sites at No.120 and No.140 are held by the same property owner. The development at No.120 Bridge Street includes light industrial operations, and the proponent has identified the need to expand operations into the site at No.140 Bridge Street which is currently zoned RU2 Rural Landscape.

The existing site at No.140 Bridge Street includes a total area of 10,520m<sup>2</sup>.

### 2.2 Existing Zoning

As stated above whilst 120 Bridge Street (and all developments east of this site) are zoned Light Industrial the current zoning of No.140 Bridge Street is RU2 – Rural Landscape.

### 2.3 Existing Site Traffic Generation

As stated above the existing site is a greenfield site and does not generate any traffic.

## 2.4 Classification Criteria

It is usual to classify roads according to a road hierarchy in order to determine their functional role within the road network. Changes to traffic flows on the roads can then be assessed within the context of the road hierarchy. Roads are classified according to the role they fulfil and the volume of traffic they should appropriately carry. The RTA has set down the following guidelines for the functional classification of roads.

- Arterial Road – typically a main road carrying over 15,000 vehicles per day and fulfilling a role as a major inter-regional link (over 1,500 vehicles per hour)
- Sub-arterial Road – defined as secondary inter-regional links, typically carrying volumes between 5,000 and 20,000 vehicles per day (500 to 2,000 vehicles per hour)
- Collector Road – provides a link between local roads and regional roads, typically carrying between 2,000 and 10,000 vehicles per day (250 to 1,000 vehicles per hour). At volumes greater than 5,000 vehicles per day, residential amenity begins to decline noticeably.
- Local Road – provides access to individual allotments, carrying low volumes, typically less than 2,000 vehicles per day (250 vehicles per hour).

## 2.5 Existing Road Network

Bridge Street – is a local road providing an overpass over the Great Southern Railway Line connecting Thirlmere Way in the west with the Old Hume Highway in the east. The road also serves a large industrial precinct to the immediate east of the site at No.120 Bridge Street. Across the frontage of No.140 Bridge Street the road includes a single travel lane in each direction and unformed shoulders along with a posted speed limit of 60km/hr. Bridge Street at Old Hume Highway includes a 15 tonne load limit.

Old Hume Highway – is the key north-south sub arterial road through the area providing access to multiple suburbs along the corridor and full interchange access to the Hume Highway in the south. At its intersection with Bridge Street, the Old Hume Highway includes a single travel lane in each direction with unrestricted parallel parking permitted in most locations. The intersection of Old Hume Highway / Bridge Street is a priority controlled intersection with a separate right turn bay provided for southbound turning traffic into Bridge Street.

## 2.6 Existing Traffic Flows

To gauge existing traffic flows on the surrounding road network a seven (7) day tube counter was installed in Bridge Street between the existing railway line overpass and the creek (approximately central to the frontage of No.140 Bridge Street). Copies of the seven (7) day tube count can be found in **Appendix A** of this report.

In addition, an intersection count during morning and afternoon weekday peak road network periods was undertaken at Bridge Street / Old Hume Highway intersection. Copies of this intersection count is also provided in **Appendix A** of this report. The peak flows by direction in each street from the intersection count are summarised below.

**Table 1 – Existing Weekday Peak Period Volumes in vicinity of site (veh/hr)**

Road	Location	Weekday AM		Weekday PM	
		NB/EB	SB/WB	NB/EB	SB/WB
Old Hume Highway	North of Bridge Street	674	563	714	841
	South of Bridge Street	599	568	671	759
Bridge Street	West of Old Hume Highway	210	130	192	231

The peak hours recorded for the intersection were 7:45am – 8:45am in the AM period and 3:15pm – 4:15pm in the PM period. From **Table 1** it can be seen that existing flows on surrounding roads are in generally in line with their classification.

In comparison, the recorded seven (7) day traffic flows by direction in Bridge Street across the frontage of the site are presented below.

**Table 2 - Bridge Street Outside No.140 Northbound Hourly Flows**

Hour Starting	Day of Week							W'Day Ave <b>1524</b>	7 Day Ave <b>1360</b>
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	8-Feb	9-Feb	3-Feb	4-Feb	5-Feb	6-Feb	7-Feb		
AM Peak	196	179	187	163	187	106	84		
PM Peak	93	96	108	100	100	89	81		
0:00	1	0	0	0	0	1	5	0	1
1:00	3	2	1	2	2	2	0	2	2
2:00	7	9	8	5	9	2	1	8	6
3:00	11	9	13	14	14	4	3	12	10
4:00	39	38	45	46	39	7	1	41	31
5:00	125	127	129	133	111	26	5	125	94
6:00	144	150	158	153	163	49	33	154	121
7:00	161	154	148	143	155	75	29	<b>152</b>	124
8:00	<b>196</b>	<b>179</b>	<b>187</b>	<b>163</b>	<b>187</b>	96	64	182	153
9:00	101	89	96	108	105	92	81	100	96
10:00	87	79	86	72	92	<b>106</b>	<b>84</b>	83	87
11:00	68	73	66	69	69	105	69	69	74
12:00	60	<b>96</b>	73	62	75	<b>89</b>	<b>81</b>	73	77
13:00	56	80	40	61	78	73	66	63	65
14:00	86	71	68	81	92	66	41	80	72
15:00	<b>93</b>	76	<b>108</b>	<b>100</b>	<b>100</b>	62	58	<b>95</b>	85
16:00	75	91	101	91	79	34	51	87	75
17:00	66	71	69	77	85	58	42	74	67
18:00	40	61	58	55	60	41	38	55	50
19:00	24	31	29	45	27	36	22	31	31
20:00	14	11	21	23	12	22	30	16	19
21:00	9	13	16	16	12	8	12	13	12
22:00	5	6	6	5	9	13	4	6	7
23:00	0	1	2	1	5	8	2	2	3
Total	1471	1517	1528	1525	1580	1075	822	1524	1360

**Table 3 - Bridge Street Outside No.140 Southbound Hourly Flows**

Hour Starting	Day of Week							W'Day Ave	7 Day Ave
	Mon 8-Feb	Tue 9-Feb	Wed 3-Feb	Thu 4-Feb	Fri 5-Feb	Sat 6-Feb	Sun 7-Feb		
AM Peak	88	85	95	100	103	106	86	1664	1499
PM Peak	197	235	198	220	189	145	90		
0:00	4	5	3	5	3	6	14	4	6
1:00	2	2	3	5	4	3	8	3	4
2:00	3	4	0	2	3	2	7	2	3
3:00	2	3	2	2	2	3	2	2	2
4:00	3	3	5	2	3	2	1	3	3
5:00	6	12	16	16	11	6	2	12	10
6:00	36	31	38	27	39	17	9	34	28
7:00	53	60	50	61	52	35	19	55	47
8:00	75	73	89	68	77	49	26	76	65
9:00	71	83	95	100	86	77	51	87	80
10:00	88	75	80	78	92	98	86	83	85
11:00	87	85	73	94	103	106	73	88	89
12:00	107	90	100	88	99	145	75	97	101
13:00	88	105	82	88	114	104	85	95	95
14:00	103	122	103	114	124	106	82	113	108
15:00	174	176	186	172	189	88	90	179	154
16:00	197	235	198	220	179	86	71	206	169
17:00	196	198	185	176	180	77	76	187	155
18:00	115	158	150	140	128	59	47	138	114
19:00	62	64	77	89	68	52	45	72	65
20:00	46	62	58	74	55	45	33	59	53
21:00	33	40	39	50	36	25	19	40	35
22:00	17	15	21	11	28	20	13	18	18
23:00	4	7	4	9	19	25	4	9	10
Total	1572	1708	1657	1691	1694	1236	938	1664	1499

It is noted that traffic volumes past the development site in each direction in Bridge Street were somewhat lower than those recorded in Bridge Street the Old Hume Highway intersection.

## 2.7 Mid-Block Capacity Assessment

On the matter of mid-block capacity of roads surveyed versus demands, the following mid block capacities are typical by road type.

**Table 4 – Austroads 2020 Lane Mid Block Capacities**

Type of lane	One-way mid-block capacity (pc/h)
<b>Median or inner lane</b>	
Divided road	1000
Undivided road	900
<b>Middle lane (of a 3 lane carriageway)</b>	
Divided road	900
Undivided road	1000
<b>Kerb lane</b>	
Adjacent to parking lane	900
Occasional parked vehicles	600
Clearway conditions	900

Source: Austroads (2020)



The following is also noted from Austroads in regards to assumed mid block capacity variations to the above table:

*Peak-period mid-block traffic volumes may increase to 1200 to 1400 pc/h/ln on any approach road when the following conditions exist or can be implemented:*

- *adequate flaring at major upstream intersections*
- *uninterrupted flow from a wider carriageway upstream of an intersection approach and flowing at capacity*
- *control or absence of crossing or entering traffic at minor intersections by major road priority controls*
- *control or absence of parking*
- *control or absence of right turns by banning turning at difficult intersections*
- *high-volume flows of traffic from upstream intersections during more than one phase of a signal cycle*
- *good co-ordination of traffic signals along the route*

Thus, as Bridge Street does not include any formal parking with little to no side friction from side accesses, the adoption of 1,200 vehicles pc/h/ln is appropriate. The following existing volume capacity ratio by direction for Old Bathurst Road.

**Table 5 – Volume / Capacity Analysis of Old Bathurst Road**

Road	Mid Block Capacity	AM Peak Hour One Way Flow	AM Peak V/C	PM Peak Hour One Way Flow	PM Peak V/C
Bridge Street – Eastbound	1,200	152	0.127	95	0.079
Bridge Street – Westbound	1,200	55	0.486	179	0.149

\*Outside No.140 Bridge Street

From **Table 5** it is noted the existing AM / PM peak hour flows by direction in Bridge Street are well below the expected mid-block lane capacity in each direction.

## 2.8 Existing Intersection Operating Conditions

All intersections surveyed have been analysed using the Sidra Intersection analysis program. Sidra Intersection determines the average delay that vehicles encounter, the degree of saturation of the intersection, and the level of service. The degree of saturation is the ratio of the arrival rate of vehicles to the capacity of the approach. Sidra Intersection provides analysis of the operating conditions which can be compared to the performance criteria set out in **Table 6**.

**Table 6 – Level of Service Criteria**

Level of Service	Average Delay per Vehicle (secs/veh)	Signals & Roundabouts	Give Way & Stop Signs
A	less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & Spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode
F	> 70	Extra capacity required	Extreme delay, traffic signals or other major treatment required

Adapted from RTA Guide to Traffic Generating Developments, 2002.

For roundabouts and priority intersections, the reported average delay is for the individual movement with the highest average delay per vehicle. At signalised intersections, the reported average delay is over all movements. The two intersections surveyed have been modelled as a network given their close proximity to each other. The existing weekday and weekend day intersection operating conditions are presented in **Table 7**. Average delay is expressed in seconds per vehicle. It should be noted that given their close proximity the intersections have been modelled as a network within SIDRA.

**Table 7 – Existing Weekday AM / PM Intersection Operating Conditions**

Intersection	Control	Weekday AM Peak		Weekday PM Peak	
		Avg Delay	LOS	Avg Delay	LOS
Bridge St / Old Hume Highway	Priority	10.7	A	13.9	A

Avg Delay (sec/veh) is over all movements at signals, and for worst movement at priority and roundabouts

From **Table 7** it is noted that the intersection of Bridge Street / Old Bathurst Road currently operates at a satisfactory level of service with spare capacity.

Copies of the SIDRA outputs are provided in **Appendix B** of this report.

### 3. The Proposed Development

The key components of the proposed development are summarised below

- Rezoning of the existing portion of land from 'Rural Landscape' to 'IN2 Light Industrial'
- Following rezoning seeking to achieve a potential 124m x 18m (2,232m<sup>2</sup> GFA) light industrial building on site to house expanded operations of the site at No.120 Bridge Street.
- Truck only entry in Bridge Street near railway overpass
- Light Vehicle entry / exit and truck exit driveway in Bridge Street central to the site.
- Design of the driveway access to accommodate a 19.0 semi-trailer.
- On-site parking provision for a total of **35 spaces**.

A preliminary layout plan of the potential arrangements of the site upon rezoning is provided in **Appendix C** of this report.

## 4. Potential Traffic Impacts

### 4.1 Introduction

The following presents an assessment of the potential traffic impacts of the proposal using the Roads and Traffic Authority Guide to Traffic Generating Developments standard approach.

### 4.2 Development Traffic Generation

Applying the Transport for NSW Technical Direction TDT2013/04a (regional rate) to the potential total GFA industrial development yield of 2,232m<sup>2</sup>, the traffic generation of No.140 Bridge Street would equate to **16 AM Peak** trips two way and **18 PM Peak** trips two way.

### 4.3 Trip Distribution

As it is noted that the Bridge Street overpass includes a 15-tonne load limit, it is expected that the majority of the trips generated by the development would travel to / from the site via the Bridge Street / Old Hume Highway intersection.

The trips generated by the development have been distributed through this intersection mirroring the northbound and southbound peak hour splits in Old Hume Highway. A 50/50 split of AM and PM peak trips for inbound and outbound has been adopted being an industrial use type of development.

### 4.4 Future Mid-Block Capacity of Old Bathurst Road

The additional traffic generated by the proposal has been added to Bridge Street in accordance with the adopted distribution of trips presented above. The resulting future mid-block capacity ratios for Old Bathurst Road is presented below in **Table 8**.

**Table 8 – Existing vs Future Volume / Capacity Analysis of Old Bathurst Road**

Road	Mid Block Capacity	AM Peak Hour Two Way Flow	AM Peak V/C	PM Peak Hour Two Way Flow	PM Peak V/C
<b>Existing</b>					
Bridge Street – Eastbound	1,200	152	0.127	95	0.079
Bridge Street – Westbound	1,200	55	0.486	179	0.149
<b>Future</b>					
Bridge Street – Eastbound	1,200	165	0.138	109	0.091
Bridge Street – Westbound	1,200	68	0.057	193	0.161

From **Table 8** it is noted that following full development of the rezoned site the future traffic flows in Bridge Street would not result in the mid-block capacities being exceeded in either direction during the AM and PM peak hour periods.

### 4.5 Future Intersection Operating Conditions

The additional traffic generated by the proposal has been added to the surrounding road network in accordance with the adopted distribution of trips presented above. The resulting future intersection operating conditions is presented below in **Table 9**.

**Table 9 – Existing Weekday AM / PM Intersection Operating Conditions**

Intersection	Control	Weekday AM Peak		Weekday PM Peak	
		Av Delay	LOS	Av Delay	LOS
Bridge St / Old Hume Highway	Priority	10.8	A	14.2	B

Avg Delay (sec/veh) is over all movements at signals, and for worst movement at priority and roundabouts

From **Table 9** it is noted that the intersection of Bridge Street / Old Hume Highway would continue to operate at a satisfactory level of service in the future upon *full* development of the subject site if rezoning was approved.

Further, there would be *no* requirement for upgrades at the intersection to accommodate the traffic demands of the proposal.

Overall, the traffic impacts of the proposal are considered acceptable.

## 5. Parking and Access Review

### 5.1 Council DCP Parking Provision

It is expected that future development applications of each component of the development would provide parking in accordance with the requirements of Councils DCP.

On the basis that the building shown in [Appendix C](#) of this report was achieved (2,232m<sup>2</sup> of GFA), than the site would require a total of **32** car spaces.

As the preliminary layout plan shown in [Appendix B](#) achieves **35 spaces**, the parking arrangements would comply with the requirements of the DCP and thus considered satisfactory.

### 5.2 Access Arrangements

The nature of Bridge Street across the frontage of the site is that it was observed traffic speeds were generally slow in the vicinity of the railway overpass and the largest possible exit sight distance of the site would be in a position central to the existing creek and bend in Bridge Street.

Thus, it is suggested that an entry only driveway should be considered in the vicinity of the railway overpass where observed speeds were the slowest with an exit only driveway located central to the bend in Bridge Street and the creek.

The arrangements described above along with the potential layout plan have been reviewed in AutoTURN for the largest vehicle expected to access the site, a 19.0m semi-trailer and are provided in [Appendix D](#) of this report.

Such arrangements would be considered a satisfactory access solution for the rezoned site subject to a future development application.

## 6. Conclusions

This report has reviewed the potential traffic impacts of the proposed rezoning of the site known as 140 Bridge Street to allow light industrial uses at the site. The findings of this assessment are presented below:

1. The traffic generated by a potential development of the rezoned site would be generally low and would not impact to a point of detriment on the surrounding road network.
2. The intersection of Bridge Street / Old Hume Highway currently operates at a satisfactory level of service.
3. The intersection of Bridge Street / Old Hume Highway would continue to operate at a satisfactory level of service in the future should full development of the site occur allowing for light industrial uses.
4. The future traffic flows in Bridge Street would remain well below the mid-block lane capacity in either direction in both the AM and PM peak hour periods.
5. The proposed parking provision would comply with the minimum requirements of Council's DCP.

Overall the traffic impacts of the proposal are considered acceptable.

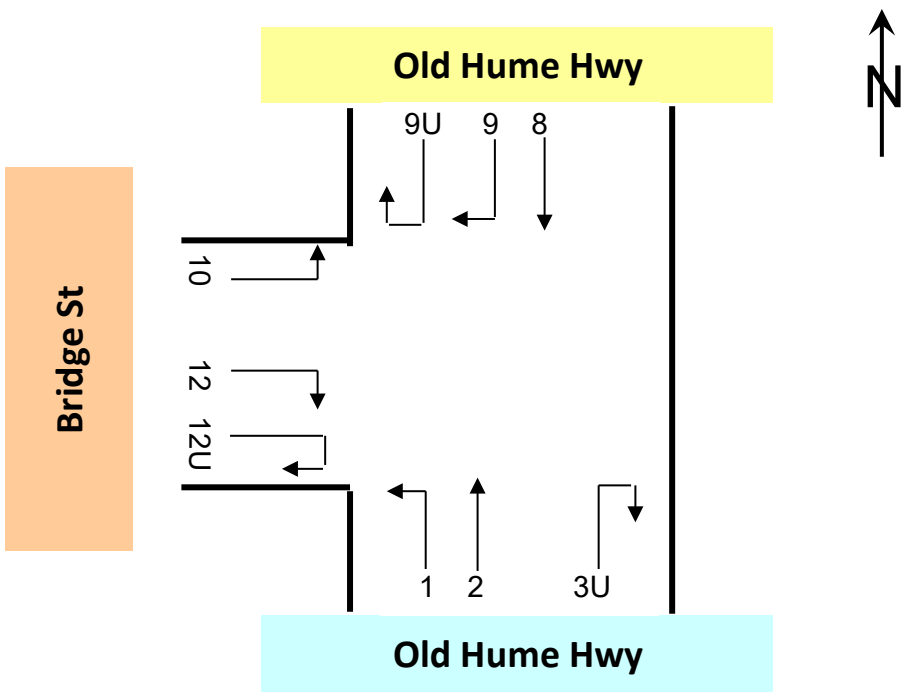


## 7. Appendix A – Intersection / Tube Counts



Job No. : N6161  
Client : Positive Traffic Pty Ltd  
Suburb : Picton  
Location : 1. Old Hume Hwy / Bridge St  
  
Day/Date : Wed, 3rd Feb 2021  
Weather : Fine  
Description : Classified Intersection Count  
: 15 mins Data

	Class 1	Class 2	Class 3
Classifications	Cars	Trucks	Buses

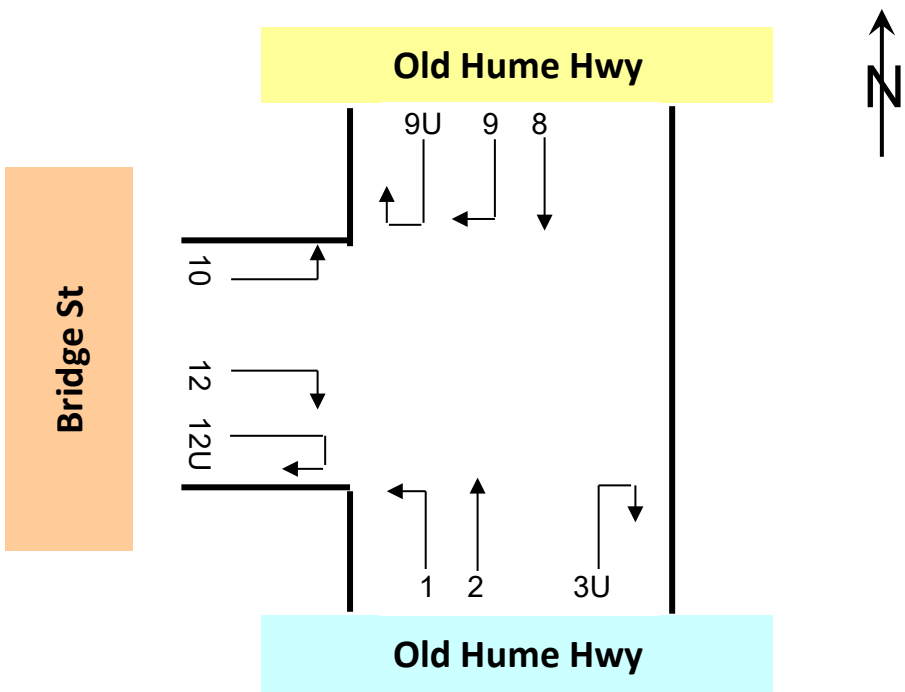


Approach	Old Hume Hwy												
Direction	Direction 1 (Left Turn)				Direction 2 (Through)				Direction 3U (U Turn)				
Time Period	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
6:00 to 6:15	6	1	0	7	82	9	0	91	0	0	0	0	
6:15 to 6:30	2	0	0	2	95	6	1	102	0	0	0	0	
6:30 to 6:45	8	0	0	8	92	11	2	105	0	0	0	0	
6:45 to 7:00	18	0	0	18	90	5	3	98	0	0	0	0	
7:00 to 7:15	15	3	1	19	102	7	3	112	0	0	0	0	
7:15 to 7:30	6	0	1	7	117	3	4	124	0	1	0	1	
7:30 to 7:45	6	0	0	6	118	2	2	122	0	0	0	0	
7:45 to 8:00	13	1	1	15	121	8	0	129	0	0	0	0	
8:00 to 8:15	10	3	0	13	116	10	0	126	0	0	0	0	
8:15 to 8:30	13	2	0	15	151	5	1	157	0	0	0	0	
8:30 to 8:45	6	2	0	8	127	6	3	136	0	0	0	0	
8:45 to 9:00	21	0	0	21	65	2	1	68	0	0	0	0	
AM Totals	124	12	3	139	1,276	74	20	1,370	0	1	0	1	
15:00 to 15:15	7	0	0	7	136	2	1	139	0	0	0	0	
15:15 to 15:30	27	0	0	27	181	6	3	190	0	0	0	0	
15:30 to 15:45	12	0	1	13	123	5	1	129	0	0	0	0	
15:45 to 16:00	15	1	1	17	113	9	2	124	0	0	0	0	
16:00 to 16:15	20	0	0	20	144	7	0	151	0	0	0	0	
16:15 to 16:30	16	0	0	16	130	2	1	133	0	0	0	0	
16:30 to 16:45	11	0	0	11	129	3	1	133	0	0	0	0	
16:45 to 17:00	13	0	0	13	121	1	0	122	0	0	0	0	
17:00 to 17:15	12	0	0	12	145	3	0	148	0	0	0	0	
17:15 to 17:30	13	1	0	14	105	1	0	106	0	0	0	0	
17:30 to 17:45	13	0	0	13	110	5	0	115	0	0	0	0	
17:45 to 18:00	8	1	0	9	94	3	0	97	0	0	0	0	
PM Totals	167	3	2	172	1,531	47	9	1,587	0	0	0	0	

Approach	Old Hume Hwy												Bridge St													
Direction		Direction 8 (Through)				Direction 9 (Right Turn)				Direction 9U (U Turn)				Direction 10 (Left Turn)					Direction 12 (Right Turn)				Direction 12U (U Turn)			
Time Period		Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total
6:00 to 6:15		59	4	0	63	10	2	0	12	0	0	0	0	25	2	0	27		7	0	0	7	0	0	0	0
6:15 to 6:30		68	5	0	73	15	0	0	15	0	0	0	0	26	6	0	32		5	2	0	7	0	0	0	0
6:30 to 6:45		66	10	0	76	13	3	0	16	0	0	0	0	27	3	0	30		10	0	0	10	0	0	0	0
6:45 to 7:00		118	3	1	122	38	0	0	38	0	0	0	0	34	4	0	38		7	0	0	7	0	0	0	0
7:00 to 7:15		88	15	0	103	23	3	0	26	0	0	0	0	27	1	1	29		3	2	0	5	0	0	0	0
7:15 to 7:30		90	7	1	98	16	0	0	16	0	0	0	0	29	6	0	35		6	0	0	6	0	0	0	0
7:30 to 7:45		122	7	2	131	16	0	0	16	0	0	0	0	20	3	0	23		9	1	0	10	0	0	0	0
7:45 to 8:00		118	6	0	124	16	1	0	17	0	0	0	0	32	0	0	32		22	3	0	25	0	0	0	0
8:00 to 8:15	105	8	0	113	19	2	0	21	0	0	0	0	24	0	1	25	10	1	0	11	0	0	0	0		
8:15 to 8:30	106	6	3	115	15	3	0	18	0	0	0	0	28	1	0	29	20	1	0	21	0	0	0	0		
8:30 to 8:45	123	9	0	132	21	2	0	23	0	0	0	0	36	4	0	40	26	1	0	27	0	0	0	0		
8:45 to 9:00	127	9	5	141	25	3	0	28	0	0	0	0	23	2	0	25	33	0	3	36	0	0	0	0		
AM Totals	1,190	89	12	1,291	227	19	0	246	0	0	0	0	331	32	2	365	158	11	3	172	0	0	0	0		
15:00 to 15:15	130	6	0	136	21	5	0	26	0	0	0	0	28	0	0	28	18	0	0	18	0	0	0	0		
15:15 to 15:30	150	4	0	154	33	5	0	38	0	0	0	0	28	1	0	29	14	1	0	15	0	0	0	0		
15:30 to 15:45	189	7	5	201	30	4	0	34	0	0	0	0	33	0	0	33	18	2	0	20	0	0	0	0		
15:45 to 16:00	142	4	5	151	36	7	0	43	0	0	0	0	23	1	0	24	18	1	0	19	0	0	0	0		
16:00 to 16:15	173	7	1	181	37	2	0	39	0	0	0	0	34	0	0	34	18	0	0	18	0	0	0	0		
16:15 to 16:30	147	7	7	161	31	4	0	35	0	0	0	0	23	3	0	26	13	0	1	14	0	0	0	0		
16:30 to 16:45	133	6	4	143	43	3	0	46	0	0	0	0	32	1	0	33	10	0	0	10	0	0	0	0		
16:45 to 17:00	167	1	2	170	31	1	0	32	0	0	0	0	26	1	0	27	13	0	1	14	0	0	0	0		
17:00 to 17:15	160	6	1	167	44	2	0	46	0	0	0	0	20	1	0	21	8	1	0	9	0	0	0	0		
17:15 to 17:30	157	7	0	164	26	0	0	26	0	0	0	0	20	1	0	21	13	0	0	13	0	0	0	0		
17:30 to 17:45	154	8	0	162	34	1	0	35	0	0	0	0	25	1	0	26	11	1	0	12	0	0	0	0		
17:45 to 18:00	141	4	0	145	38	2	0	40	0	0	0	0	19	1	0	20	6	0	0	6	0	0	0	0		
PM Totals	1,843	67	25	1,935	404	36	0	440	0	0	0	0	311	11	0	322	160	6	2	168	0	0	0	0		

Job No. : N6161  
Client : Positive Traffic Pty Ltd  
Suburb : Picton  
Location : 1. Old Hume Hwy / Bridge St

Day/Date : Wed, 3rd Feb 2021  
Weather : Fine  
Description : Classified Intersection Count  
: Hourly Summary

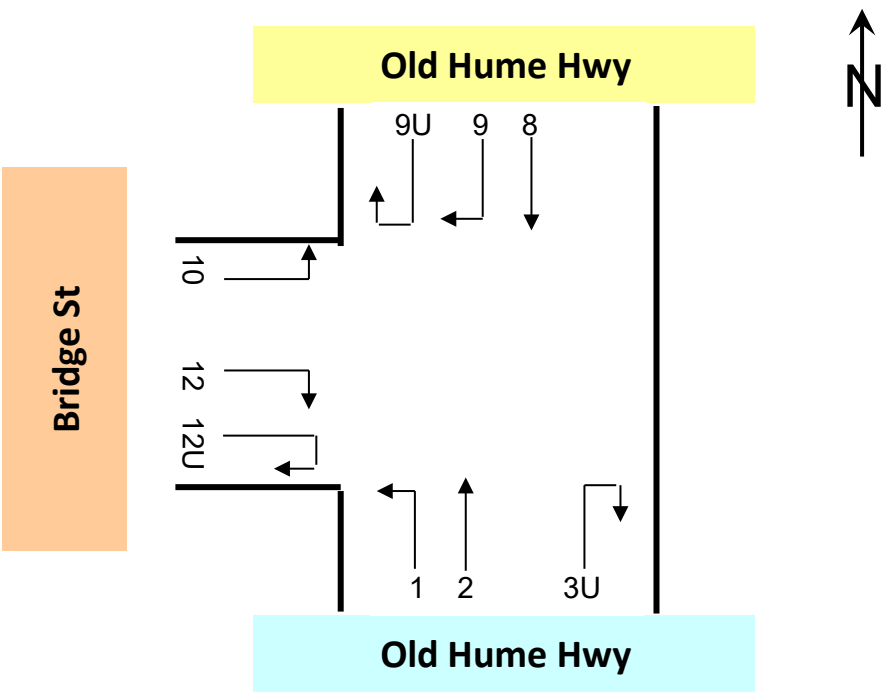


Approach	Old Hume Hwy											
Direction	Direction 1 (Left Turn)				Direction 2 (Through)				Direction 3U (U Turn)			
Time Period	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total
6:00 to 7:00	34	1	0	35	359	31	6	396	0	0	0	0
6:15 to 7:15	43	3	1	47	379	29	9	417	0	0	0	0
6:30 to 7:30	47	3	2	52	401	26	12	439	0	1	0	1
6:45 to 7:45	45	3	2	50	427	17	12	456	0	1	0	1
7:00 to 8:00	40	4	3	47	458	20	9	487	0	1	0	1
7:15 to 8:15	35	4	2	41	472	23	6	501	0	1	0	1
7:30 to 8:30	42	6	1	49	506	25	3	534	0	0	0	0
7:45 to 8:45	42	8	1	51	515	29	4	548	0	0	0	0
8:00 to 9:00	50	7	0	57	459	23	5	487	0	0	0	0
AM Totals	124	12	3	139	1,276	74	20	1,370	0	1	0	1
15:00 to 16:00	61	1	2	64	553	22	7	582	0	0	0	0
15:15 to 16:15	74	1	2	77	561	27	6	594	0	0	0	0
15:30 to 16:30	63	1	2	66	510	23	4	537	0	0	0	0
15:45 to 16:45	62	1	1	64	516	21	4	541	0	0	0	0
16:00 to 17:00	60	0	0	60	524	13	2	539	0	0	0	0
16:15 to 17:15	52	0	0	52	525	9	2	536	0	0	0	0
16:30 to 17:30	49	1	0	50	500	8	1	509	0	0	0	0
16:45 to 17:45	51	1	0	52	481	10	0	491	0	0	0	0
17:00 to 18:00	46	2	0	48	454	12	0	466	0	0	0	0
PM Totals	167	3	2	172	1,531	47	9	1,587	0	0	0	0

Approach	Old Hume Hwy												Bridge St													
Direction		Direction 8 (Through)				Direction 9 (Right Turn)				Direction 9U (U Turn)				Direction 10 (Left Turn)					Direction 12 (Right Turn)				Direction 12U (U Turn)			
Time Period		Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total
6:00 to 7:00		311	22	1	334	76	5	0	81	0	0	0	0	112	15	0	127		29	2	0	31	0	0	0	0
6:15 to 7:15		340	33	1	374	89	6	0	95	0	0	0	0	114	14	1	129		25	4	0	29	0	0	0	0
6:30 to 7:30		362	35	2	399	90	6	0	96	0	0	0	0	117	14	1	132		26	2	0	28	0	0	0	0
6:45 to 7:45		418	32	4	454	93	3	0	96	0	0	0	0	110	14	1	125		25	3	0	28	0	0	0	0
7:00 to 8:00		418	35	3	456	71	4	0	75	0	0	0	0	108	10	1	119		40	6	0	46	0	0	0	0
7:15 to 8:15		435	28	3	466	67	3	0	70	0	0	0	0	105	9	1	115		47	5	0	52	0	0	0	0
7:30 to 8:30		451	27	5	483	66	6	0	72	0	0	0	0	104	4	1	109		61	6	0	67	0	0	0	0
7:45 to 8:45		452	29	3	484	71	8	0	79	0	0	0	0	120	5	1	126		78	6	0	84	0	0	0	0
8:00 to 9:00	461	32	8	501	80	10	0	90	0	0	0	0	111	7	1	119	89	3	3	95	0	0	0	0		
AM Totals		1,190	89	12	1,291	227	19	0	246	0	0	0	0	331	32	2	365	158	11	3	172	0	0	0	0	
15:00 to 16:00		611	21	10	642	120	21	0	141	0	0	0	0	112	2	0	114	68	4	0	72	0	0	0	0	
15:15 to 16:15		654	22	11	687	136	18	0	154	0	0	0	0	118	2	0	120	68	4	0	72	0	0	0	0	
15:30 to 16:30		651	25	18	694	134	17	0	151	0	0	0	0	113	4	0	117	67	3	1	71	0	0	0	0	
15:45 to 16:45		595	24	17	636	147	16	0	163	0	0	0	0	112	5	0	117	59	1	1	61	0	0	0	0	
16:00 to 17:00		620	21	14	655	142	10	0	152	0	0	0	0	115	5	0	120	54	0	2	56	0	0	0	0	
16:15 to 17:15		607	20	14	641	149	10	0	159	0	0	0	0	101	6	0	107	44	1	2	47	0	0	0	0	
16:30 to 17:30		617	20	7	644	144	6	0	150	0	0	0	0	98	4	0	102	44	1	1	46	0	0	0	0	
16:45 to 17:45		638	22	3	663	135	4	0	139	0	0	0	0	91	4	0	95	45	2	1	48	0	0	0	0	
17:00 to 18:00		612	25	1	638	142	5	0	147	0	0	0	0	84	4	0	88	38	2	0	40	0	0	0	0	
PM Totals		1,843	67	25	1,935	404	36	0	440	0	0	0	0	311	11	0	322	160	6	2	168	0	0	0	0	

Job No. : N6161  
Client : Positive Traffic Pty Ltd  
Suburb : Picton  
Location : 1. Old Hume Hwy / Bridge St

Day/Date : Wed, 3rd Feb 2021  
Weather : Fine  
Description : Classified Intersection Count  
: Peak Hour Summary



Approach		Old Hume Hwy					Old Hume Hwy				Bridge St				Grand Total
Time Period		Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
AM 7:45 to 8:45		557	37	5	599		523	37	3	563	198	11	1	210	
PM 15:15 to 16:15		635	28	8	671		790	40	11	841	186	6	0	192	1,704

Approach		Old Hume Hwy					Old Hume Hwy				Bridge St				Grand Total
Time Period		Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
6:00 to 7:00		393	32	6	431		387	27	1	415	141	17	0	158	
6:15 to 7:15		422	32	10	464		429	39	1	469	139	18	1	158	1,091
6:30 to 7:30		448	30	14	492		452	41	2	495	143	16	1	160	1,147
6:45 to 7:45		472	21	14	507		511	35	4	550	135	17	1	153	1,210
7:00 to 8:00		498	25	12	535		489	39	3	531	148	16	1	165	1,231
7:15 to 8:15		507	28	8	543		502	31	3	536	152	14	1	167	1,246
7:30 to 8:30		548	31	4	583		517	33	5	555	165	10	1	176	1,314
7:45 to 8:45		557	37	5	599		523	37	3	563	198	11	1	210	1,372
8:00 to 9:00		509	30	5	544		541	42	8	591	200	10	4	214	1,349
AM Totals		1,400	87	23	1,510		1,417	108	12	1,537	489	43	5	537	3,584
15:00 to 16:00		614	23	9	646		731	42	10	783	180	6	0	186	1,615
15:15 to 16:15		635	28	8	671		790	40	11	841	186	6	0	192	1,704
15:30 to 16:30		573	24	6	603		785	42	18	845	180	7	1	188	1,636
15:45 to 16:45		578	22	5	605		742	40	17	799	171	6	1	178	1,582
16:00 to 17:00		584	13	2	599		762	31	14	807	169	5	2	176	1,582
16:15 to 17:15		577	9	2	588		756	30	14	800	145	7	2	154	1,542
16:30 to 17:30		549	9	1	559		761	26	7	794	142	5	1	148	1,501
16:45 to 17:45		532	11	0	543		773	26	3	802	136	6	1	143	1,488
17:00 to 18:00		500	14	0	514		754	30	1	785	122	6	0	128	1,427
PM Totals		1,698	50	11	1,759		2,247	103	25	2,375	471	17	2	490	4,624

Job No. : N6161  
Client : Positive Traffic Pty Ltd  
Suburb : Picton  
Location : 1. Old Hume Hwy / Bridge St

Day/Date : Wed, 3rd Feb 2021  
Weather : Fine  
Description : Classified Intersection Count  
: Intersection Diagram

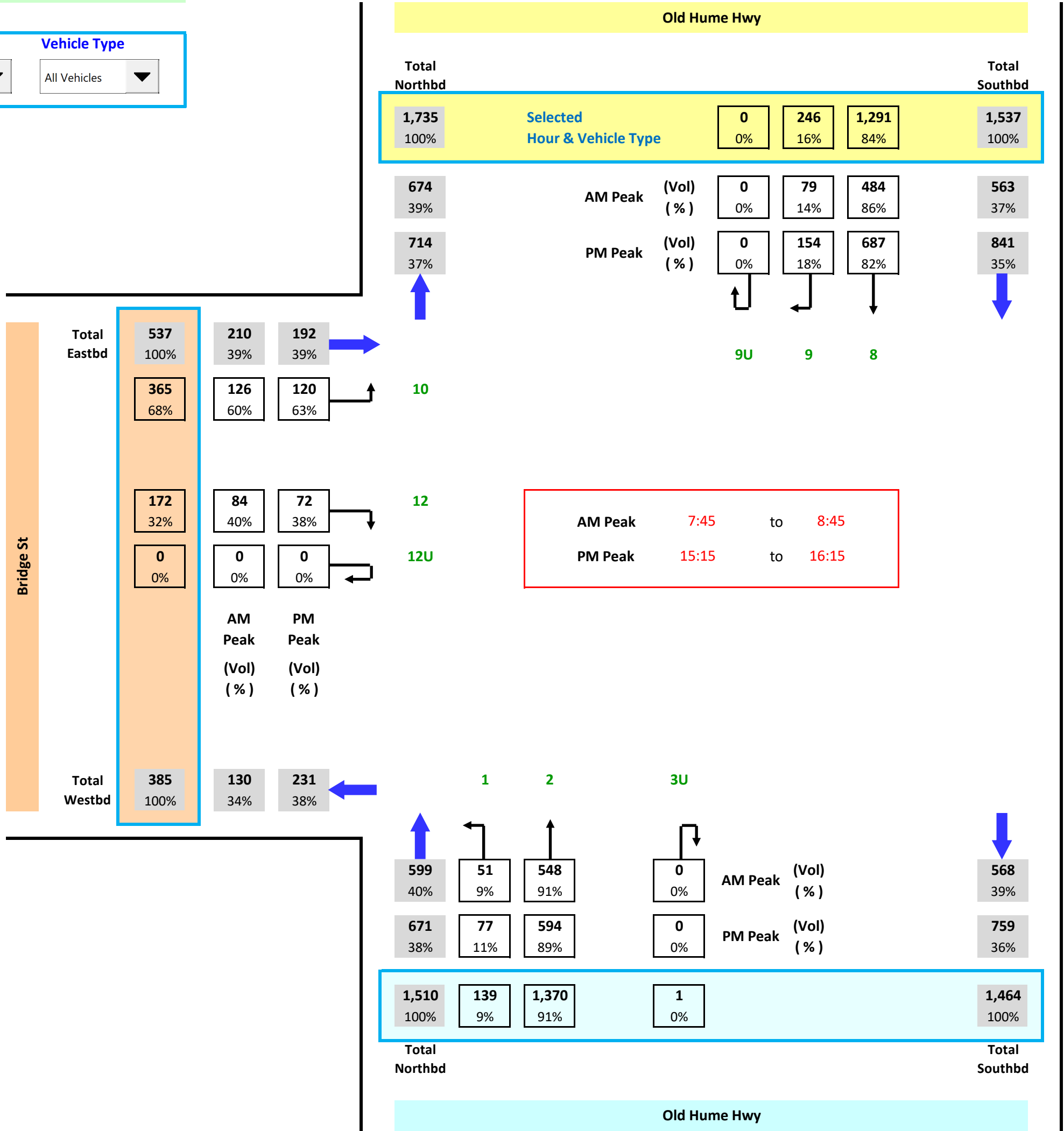


Hour Starting

Vehicle Type

AM Totals

All Vehicles



## 8. Appendix B – SIDRA Outputs

# MOVEMENT SUMMARY

▼ Site: 101 [Bridge\_Old Hume\_PM\_Fut (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV ] veh/h	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] m				
South: Old Hume Hwy														
1	L2	82	1	86	1.2	0.374	5.7	LOS A	0.0	0.0	0.00	0.07	0.00	57.5
2	T1	588	27	619	4.6	0.374	0.1	LOS A	0.0	0.0	0.00	0.07	0.00	59.1
Approach		670	28	705	4.2	0.374	0.8	NA	0.0	0.0	0.00	0.07	0.00	58.9
North: Old Hume Hwy														
8	T1	676	22	712	3.3	0.375	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
9	R2	161	18	169	11.2	0.237	10.2	LOS A	1.0	7.7	0.65	0.86	0.68	49.6
Approach		837	40	881	4.8	0.375	2.1	NA	1.0	7.7	0.12	0.17	0.13	57.5
West: Bridge St														
10	L2	127	2	134	1.6	0.162	8.7	LOS A	0.6	4.4	0.56	0.80	0.56	51.2
12	R2	79	4	83	5.1	0.205	14.2	LOS A	0.7	5.0	0.81	0.94	0.86	47.0
Approach		206	6	217	2.9	0.205	10.8	LOS A	0.7	5.0	0.66	0.85	0.67	49.5
All Vehicles		1713	74	1803	4.3	0.375	2.6	NA	1.0	7.7	0.14	0.21	0.14	56.9

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

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

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

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

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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Project: Z:\2021 Projects\PT21001 - 120-140 Bridge Street, Picton\SIDRA\PT21001.sip9



# INTERSECTION SUMMARY

▼ Site: 101 [Bridge\_Old Hume\_AM\_Ex (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Intersection Performance - Hourly Values		
Performance Measure	Vehicles	Persons
Travel Speed (Average)	57.3 km/h	57.3 km/h
Travel Distance (Total)	1456.0 veh-km/h	1747.2 pers-km/h
Travel Time (Total)	25.4 veh-h/h	30.5 pers-h/h
Desired Speed (Program)	60.0 km/h	
Speed Efficiency	0.96	
Travel Time Index	9.50	
Congestion Coefficient	1.05	
Demand Flows (Total)	1437 veh/h	1724 pers/h
Percent Heavy Vehicles (Demand)	6.4 %	
Degree of Saturation	0.337	
Practical Spare Capacity	190.6 %	
Effective Intersection Capacity	4261 veh/h	
Control Delay (Total)	0.89 veh-h/h	1.07 pers-h/h
Control Delay (Average)	2.2 sec	2.2 sec
Control Delay (Worst Lane)	10.7 sec	
Control Delay (Worst Movement)	10.7 sec	10.7 sec
Geometric Delay (Average)	1.4 sec	
Stop-Line Delay (Average)	0.9 sec	
Idling Time (Average)	0.3 sec	
Intersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	0.6 veh	
95% Back of Queue - Distance (Worst Lane)	4.3 m	
Ave. Queue Storage Ratio (Worst Lane)	0.00	
Total Effective Stops	275 veh/h	331 pers/h
Effective Stop Rate	0.19	0.19
Proportion Queued	0.13	0.13
Performance Index	27.9	27.9
Cost (Total)	1107.49 \$/h	1107.49 \$/h
Fuel Consumption (Total)	118.2 L/h	
Carbon Dioxide (Total)	282.8 kg/h	
Hydrocarbons (Total)	0.021 kg/h	
Carbon Monoxide (Total)	0.315 kg/h	
NOx (Total)	0.620 kg/h	

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

NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Site Model Variability Index (Iterations 3 to N): 3.5 %

Number of Iterations: 6 (Maximum: 10)

Largest change in Lane Degrees of Saturation for the last three Flow-Capacity Iterations: 3.6% 1.7% 0.9%

Intersection Performance - Annual Values		
Performance Measure	Vehicles	Persons
Demand Flows (Total)	689,684 veh/y	827,621 pers/y
Delay	429 veh-h/y	514 pers-h/y
Effective Stops	132,209 veh/y	158,651 pers/y
Travel Distance	698,884 veh-km/y	838,661 pers-km/y
Travel Time	12,196 veh-h/y	14,635 pers-h/y
Cost	531,596 \$/y	531,596 \$/y
Fuel Consumption	56,742 L/y	
Carbon Dioxide	135,730 kg/y	
Hydrocarbons	10 kg/y	
Carbon Monoxide	151 kg/y	
NOx	297 kg/y	

# MOVEMENT SUMMARY

▼ Site: 101 [Bridge\_Old Hume\_AM\_Ex (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV ] veh/h	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] m				
South: Old Hume Hwy														
1	L2	50	8	53	16.0	0.337	5.8	LOS A	0.0	0.0	0.00	0.05	0.00	57.0
2	T1	546	31	575	5.7	0.337	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	59.4
Approach		596	39	627	6.5	0.337	0.6	NA	0.0	0.0	0.00	0.05	0.00	59.2
North: Old Hume Hwy														
8	T1	481	29	506	6.0	0.272	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
9	R2	79	8	83	10.1	0.103	9.0	LOS A	0.4	3.1	0.59	0.78	0.59	50.5
Approach		560	37	589	6.6	0.272	1.3	NA	0.4	3.1	0.08	0.11	0.08	58.3
West: Bridge St														
10	L2	125	5	132	4.0	0.153	8.4	LOS A	0.6	4.3	0.55	0.77	0.55	51.3
12	R2	84	6	88	7.1	0.150	10.7	LOS A	0.5	3.7	0.70	0.88	0.70	49.1
Approach		209	11	220	5.3	0.153	9.3	LOS A	0.6	4.3	0.61	0.82	0.61	50.4
All Vehicles		1365	87	1437	6.4	0.337	2.2	NA	0.6	4.3	0.13	0.19	0.13	57.3

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

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

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

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

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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Project: Z:\2021 Projects\PT21001 - 120-140 Bridge Street, Picton\SIDRA\PT21001.sip9

# INTERSECTION SUMMARY

▼ Site: 101 [Bridge\_Old Hume\_AM\_Fut (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Intersection Performance - Hourly Values		
Performance Measure	Vehicles	Persons
Travel Speed (Average)	57.2 km/h	57.2 km/h
Travel Distance (Total)	1481.6 veh-km/h	1777.9 pers-km/h
Travel Time (Total)	25.9 veh-h/h	31.1 pers-h/h
Desired Speed (Program)	60.0 km/h	
Speed Efficiency	0.95	
Travel Time Index	9.48	
Congestion Coefficient	1.05	
Demand Flows (Total)	1462 veh/h	1755 pers/h
Percent Heavy Vehicles (Demand)	6.3 %	
Degree of Saturation	0.341	
Practical Spare Capacity	187.7 %	
Effective Intersection Capacity	4293 veh/h	
Control Delay (Total)	0.96 veh-h/h	1.15 pers-h/h
Control Delay (Average)	2.4 sec	2.4 sec
Control Delay (Worst Lane)	10.8 sec	
Control Delay (Worst Movement)	10.8 sec	10.8 sec
Geometric Delay (Average)	1.5 sec	
Stop-Line Delay (Average)	0.9 sec	
Idling Time (Average)	0.3 sec	
Intersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	0.6 veh	
95% Back of Queue - Distance (Worst Lane)	4.5 m	
Ave. Queue Storage Ratio (Worst Lane)	0.00	
Total Effective Stops	296 veh/h	355 pers/h
Effective Stop Rate	0.20	0.20
Proportion Queued	0.13	0.13
Performance Index	28.6	28.6
Cost (Total)	1128.94 \$/h	1128.94 \$/h
Fuel Consumption (Total)	120.3 L/h	
Carbon Dioxide (Total)	287.7 kg/h	
Hydrocarbons (Total)	0.021 kg/h	
Carbon Monoxide (Total)	0.321 kg/h	
NOx (Total)	0.621 kg/h	

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

NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Site Model Variability Index (Iterations 3 to N): 3.8 %

Number of Iterations: 6 (Maximum: 10)

Largest change in Lane Degrees of Saturation for the last three Flow-Capacity Iterations: 3.9% 1.9% 0.9%

Intersection Performance - Annual Values		
Performance Measure	Vehicles	Persons
Demand Flows (Total)	701,811 veh/y	842,173 pers/y
Delay	459 veh-h/y	550 pers-h/y
Effective Stops	141,975 veh/y	170,370 pers/y
Travel Distance	711,177 veh-km/y	853,413 pers-km/y
Travel Time	12,438 veh-h/y	14,925 pers-h/y
Cost	541,890 \$/y	541,890 \$/y
Fuel Consumption	57,755 L/y	
Carbon Dioxide	138,108 kg/y	
Hydrocarbons	10 kg/y	
Carbon Monoxide	154 kg/y	
NOx	298 kg/y	

# MOVEMENT SUMMARY

▼ Site: 101 [Bridge\_Old Hume\_AM\_Fut (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV ] veh/h	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] m				
South: Old Hume Hwy														
1	L2	56	8	59	14.3	0.341	5.8	LOS A	0.0	0.0	0.00	0.05	0.00	57.1
2	T1	546	31	575	5.7	0.341	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	59.3
Approach		602	39	634	6.5	0.341	0.6	NA	0.0	0.0	0.00	0.05	0.00	59.1
North: Old Hume Hwy														
8	T1	481	29	506	6.0	0.272	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
9	R2	85	8	89	9.4	0.111	9.1	LOS A	0.4	3.4	0.59	0.79	0.59	50.5
Approach		566	37	596	6.5	0.272	1.4	NA	0.4	3.4	0.09	0.12	0.09	58.2
West: Bridge St														
10	L2	131	5	138	3.8	0.160	8.4	LOS A	0.6	4.5	0.55	0.78	0.55	51.3
12	R2	90	6	95	6.7	0.161	10.8	LOS A	0.5	4.0	0.70	0.88	0.70	49.1
Approach		221	11	233	5.0	0.161	9.4	LOS A	0.6	4.5	0.61	0.82	0.61	50.4
All Vehicles		1389	87	1462	6.3	0.341	2.4	NA	0.6	4.5	0.13	0.20	0.13	57.2

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

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

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

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

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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Project: Z:\2021 Projects\PT21001 - 120-140 Bridge Street, Picton\SIDRA\PT21001.sip9

# INTERSECTION SUMMARY

▼ Site: 101 [Bridge\_Old Hume\_PM\_Ex (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Intersection Performance - Hourly Values		
Performance Measure	Vehicles	Persons
Travel Speed (Average)	57.1 km/h	57.1 km/h
Travel Distance (Total)	1797.4 veh-km/h	2156.9 pers-km/h
Travel Time (Total)	31.5 veh-h/h	37.8 pers-h/h
Desired Speed (Program)	60.0 km/h	
Speed Efficiency	0.95	
Travel Time Index	9.46	
Congestion Coefficient	1.05	
Demand Flows (Total)	1774 veh/h	2128 pers/h
Percent Heavy Vehicles (Demand)	4.4 %	
Degree of Saturation	0.375	
Practical Spare Capacity	161.3 %	
Effective Intersection Capacity	4730 veh/h	
Control Delay (Total)	1.22 veh-h/h	1.47 pers-h/h
Control Delay (Average)	2.5 sec	2.5 sec
Control Delay (Worst Lane)	13.9 sec	
Control Delay (Worst Movement)	13.9 sec	13.9 sec
Geometric Delay (Average)	1.4 sec	
Stop-Line Delay (Average)	1.1 sec	
Idling Time (Average)	0.5 sec	
Intersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	0.9 veh	
95% Back of Queue - Distance (Worst Lane)	7.2 m	
Ave. Queue Storage Ratio (Worst Lane)	0.00	
Total Effective Stops	356 veh/h	427 pers/h
Effective Stop Rate	0.20	0.20
Proportion Queued	0.13	0.13
Performance Index	34.9	34.9
Cost (Total)	1350.28 \$/h	1350.28 \$/h
Fuel Consumption (Total)	136.4 L/h	
Carbon Dioxide (Total)	325.0 kg/h	
Hydrocarbons (Total)	0.024 kg/h	
Carbon Monoxide (Total)	0.374 kg/h	
NOx (Total)	0.559 kg/h	

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

NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Site Model Variability Index (Iterations 3 to N): 4.5 %

Number of Iterations: 7 (Maximum: 10)

Largest change in Lane Degrees of Saturation for the last three Flow-Capacity Iterations: 2.6% 1.3% 0.6%

Intersection Performance - Annual Values		
Performance Measure	Vehicles	Persons
Demand Flows (Total)	851,369 veh/y	1,021,642 pers/y
Delay	587 veh-h/y	704 pers-h/y
Effective Stops	170,969 veh/y	205,163 pers/y
Travel Distance	862,755 veh-km/y	1,035,306 pers-km/y
Travel Time	15,120 veh-h/y	18,144 pers-h/y
Cost	648,136 \$/y	648,136 \$/y
Fuel Consumption	65,492 L/y	
Carbon Dioxide	155,980 kg/y	
Hydrocarbons	12 kg/y	
Carbon Monoxide	179 kg/y	
NOx	268 kg/y	

# MOVEMENT SUMMARY

▼ Site: 101 [Bridge\_Old Hume\_PM\_Ex (Site Folder: General)]

New Site  
Site Category: (None)  
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV ] veh/h	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] m				
South: Old Hume Hwy														
1	L2	75	1	79	1.3	0.370	5.7	LOS A	0.0	0.0	0.00	0.07	0.00	57.5
2	T1	588	27	619	4.6	0.370	0.1	LOS A	0.0	0.0	0.00	0.07	0.00	59.1
Approach		663	28	698	4.2	0.370	0.8	NA	0.0	0.0	0.00	0.07	0.00	58.9
North: Old Hume Hwy														
8	T1	676	22	712	3.3	0.375	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
9	R2	154	18	162	11.7	0.225	10.1	LOS A	0.9	7.2	0.64	0.86	0.66	49.7
Approach		830	40	874	4.8	0.375	2.0	NA	0.9	7.2	0.12	0.16	0.12	57.6
West: Bridge St														
10	L2	120	2	126	1.7	0.153	8.6	LOS A	0.6	4.1	0.56	0.79	0.56	51.2
12	R2	72	4	76	5.6	0.186	13.9	LOS A	0.6	4.4	0.80	0.93	0.83	47.1
Approach		192	6	202	3.1	0.186	10.6	LOS A	0.6	4.4	0.65	0.84	0.66	49.6
All Vehicles		1685	74	1774	4.4	0.375	2.5	NA	0.9	7.2	0.13	0.20	0.14	57.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).  
Vehicle movement LOS values are based on average delay per movement.  
Minor Road Approach LOS values are based on average delay for all vehicle movements.  
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
Delay Model: SIDRA Standard (Geometric Delay is included).  
Queue Model: SIDRA Standard.  
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# INTERSECTION SUMMARY

▼ Site: 101 [Bridge\_Old Hume\_PM\_Fut (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Intersection Performance - Hourly Values		
Performance Measure	Vehicles	Persons
Travel Speed (Average)	56.9 km/h	56.9 km/h
Travel Distance (Total)	1827.3 veh-km/h	2192.7 pers-km/h
Travel Time (Total)	32.1 veh-h/h	38.5 pers-h/h
Desired Speed (Program)	60.0 km/h	
Speed Efficiency	0.95	
Travel Time Index	9.43	
Congestion Coefficient	1.05	
Demand Flows (Total)	1803 veh/h	2164 pers/h
Percent Heavy Vehicles (Demand)	4.3 %	
Degree of Saturation	0.375	
Practical Spare Capacity	161.3 %	
Effective Intersection Capacity	4807 veh/h	
Control Delay (Total)	1.31 veh-h/h	1.58 pers-h/h
Control Delay (Average)	2.6 sec	2.6 sec
Control Delay (Worst Lane)	14.2 sec	
Control Delay (Worst Movement)	14.2 sec	14.2 sec
Geometric Delay (Average)	1.5 sec	
Stop-Line Delay (Average)	1.2 sec	
Idling Time (Average)	0.5 sec	
Intersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	1.0 veh	
95% Back of Queue - Distance (Worst Lane)	7.7 m	
Ave. Queue Storage Ratio (Worst Lane)	0.00	
Total Effective Stops	382 veh/h	458 pers/h
Effective Stop Rate	0.21	0.21
Proportion Queued	0.14	0.14
Performance Index	35.7	35.7
Cost (Total)	1376.03 \$/h	1376.03 \$/h
Fuel Consumption (Total)	138.9 L/h	
Carbon Dioxide (Total)	330.8 kg/h	
Hydrocarbons (Total)	0.025 kg/h	
Carbon Monoxide (Total)	0.380 kg/h	
NOx (Total)	0.561 kg/h	

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

NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Site Model Variability Index (Iterations 3 to N): 4.8 %

Number of Iterations: 7 (Maximum: 10)

Largest change in Lane Degrees of Saturation for the last three Flow-Capacity Iterations: 2.8% 1.3% 0.7%

Intersection Performance - Annual Values		
Performance Measure	Vehicles	Persons
Demand Flows (Total)	865,516 veh/y	1,038,619 pers/y
Delay	631 veh-h/y	757 pers-h/y
Effective Stops	183,380 veh/y	220,056 pers/y
Travel Distance	877,097 veh-km/y	1,052,516 pers-km/y
Travel Time	15,412 veh-h/y	18,494 pers-h/y
Cost	660,492 \$/y	660,492 \$/y
Fuel Consumption	66,692 L/y	
Carbon Dioxide	158,797 kg/y	
Hydrocarbons	12 kg/y	
Carbon Monoxide	183 kg/y	
NOx	269 kg/y	

## 9. Appendix C – Plans of Potential Development Arrangement

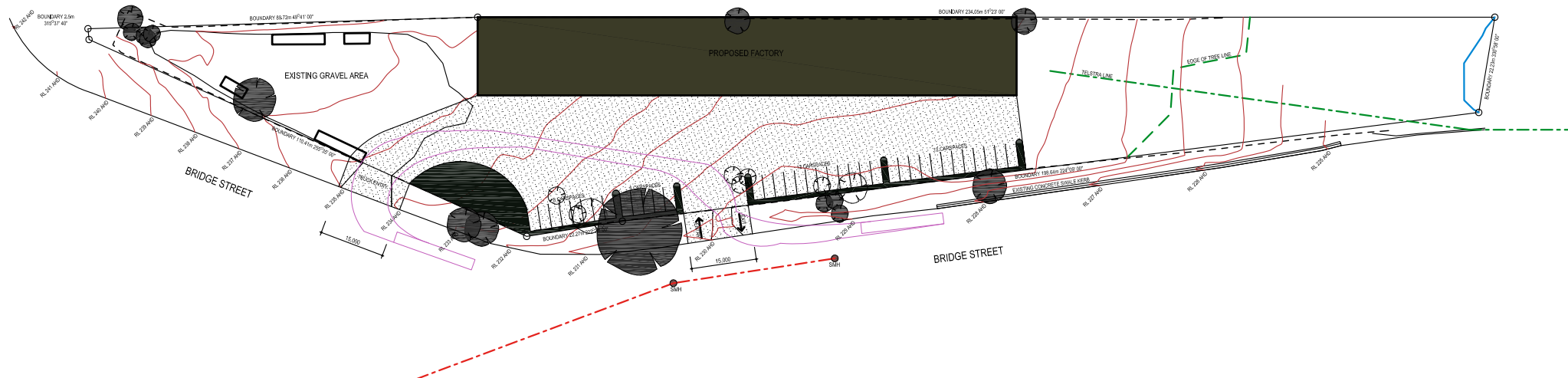






LOT 11  
DP 1012641  
AREA : 1.052 HA

GREAT SOUTHERN RAILWAY



## 10. Appendix D – 19.0m Semi Trailer Turning Path Assessment



LOT 11  
DP 1012641  
AREA : 1.052 HA

GREAT SOUTHERN RAILWAY

PROPOSED FACTORY

EXISTING GRAVEL AREA

BRIDGE STREET

BRIDGE STREET

