TRAFFIC PLANNING CONSULTANTS LTD

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PROPOSED PLAN PRIVATE CHANGE – TRANSPORT ASSESSMENT
MOONLIGHT HEIGHTS, AWAKINO ROAD, DARGAVILLE

1.0 INTRODUCTION

The following is a transport assessment for the proposed Private Plan Change on Awakino Road in Dargaville. The subject site is currently zoned Rural and is proposed to be changed to Residential to enable medium density living. Approximately 392,610 m^2 of land is seeking a plan change to facilitate the development of approximately 348 dwellings on the east side of Awakino Road, near its northern end. **Figure 1** displays the subject site location.

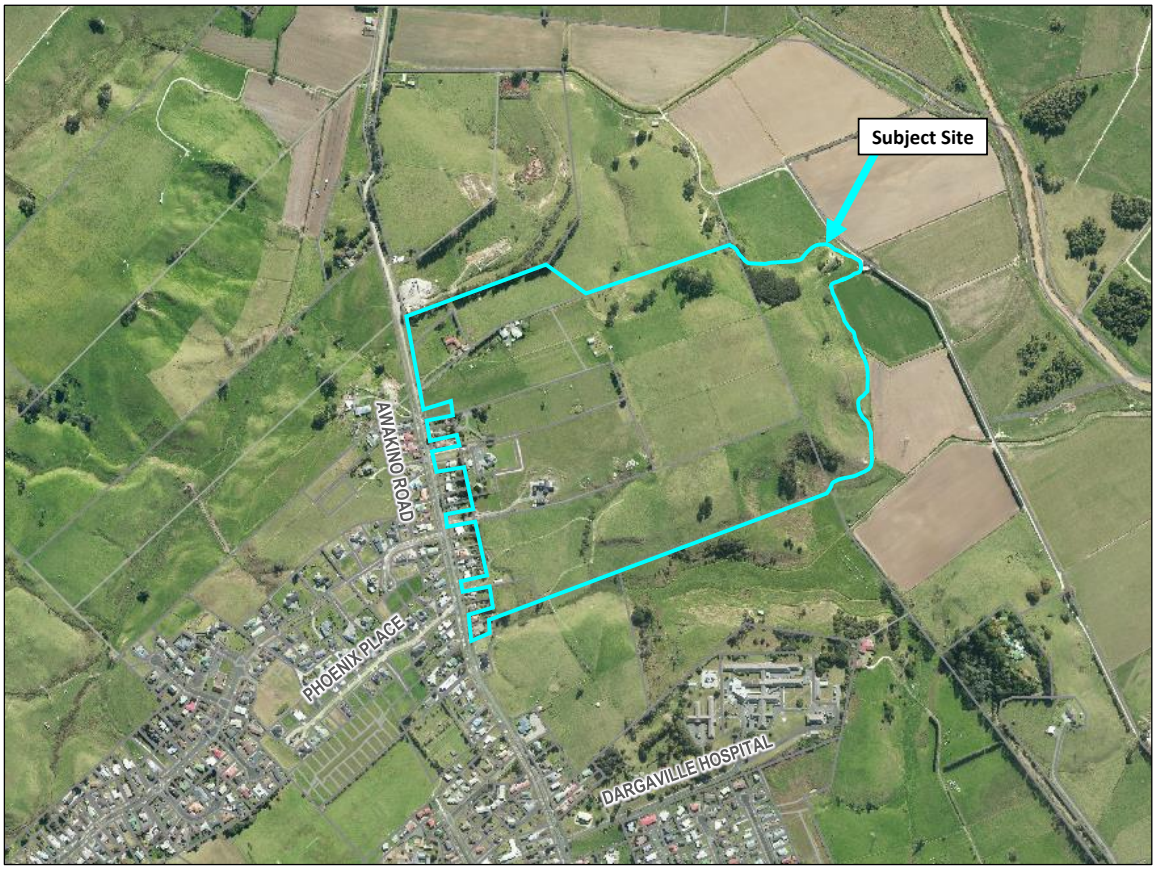

Figure 1: Site Location
Image Source: Kaipara District GIS

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2.0 EXISTING TRANSPORT ENVIRONMENT

2.1 Road Network

Awakino Road is a two-lane road which runs in a north-south directions from Victoria Street in the south and ends and terminates in the north, some 1.4 kilometres north of Paritai Place. South of the Dargaville Hospital access, Awakino Road is classified as a Secondary Collector Road and north of the Dargaville Hospital access, is an access road. Near the subject site, Awakino Road has a carriageway width of some 7.0 metres, providing one traffic lane in each direction and on-street parking on both sides. It has a speed limit of 50 km/h. A footpath is provided on the western side of the street, terminating 215 metres north of Paritai Place.

2.2 Traffic Volumes

Turning movement count data was collected in April 2022 for the intersections of:

- Awakino Road and State Highway 12;
- Awakino Road and Ranfurly Street; and
- Awakino Road and Dargaville Hospital.

Figure 2 displays the AM and PM peak hour traffic volumes along the studied corridor.

The total two-way peak hour traffic volumes on Awakino Road near the site range from approximately 238 vehicles in the AM peak hour to 191 vehicles during the PM peak hour, mid-way along Awakino Road near Ranfurly Street volumes range from approximately 321 vehicles in the AM peak hour to 304 vehicles during the PM peak hour. Near State Highway 12 volumes along Awakino Road range from approximately 282 vehicles in the AM peak hour to 288 vehicles during the PM peak hour.

Attachment 1 contains the detailed traffic counts for study area intersections.

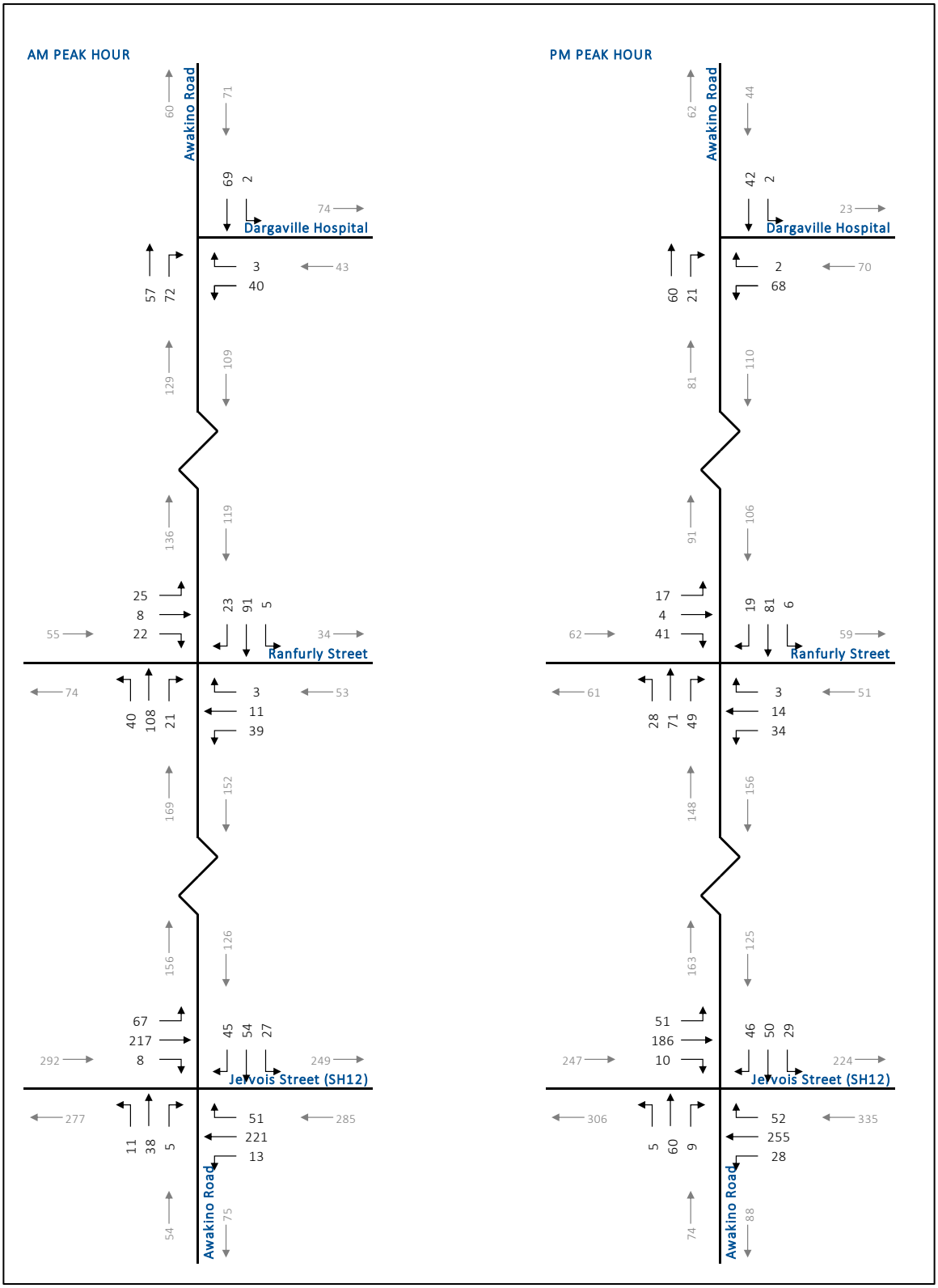

Figure 2: Awakino Road Existing Traffic Volumes

Image source: Traffic Planning Consultants Ltd.

2.3 Crash History

A review of crash data along Awakino Road, for the five-year+ period (January 2017 to present[1]) reported 17 crashes. **Table 1** summarised the reported crashes along the corridor.

Table 1: Awakino Road Crash History

Location	Reported Crashes			Key Factors
	Total	Injury	Non-Injury	
Awakino Rd and Dargaville Hospital Access	1	-	1	1 – driver hit rear end of vehicle in front
Awakino Rd and Ranfurly Street	1	-	1	1 – southbound driver turned into path of oncoming northbound vehicle
Awakino Rd and Tirarau Street	1	-	1	1 – driver under influence of alcohol and speeding, missed the intersection/end of road and hit house
Awakino Rd and Gordon Street	1	-	1	1 – driver turning from Gordon Street, failed to give-way to oncoming southbound traffic
Intersection: Awakino Rd and Jervois St (SH12)	13	4 minor	9	10 – driver failed to stop at stop sign 1 – driver misjudged other driver's action 1 – driver suspected to be under influence of alcohol and speed, hit rear end of vehicle in front (minor) 1 -driver lost control and hit fence
TOTAL	17	4 minor	3	

It is noted that 10 crashes occurred at the intersection of Awakino Road and Jervois Street (SH12), where drivers failed to stop at the stop sign, resulting in a collision with oncoming vehicles. A review of the available sightlines in this location indicated that visibility extends more than 150 metres in both directions (**Figure 3**). As such the crashes do not appear to be a result of the road environment, but rather human error and driver's making a mistake, which is expected to occur to a degree within any road environment. However, as no crashes resulted in serious injury or death, the crashes relatively minor in nature and do not represent a significant concern.

Elsewhere, there is no significant commonality within the studied crash history which would indicate an existing road safety issue along Awakino Road. While crashes have occurred, they resulted in either no injury, or minor injuries, which would be expected for collector roads within any developed area.

[1] 2022 data subject to reporting delays

Figure 3: Awakino Road Southbound Approach onto Jervois Street (SH12)
Image Source: Traffic Planning Consultants Ltd.

3.0 THE PROPOSAL

The proposal consists of rezoning approximately 392,610 m^2 of Rural zoning to Residential zoning. Based on the site area, it is estimated that approximately 348 lots will be created as a result of the plan change. The area to be rezoned is shown in **Figure 4**.

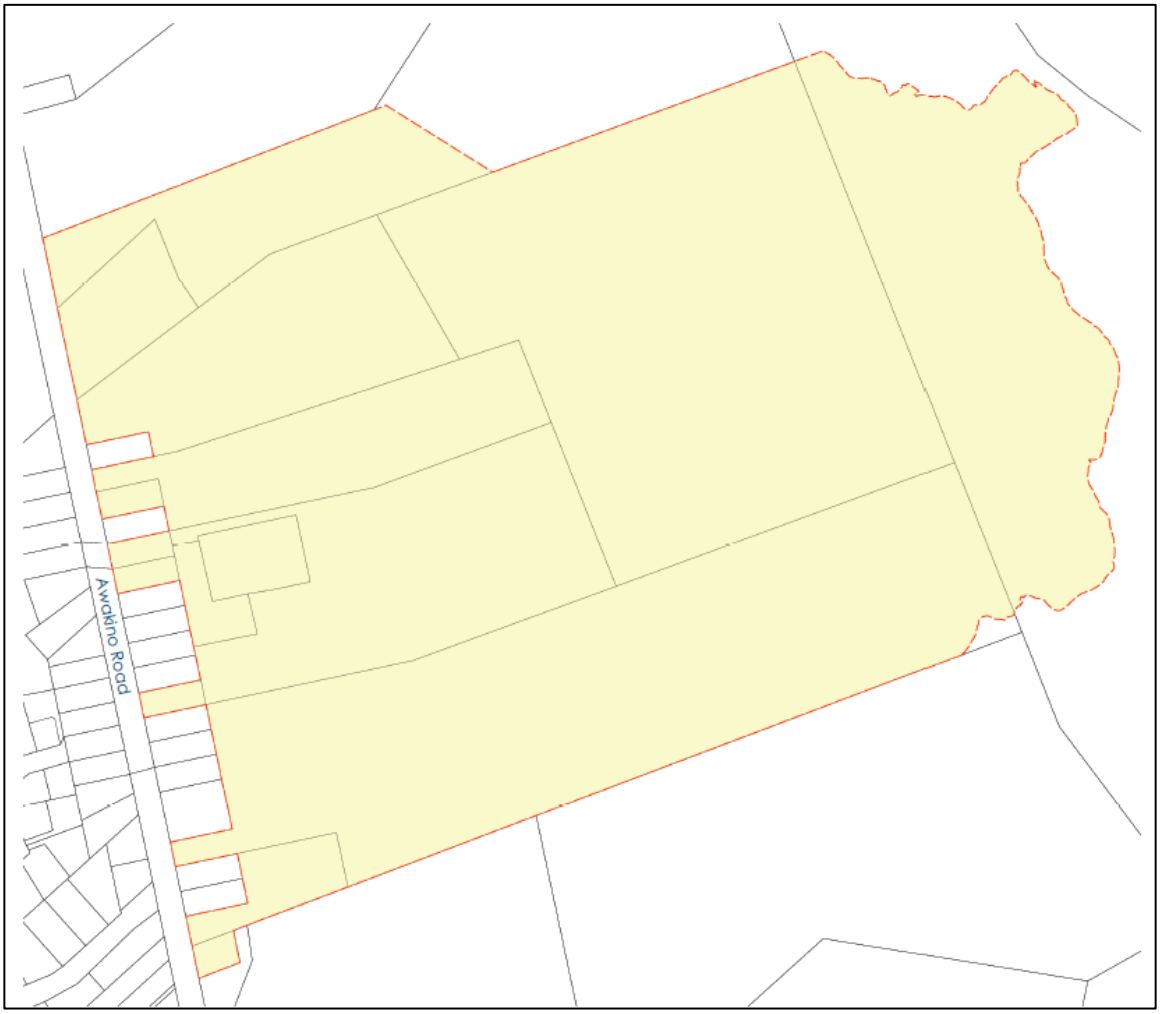

Figure 4: Proposed Plan Change Area
Image Source: Barker and Associates

3.1 Trip Generation

Residential trip generation data taken from the NZ Transport Agency publication "Trips and Parking Related to Land-Use", provides trip generation estimates for outer suburban dwellings. The publication indicates an 85th percentile rate of 0.9 peak hour trips and 8.2 daily trips. The 85th percentile rates have been utilised due to no local public transportation infrastructure and higher reliance on personal vehicles for travel within this area. Further, utilising the higher rate, represents a more conservative approach within the following assessment, as it is not likely that each future dwelling in this area will have the 85th percentile trip generation rate in practice.

Overall, the site is estimated to generate 2,853 daily trips and 313 peak hour trips. As residential trips are typically tidal, with vehicle leaving in the AM and returning in the PM, an 80-20 and 20-80 inbound-outbound split has been estimated for the AM and PM peak hours, respectively.

3.2 Site Access to Public Road Network

The subject site is provided with multiple parcels of land onto Awakino Road which could be utilised to construct new public roads to service the resultant subdivision, post Plan Change. Along this section of Awakino Road, the road is relatively straight and flat allowing for good sightlines conducive to the creation of a new public road intersection. Preliminary massing for a future subdivision identified an access point along Awakino Road. Indicative sight distances from this location are shown in Figure 5. It is noted that further investigation of new road intersection locations will be carried out as part of any future subdivision applications, following a successful Plan Change.

Figure 5: Potential Road Connection Indicative Sightlines
Image Source: Traffic Planning Consultants Ltd.

4.0 TRAFFIC OPERATIONS

Intersection level of service (LOS) is a recognized method of quantifying the average delay experienced by drivers at intersections. It is based on the delay experienced by individual vehicles executing the various movements. The delay is related to the number of vehicles desiring to make a particular movement, compared to the estimated capacity for that movement. The capacity is based on a number of criteria related to the opposing traffic flows and intersection geometry.

The highest possible rating is LOS A, under which the average total delay is equal or less than 10.0 seconds per vehicle. When the average delay exceeds 50 seconds for unsignalized intersections or when the volume to capacity ratio is greater than 1.0, the movement is classed as LOS F and remedial measures are usually implemented, if they are feasible. LOS E is usually used as a guideline for the determination of road improvement needs on through lanes, while LOS F may be acceptable for right-turn movements at peak times, depending on delays.

The operations of intersections in the study area were evaluated with the existing turning movement volumes using Sidra.

The intersection analysis considered two separate measures of performance:

- The volume to capacity ratio for each intersection.
- The LOS for each turning movement (LOS is based on the average delay per vehicle).

4.1 Existing Operations

Using the above methodology, the existing intersection operations were assessed within Sidra and are summarized in Table 2 indicating the existing levels of service (LOS), volume to capacity ratios (V/C) experienced within the study area, for the AM and PM peak hours. Attachment 2 contains the detailed Sidra reports. Key findings from the analysis of the study area under existing conditions are as follows:

- All intersections are forecast to operate within acceptable levels, with no specific problem movements.

Table 2: Existing Intersection Operations

Intersection	Time	MOE	Approach / Movement												OVERALL
			South			East			North			West			
			LEFT	THROUGH	RIGHT	LEFT	THROUGH	RIGHT	LEFT	THROUGH	RIGHT	LEFT	THROUGH	RIGHT	
Awakino Road and Dargaville Hospital	AM Peak	LOS		A	A	A		A	A	A					A
		Delay (s)		0	5	5		5	5	0					2
		V/C		0.08	0.08	0.03		0.03	0.04	0.04					
		Queue (m)		3	3	1		1	0	0					
	PM Peak	LOS		A	A	A		A	A	A					A
		Delay (s)		0	5	5		6	5	0					2
		V/C		0.05	0.05	0.05		0.05	0.02	0.02					
		Queue (m)		1	1	1		1	0	0					
Awakino Road and Ranfurly Street	AM Peak	LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
		Delay (s)	5	0	5	8	9	9	5	0	5	8	9	9	3
		V/C	0.10	0.10	0.10	0.05	0.05	0.05	0.07	0.07	0.07	0.06	0.06	0.06	
		Queue (m)	1	1	1	1	1	1	1	1	1	1	1	1	
	PM Peak	LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
		Delay (s)	5	0	5	8	9	9	5	0	5	8	9	9	4
		V/C	0.09	0.09	0.09	0.05	0.05	0.05	0.06	0.06	0.06	0.08	0.08	0.08	
		Queue (m)	2	2	2	1	1	1	1	1	1	2	2	2	
Awakino Road and Jervois Street (SH12)	AM Peak	LOS	A	C	C	A	A	A	B	C	C	A	A	A	A
		Delay (s)	9	16	17	5	0	6	10	17	20	5	0	5	5
		V/C	0.13	0.13	0.13	0.14	0.14	0.04	0.32	0.32	0.32	0.16	0.16	0.01	
		Queue (m)	4	4	4	0	0	1	11	11	11	0	0	0	
	PM Peak	LOS	A	C	C	A	A	A	A	C	C	A	A	A	A
		Delay (s)	9	15	18	5	0	5	9	16	19	5	0	6	5
		V/C	0.19	0.19	0.19	0.16	0.16	0.04	0.31	0.31	0.31	0.13	0.13	0.01	
		Queue (m)	5	5	5	0	0	1	10	10	10	0	0	0	

4.2 Development Trip Distribution and Assignment

Given that the surrounding area is largely developed with land-use similar to the proposed plan, the trip distribution was based on the likely origin/destination of trips generated by the development and the existing distribution on the surrounding streets, as determined by the collected intersection data. **Table 3** displays the breakdown of trip distribution used in this study.

Table 3: Estimated Trip Distribution

Origin/Destination	Percentage
Dargaville Hospital	2%
West via Ranfurly Street	20%
East via Ranfurly Street	3%
Other routes East & West between Ranfurly Street and Jervois Street (SH12)	20%
South via Awakino Road	20%
West via Jervois Street (SH12)	20%
East via Jervois Street (SH12)	15%

Figure 6 illustrates the site generated traffic volumes for the AM and PM peak hours.

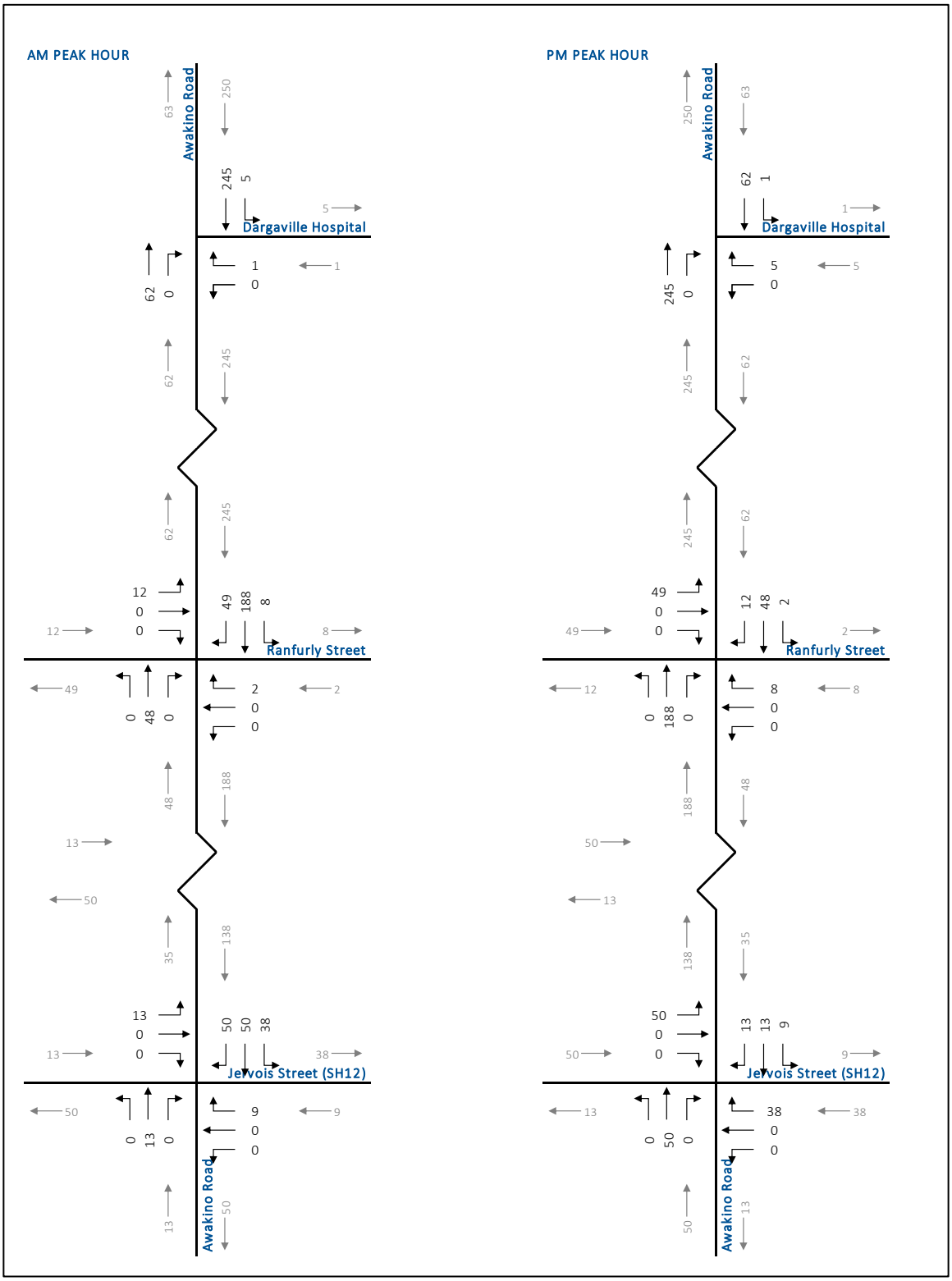

Figure 6: Estimated Site Generated Traffic Volumes
Image source: Traffic Planning Consultants Ltd.

4.3 Future Background Traffic Operations

The assessment of future traffic conditions contained in this section includes estimates of future background and total traffic and analysis for the 2029 horizon (estimated opening day + 5 years). The future traffic volumes in the vicinity of the development will likely consist of increased non-site traffic volumes (background traffic), traffic generated by other developments, and the traffic forecast to be generated by the proposed development.

The non-site traffic increase is the generalized traffic growth in Dargaville. The generalized traffic growth will follow the average increase in population within the area, which is estimated to be 1% per annum, based on population growth forecasts provided by Stats NZ. **Figure 7** displays the 2029 AM and PM peak hour background traffic volumes.

Based on the forecast 2029 background traffic volumes, LOS analyses have been conducted using Sidra to determine the AM and PM peak hour conditions for the intersections within the study area and are summarised in **Table 4**. **Attachment 3** contains the detailed Sidra reports. Key findings from the analysis of the study area under background 2029 conditions are as follows:

- All intersections are forecast to operate within acceptable levels, with no specific problem movements.

Table 4: Background 2029 Intersection Operations

Intersection	Time	MOE	Approach / Movement												OVERALL
			South			East			North			West			
			LEFT	THROUGH	RIGHT	LEFT	THROUGH	RIGHT	LEFT	THROUGH	RIGHT	LEFT	THROUGH	RIGHT	
Awakino Road and Dargaville Hospital	AM Peak	LOS		A	A	A		A	A	A					A
		Delay (s)		0	5	5		5	5	0					2
		V/C		0.08	0.08	0.03		0.03	0.04	0.04					
		Queue (m)		3	3	1		1	0	0					
	PM Peak	LOS		A	A	A		A	A	A					A
		Delay (s)		0	5	5		6	5	0					2
		V/C		0.05	0.05	0.05		0.05	0.02	0.02					
		Queue (m)		1	1	1		1	0	0					
Awakino Road and Ranfurly Street	AM Peak	LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
		Delay (s)	5	0	5	8	9	9	5	0	5	8	9	9	3
		V/C	0.10	0.10	0.10	0.05	0.05	0.05	0.07	0.07	0.07	0.06	0.06	0.06	
		Queue (m)	1	1	1	1	1	1	1	1	1	1	1	1	
	PM Peak	LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
		Delay (s)	5	0	5	8	9	9	5	0	5	8	9	9	4
		V/C	0.09	0.09	0.09	0.05	0.05	0.05	0.06	0.06	0.06	0.08	0.08	0.08	
		Queue (m)	2	2	2	1	1	1	1	1	1	2	2	2	
Awakino Road and Jervois Street (SH12)	AM Peak	LOS	A	C	C	A	A	A	B	C	C	A	A	A	A
		Delay (s)	9	16	17	5	0	6	10	17	20	5	0	5	5
		V/C	0.13	0.13	0.13	0.14	0.14	0.04	0.32	0.32	0.32	0.16	0.16	0.01	
		Queue (m)	4	4	4	0	0	1	11	11	11	0	0	0	
	PM Peak	LOS	A	C	C	A	A	A	A	C	C	A	A	A	A
		Delay (s)	9	15	18	5	0	5	9	16	19	5	0	6	5
		V/C	0.19	0.19	0.19	0.16	0.16	0.04	0.31	0.31	0.31	0.13	0.13	0.01	
		Queue (m)	5	5	5	0	0	1	10	10	10	0	0	0	

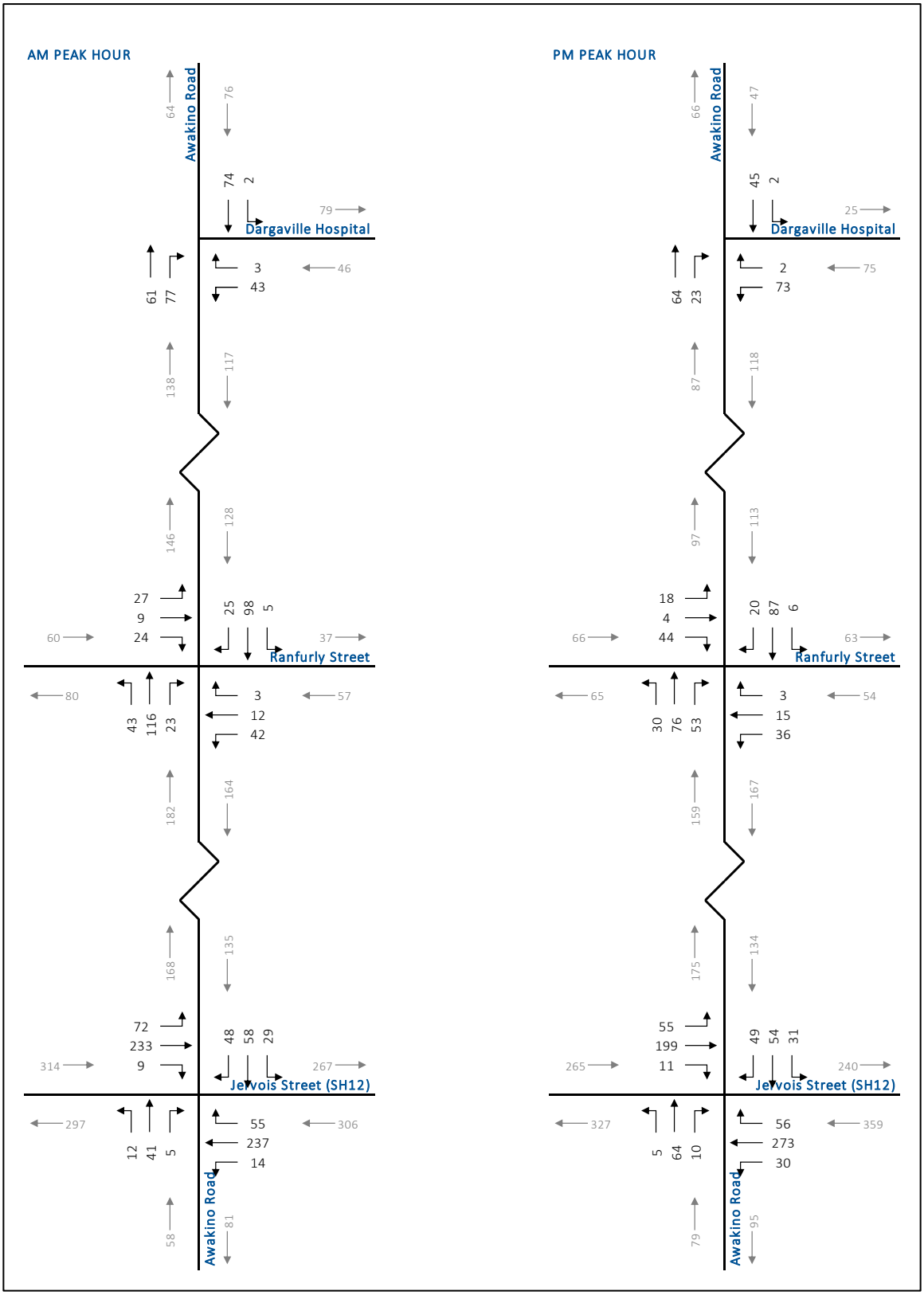

Figure 7: Estimated 2029 Background Traffic Volumes

Image source: Traffic Planning Consultants Ltd.

4.4 Future Total Traffic Operations

Figure 8 displays the total trips expected in 2029, which is the addition of the development traffic (*Figure 6*) to the background traffic (*Figure 7*). Based on the forecast 2029 total traffic volumes, LOS analyses have been conducted using Sidra to determine the AM and PM peak hour conditions for the intersections within the study area and are summarised in Table 5. Attachment 4 contains the detailed Sidra reports. Key findings from the analysis of the study area under total 2029 conditions are as follows:

- At the intersection of Awakino Road and Jervois Street (SH12), the north approach's right turn movement operates at LOS E with average delay of 36 seconds and a v/c ratio of 0.77.
- All other intersections are forecast to operate within acceptable levels, with no specific problem movements.

Table 5: Total 2029 Intersection Operations

Intersection	Time	MOE	Approach / Movement												OVERALL
			South			East			North			West			
			LEFT	THROUGH	RIGHT	LEFT	THROUGH	RIGHT	LEFT	THROUGH	RIGHT	LEFT	THROUGH	RIGHT	
Awakino Road and Dargaville Hospital	AM Peak	LOS		A	A	A		A	A	A					A
		Delay (s)		1	6	6		7	5	0					2
		V/C		0.13	0.13	0.04		0.04	0.18	0.18					
		Queue (m)		4	4	1		1	0	0					
	PM Peak	LOS		A	A	A		A	A	A					A
		Delay (s)		0	5	5		9	5	0					1
		V/C		0.18	0.18	0.06		0.06	0.60	0.60					
		Queue (m)		1	1	2		2	0	0					
Awakino Road and Ranfurly Street	AM Peak	LOS	A	A	A	A	B	B	A	A	A	A	B	B	A
		Delay (s)	5	0	6	9	12	12	5	0	5	8	12	13	3
		V/C	0.13	0.13	0.13	0.08	0.08	0.08	0.22	0.22	0.22	0.11	0.11	0.11	
		Queue (m)	2	2	2	2	2	2	6	6	6	3	3	3	
	PM Peak	LOS	A	A	A	A	B	B	A	A	A	A	B	B	A
		Delay (s)	5	0	5	8	11	12	6	0	6	9	11	12	4
		V/C	0.20	0.20	0.20	0.08	0.08	0.08	0.10	0.10	0.10	0.16	0.16	0.16	
		Queue (m)	3	3	3	2	2	2	2	2	2	4	4	4	
Awakino Road and Jervois Street (SH12)	AM Peak	LOS	A	C	C	A	A	A	C	D	E	A	A	A	B
		Delay (s)	9	18	22	5	0	6	21	31	36	5	0	5	11
		V/C	0.21	0.21	0.21	0.15	0.15	0.05	0.77	0.77	0.77	0.18	0.18	0.01	
		Queue (m)	6	6	6	0	0	2	52	52	52	0	0	0	
	PM Peak	LOS	B	C	C	A	A	A	B	C	D	A	A	A	A
		Delay (s)	12	22	25	5	0	6	13	23	29	5	0	6	8
		V/C	0.42	0.42	0.42	0.17	0.17	0.08	0.53	0.53	0.53	0.17	0.17	0.01	
		Queue (m)	15	15	15	0	0	2	21	21	21	0	0	0	

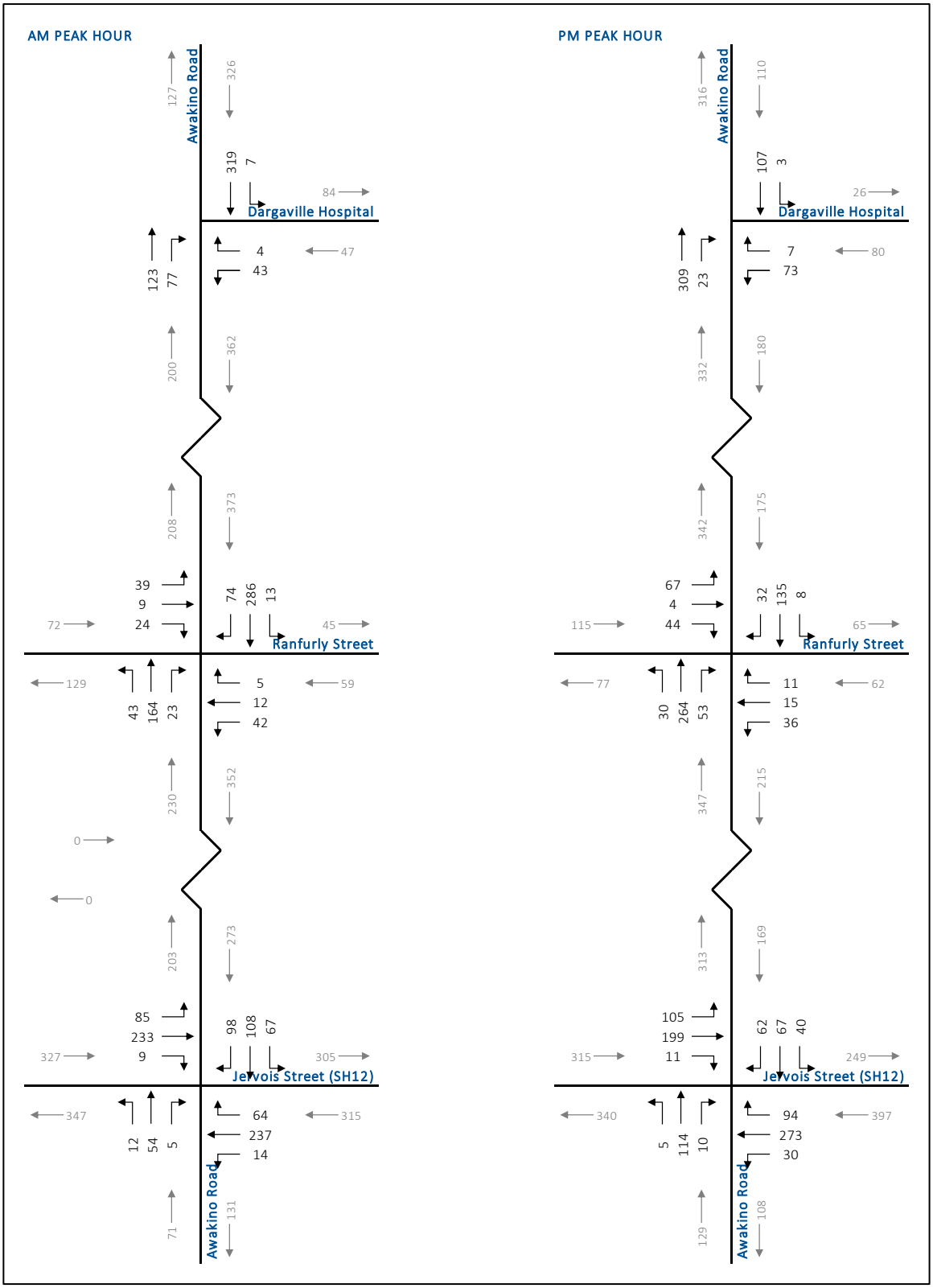

Figure 8: Estimated 2029 Total Traffic Volumes

Image source: Traffic Planning Consultants Ltd.

4.5 Effects of Proposal on Study Area

Reviewing the intersection operation findings between the Background 2029 scenario and the Total 2029 scenario, it can be seen that the proposal has negligible impacts onto the operation of the intersections of Awakino Road and Dargaville Hospital and Awakino Road an Ranfurly Street.

At the intersection of Awakino Road and Jervois Street, average delays on the north approach increase by a noticeable margin, where the three other intersection approaches no not have significant delay increases. The changes to average delays and v/c ratios on the north approach are summarised below:

- AM Peak hour:
  - Left turn delays increase from 11 seconds to 21 seconds.
  - Through movement delays increase from 19 seconds to 31 seconds.
  - Right turn delays increase from 22 seconds to 36 seconds.
  - The approach v/c ratio increase from 0.37 to 0.77.
- PM Peak hour:
  - Left turn delays increase from 10 seconds to 13 seconds.
  - Through movement delays increase from 18 seconds to 23 seconds.
  - Right turn delays increase from 21 seconds to 29 seconds.
  - The approach v/c ratio increase from 0.36 to 0.53.

Due to the increase in average delay on the north approach, specifically during the AM peak hour, remedial measures were investigated in order to lessen the experienced effects of the proposal at this location and to improve the overall operations of the intersection. As the north approach is currently a single lane serving all three turn movements through the intersection, installing an auxiliary left-turn lane with a length of 20 metres was tested as a remedial measure. Table 6 summarises the operations of the intersection with this improvement implemented and compares to the other scenarios for easy reference.

From implementation of the remedial measure, the average delay for left turns on the north approach reduces from 21 seconds to 9 seconds, as drivers will be able to by-pass any queue of drivers looking to turn right onto Jervois Street (SH12) or drive straight through the intersection. This in-turn removes vehicles within the single lane approach queue, thereby reducing delays for right-turning and straight travelling vehicles. With this remedial measure implemented, the LOS for all intersection turning movements is at LOS D (or better) and therefore within acceptable intersection operation parameters.

Table 6: Awakino Road and Jervois Street (SH12) Intersection Operations

Scenario	Intersection	Time	MOE	Approach / Movement												OVERALL
				South			East			North			West				
				LEFT	THROUGH	RIGHT	LEFT	THROUGH	RIGHT	LEFT	THROUGH	RIGHT	LEFT	THROUGH	RIGHT	
2029 Background	Awakino Road and Jervois Street (SH12)	AM Peak	LOS	A	C	C	A	A	A	B	C	C	A	A	A	A
			Delay (s)	9	17	19	5	0	6	11	19	22	5	0	5	5
			V/C	0.16	0.16	0.16	0.15	0.15	0.05	0.37	0.37	0.37	0.17	0.17	0.01	
			Queue (m)	4	4	4	0	0	1	13	13	13	0	0	0	
		PM Peak	LOS	A	C	C	A	A	A	B	C	C	A	A	A	A
			Delay (s)	9	16	19	5	0	5	10	18	21	5	0	6	5
			V/C	0.22	0.22	0.22	0.17	0.17	0.04	0.36	0.36	0.36	0.14	0.14	0.01	
			Queue (m)	6	6	6	0	0	1	12	12	12	0	0	0	
2029 Total	Awakino Road and Jervois Street (SH12)	AM Peak	LOS	A	C	C	A	A	A	C	D	E	A	A	A	B
			Delay (s)	9	18	22	5	0	6	21	31	36	5	0	5	11
			V/C	0.21	0.21	0.21	0.15	0.15	0.05	0.77	0.77	0.77	0.18	0.18	0.01	
			Queue (m)	6	6	6	0	0	2	52	52	52	0	0	0	
		PM Peak	LOS	B	C	C	A	A	A	B	C	D	A	A	A	A
			Delay (s)	12	22	25	5	0	6	13	23	29	5	0	6	8
			V/C	0.42	0.42	0.42	0.17	0.17	0.08	0.53	0.53	0.53	0.17	0.17	0.01	
			Queue (m)	15	15	15	0	0	2	21	21	21	0	0	0	
2029 Total with Remedial Measure	Awakino Road and Jervois Street (SH12)	AM Peak	LOS	A	C	C	A	A	A	A	D	D	A	A	A	A
			Delay (s)	9	18	22	5	0	6	9	27	32	5	0	5	9
			V/C	0.21	0.21	0.21	0.15	0.15	0.05	0.08	0.69	0.69	0.18	0.18	0.18	
			Queue (m)	6	6	6	0	0	2	2	35	35	0	0	2	
		PM Peak	LOS	B	C	C	A	A	A	A	C	D	A	A	A	A
			Delay (s)	12	22	25	5	0	6	9	22	28	5	0	6	8
			V/C	0.42	0.42	0.42	0.17	0.17	0.08	0.04	0.49	0.49	0.17	0.17	0.01	
			Queue (m)	15	15	15	0	0	2	1	17	17	0	0	0	

5.0 CONCLUSION

Based on the investigations carried out as part of this assessment the following is concluded:

- The proposed plan change for approximately 392,610 m^2 of rural land, enabling the creation of up to 348 dwellings will generate approximately 2,853 daily trips and 313 peak hour trips.
    - Trip generation has been calculated based on the 85th percentile trip generation rate for each of the 348 dwellings; thereby representing a conservative approach to effect determination.
- A review of the area crash history did not suggest any inherent road safety issues, which would likely result in serious injury or death.
- When these trips are assigned to the wider road network following existing trip distribution trends, there are significantly noticeable effects onto intersections along Awakino Road, north of Jervois Street (SH12).
- At the intersection of Awakino Road and Jervois Street (SH12), the north intersection approach was forecast to result in increased average delays for all turning movements, such that the proposal would likely result in noticeable effects onto the operation to the intersection.
- To mitigate the effects of the proposal, an auxiliary left-turn lane, with 20 metres of storage can be constructed through road widening on the north approach to improve the intersection's capacity and reduce delays to an acceptable level.

Prepared by,

Peter Kelly
Senior Transportation Engineer

ATTACHMENT 1:

EXISTING INTERSECTION TURNING MOVEMENT COUNT DATA

Traffic Planning Consultants Ltd.
Level 1, 400 Titirangi Road
Titirangi
Auckland, New Zealand 0604
098172500 peter@trafficplanning.co.nz
Traffic Planning Consultants Ltd.

Count Name: Awakino and SH12
Site Code:
Start Date: 04/12/2022

Turning Movement Data

Start Time	Awakino Road Southbound					State Highway 12 Westbound					Awakino Road Northbound					State Highway 12 Eastbound					
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
6:30 AM	8	1	10	0	19	3	18	1	0	22	0	2	2	0	4	3	27	1	0	31	76
6:45 AM	14	3	11	0	28	0	44	8	0	52	0	2	1	0	3	2	63	0	0	65	148
Hourly Total	22	4	21	0	47	3	62	9	0	74	0	4	3	0	7	5	90	1	0	96	224
7:00 AM	9	8	12	0	29	3	33	2	0	38	0	7	0	0	7	4	35	0	0	39	113
7:15 AM	5	9	9	0	23	4	38	5	0	47	2	8	3	0	13	8	54	2	0	64	147
7:30 AM	12	9	4	0	25	3	38	13	0	54	2	5	0	0	7	6	55	2	0	63	149
7:45 AM	10	17	11	0	38	2	60	10	0	72	4	9	0	0	13	18	75	2	0	95	218
Hourly Total	36	43	36	0	115	12	169	30	0	211	8	29	3	0	40	36	219	6	0	261	627
8:00 AM	4	8	11	0	23	1	55	10	0	66	1	5	1	0	7	15	44	3	0	62	158
8:15 AM	9	8	12	0	29	5	58	15	0	78	6	10	2	0	18	19	46	3	0	68	193
8:30 AM	4	21	11	0	36	5	48	16	0	69	0	14	2	0	16	15	52	0	0	67	188
8:45 AM	6	15	14	0	35	4	41	11	0	56	5	13	2	0	20	16	45	3	0	64	175
Hourly Total	23	52	48	0	123	15	202	52	0	269	12	42	7	0	61	65	187	9	0	261	714
9:00 AM	4	21	16	0	41	6	44	12	0	62	3	8	2	0	13	14	32	3	0	49	165
9:15 AM	4	18	11	0	33	1	48	12	0	61	4	15	1	0	20	20	41	3	0	64	178
9:30 AM	7	19	13	0	39	4	50	6	0	60	5	8	0	0	13	13	51	2	0	66	178
9:45 AM	8	17	13	0	38	12	59	9	0	80	2	12	1	0	15	15	46	1	0	62	195
Hourly Total	23	75	53	0	151	23	201	39	0	263	14	43	4	0	61	62	170	9	0	241	716
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	8	19	14	0	41	2	56	5	0	63	3	10	4	0	17	17	38	4	0	59	180
11:15 AM	7	19	20	0	46	3	43	8	0	54	2	14	1	0	17	13	46	1	0	60	177
11:30 AM	7	15	7	0	29	3	38	9	0	50	3	8	0	0	11	19	35	1	0	55	145
11:45 AM	9	22	10	0	41	3	50	8	0	61	1	15	3	0	19	11	36	2	0	49	170
Hourly Total	31	75	51	0	157	11	187	30	0	228	9	47	8	0	64	60	155	8	0	223	672
12:00 PM	8	8	10	0	26	10	56	9	0	75	4	16	3	0	23	15	46	2	0	63	187
12:15 PM	13	20	12	0	45	4	50	10	0	64	0	12	2	0	14	19	46	1	0	66	189
12:30 PM	8	23	17	0	48	5	59	10	0	74	4	9	1	0	14	15	44	6	0	65	201
12:45 PM	8	20	17	0	45	3	41	7	0	51	5	18	0	0	23	19	56	2	0	77	196
Hourly Total	37	71	56	0	164	22	206	36	0	264	13	55	6	0	74	68	192	11	0	271	773
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2:30 PM	3	15	14	0	32	4	55	8	0	67	3	10	2	0	15	16	43	1	0	60	174
2:45 PM	9	8	5	0	22	2	43	9	0	54	1	13	2	0	16	9	41	1	0	51	143
Hourly Total	12	23	19	0	54	6	98	17	0	121	4	23	4	0	31	25	84	2	0	111	317
3:00 PM	13	17	14	0	44	5	56	14	0	75	4	9	4	0	17	12	62	6	0	80	216
3:15 PM	13	24	15	0	52	5	38	16	0	59	4	11	2	0	17	6	50	3	0	59	187
3:30 PM	8	11	8	0	27	4	44	10	0	58	0	15	1	0	16	7	45	3	0	55	156
3:45 PM	8	15	10	0	33	7	53	19	0	79	2	12	2	0	16	12	47	6	0	65	193
Hourly Total	42	67	47	0	156	21	191	59	0	271	10	47	9	0	66	37	204	18	0	259	752

4:00 PM	9	16	14	0	39	9	64	16	0	89	5	10	2	0	17	13	62	1	0	76	221
4:15 PM	3	9	11	0	23	3	55	5	0	63	2	8	1	0	11	15	34	3	0	52	149
4:30 PM	8	12	14	0	34	11	61	11	0	83	3	7	6	0	16	13	39	4	0	56	189
4:45 PM	9	11	8	0	28	8	47	7	0	62	0	16	3	0	19	7	43	5	0	55	164
Hourly Total	29	48	47	0	124	31	227	39	0	297	10	41	12	0	63	48	178	13	0	239	723
5:00 PM	8	16	10	0	34	9	61	16	0	86	3	25	2	0	30	21	58	3	0	82	232
5:15 PM	4	13	13	0	30	5	66	18	0	89	1	8	1	0	10	10	38	2	0	50	179
5:30 PM	8	10	15	0	33	6	81	11	0	98	1	11	3	0	15	13	47	0	0	60	206
5:45 PM	4	9	13	0	26	5	53	10	0	68	2	10	0	0	12	12	27	3	0	42	148
Hourly Total	24	48	51	0	123	25	261	55	0	341	7	54	6	0	67	56	170	8	0	234	765
Grand Total	279	506	429	0	1214	169	1804	366	0	2339	87	385	62	0	534	462	1649	85	0	2196	6283
Approach %	23.0	41.7	35.3	0.0	-	7.2	77.1	15.6	0.0	-	16.3	72.1	11.6	0.0	-	21.0	75.1	3.9	0.0	-	-
Total %	4.4	8.1	6.8	0.0	19.3	2.7	28.7	5.8	0.0	37.2	1.4	6.1	1.0	0.0	8.5	7.4	26.2	1.4	0.0	35.0	-
Lights	271	500	420	0	1191	160	1613	352	0	2125	84	383	59	0	526	453	1481	84	0	2018	5860
% Lights	97.1	98.8	97.9	-	98.1	94.7	89.4	96.2	-	90.9	96.6	99.5	95.2	-	98.5	98.1	89.8	98.8	-	91.9	93.3
Mediums	7	6	9	0	22	8	140	13	0	161	3	2	2	0	7	9	115	1	0	125	315
% Mediums	2.5	1.2	2.1	-	1.8	4.7	7.8	3.6	-	6.9	3.4	0.5	3.2	-	1.3	1.9	7.0	1.2	-	5.7	5.0
Articulated Trucks	1	0	0	0	1	1	51	1	0	53	0	0	1	0	1	0	53	0	0	53	108
% Articulated Trucks	0.4	0.0	0.0	-	0.1	0.6	2.8	0.3	-	2.3	0.0	0.0	1.6	-	0.2	0.0	3.2	0.0	-	2.4	1.7

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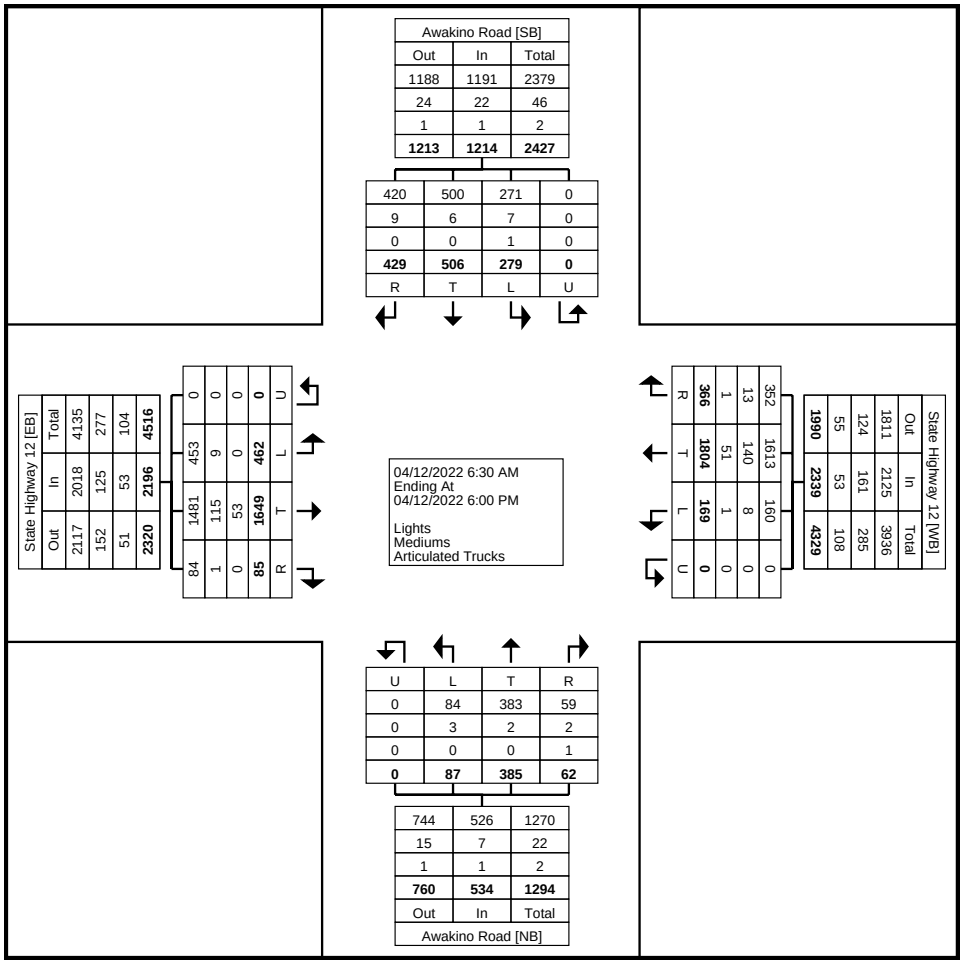

Turning Movement Data Plot

Traffic Planning Consultants Ltd.
Level 1, 400 Titirangi Road
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Traffic Planning Consultants Ltd.

Count Name: Awakino and SH12
Site Code:
Start Date: 04/12/2022

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Awakino Road Southbound					State Highway 12 Westbound					Awakino Road Northbound					State Highway 12 Eastbound					
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
7:45 AM	10	17	11	0	38	2	60	10	0	72	4	9	0	0	13	18	75	2	0	95	218
8:00 AM	4	8	11	0	23	1	55	10	0	66	1	5	1	0	7	15	44	3	0	62	158
8:15 AM	9	8	12	0	29	5	58	15	0	78	6	10	2	0	18	19	46	3	0	68	193
8:30 AM	4	21	11	0	36	5	48	16	0	69	0	14	2	0	16	15	52	0	0	67	188
Total	27	54	45	0	126	13	221	51	0	285	11	38	5	0	54	67	217	8	0	292	757
Approach %	21.4	42.9	35.7	0.0	-	4.6	77.5	17.9	0.0	-	20.4	70.4	9.3	0.0	-	22.9	74.3	2.7	0.0	-	-
Total %	3.6	7.1	5.9	0.0	16.6	1.7	29.2	6.7	0.0	37.6	1.5	5.0	0.7	0.0	7.1	8.9	28.7	1.1	0.0	38.6	-
PHF	0.675	0.643	0.938	0.000	0.829	0.650	0.921	0.797	0.000	0.913	0.458	0.679	0.625	0.000	0.750	0.882	0.723	0.667	0.000	0.768	0.868
Lights	26	53	44	0	123	13	194	49	0	256	10	37	5	0	52	67	203	8	0	278	709
% Lights	96.3	98.1	97.8	-	97.6	100.0	87.8	96.1	-	89.8	90.9	97.4	100.0	-	96.3	100.0	93.5	100.0	-	95.2	93.7
Mediums	0	1	1	0	2	0	16	2	0	18	1	1	0	0	2	0	7	0	0	7	29
% Mediums	0.0	1.9	2.2	-	1.6	0.0	7.2	3.9	-	6.3	9.1	2.6	0.0	-	3.7	0.0	3.2	0.0	-	2.4	3.8
Articulated Trucks	1	0	0	0	1	0	11	0	0	11	0	0	0	0	0	0	7	0	0	7	19
% Articulated Trucks	3.7	0.0	0.0	-	0.8	0.0	5.0	0.0	-	3.9	0.0	0.0	0.0	-	0.0	0.0	3.2	0.0	-	2.4	2.5

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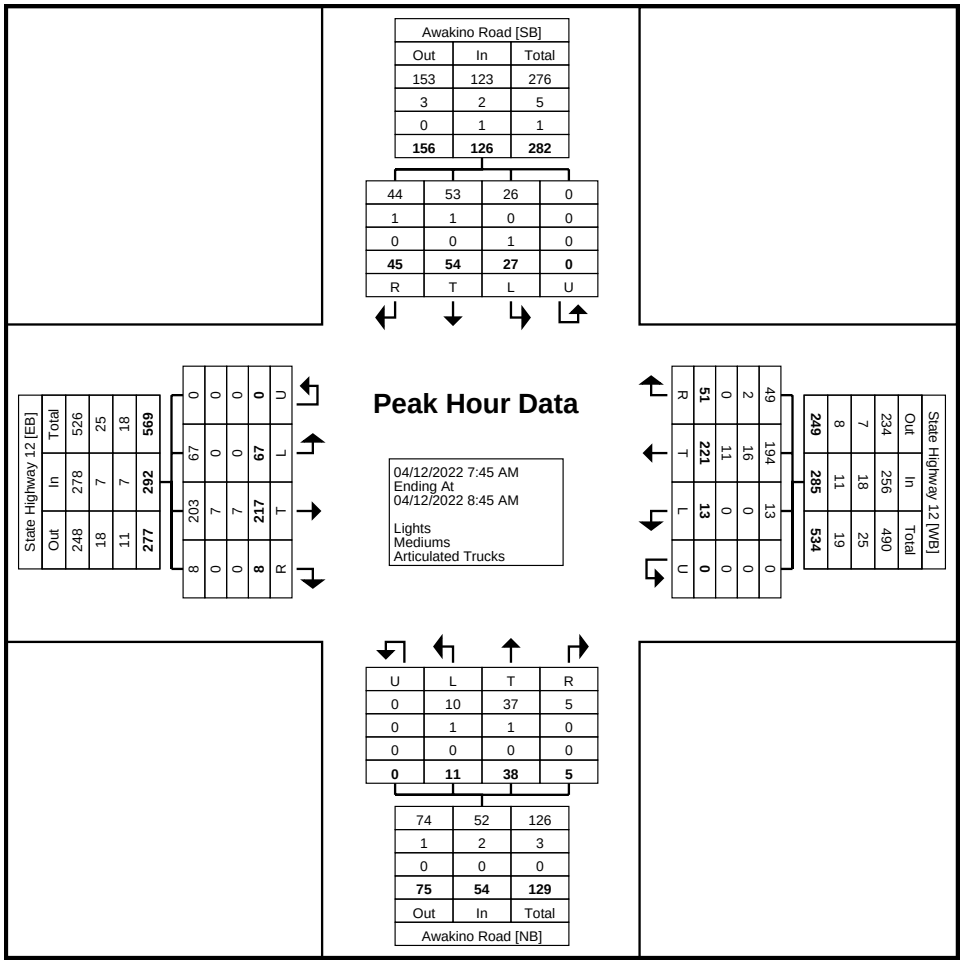

Turning Movement Peak Hour Data Plot (7:45 AM)

Traffic Planning Consultants Ltd.
Level 1, 400 Titirangi Road
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098172500 peter@trafficplanning.co.nz
Traffic Planning Consultants Ltd.

Count Name: Awakino and SH12
Site Code:
Start Date: 04/12/2022

Turning Movement Peak Hour Data (11:00 AM)

Start Time	Awakino Road Southbound					State Highway 12 Westbound					Awakino Road Northbound					State Highway 12 Eastbound					
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
11:00 AM	8	19	14	0	41	2	56	5	0	63	3	10	4	0	17	17	38	4	0	59	180
11:15 AM	7	19	20	0	46	3	43	8	0	54	2	14	1	0	17	13	46	1	0	60	177
11:30 AM	7	15	7	0	29	3	38	9	0	50	3	8	0	0	11	19	35	1	0	55	145
11:45 AM	9	22	10	0	41	3	50	8	0	61	1	15	3	0	19	11	36	2	0	49	170
Total	31	75	51	0	157	11	187	30	0	228	9	47	8	0	64	60	155	8	0	223	672
Approach %	19.7	47.8	32.5	0.0	-	4.8	82.0	13.2	0.0	-	14.1	73.4	12.5	0.0	-	26.9	69.5	3.6	0.0	-	-
Total %	4.6	11.2	7.6	0.0	23.4	1.6	27.8	4.5	0.0	33.9	1.3	7.0	1.2	0.0	9.5	8.9	23.1	1.2	0.0	33.2	-
PHF	0.861	0.852	0.638	0.000	0.853	0.917	0.835	0.833	0.000	0.905	0.750	0.783	0.500	0.000	0.842	0.789	0.842	0.500	0.000	0.929	0.933
Lights	30	74	49	0	153	11	157	28	0	196	8	47	6	0	61	59	126	8	0	193	603
% Lights	96.8	98.7	96.1	-	97.5	100.0	84.0	93.3	-	86.0	88.9	100.0	75.0	-	95.3	98.3	81.3	100.0	-	86.5	89.7
Mediums	1	1	2	0	4	0	28	2	0	30	1	0	2	0	3	1	20	0	0	21	58
% Mediums	3.2	1.3	3.9	-	2.5	0.0	15.0	6.7	-	13.2	11.1	0.0	25.0	-	4.7	1.7	12.9	0.0	-	9.4	8.6
Articulated Trucks	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	9	0	0	9	11
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.0	1.1	0.0	-	0.9	0.0	0.0	0.0	-	0.0	0.0	5.8	0.0	-	4.0	1.6

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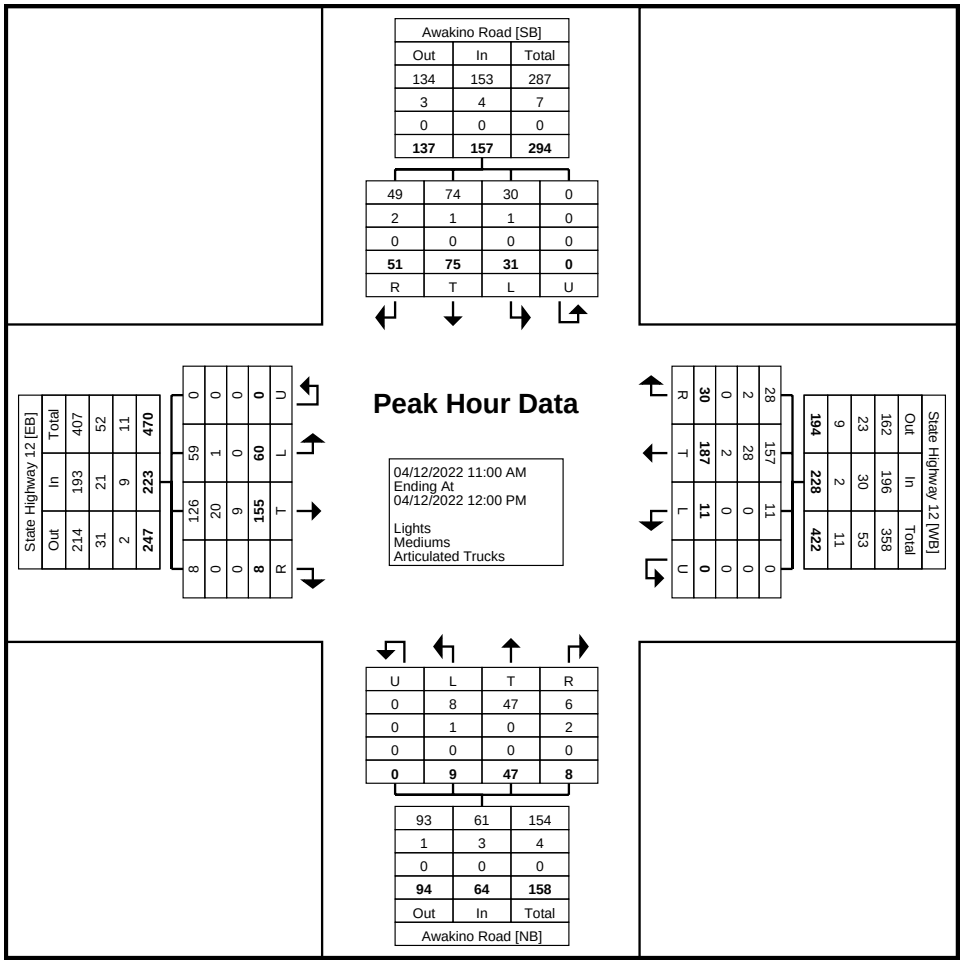

Turning Movement Peak Hour Data Plot (11:00 AM)

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Level 1, 400 Titirangi Road
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Auckland, New Zealand 0604
098172500 peter@trafficplanning.co.nz
Traffic Planning Consultants Ltd.

Count Name: Awakino and SH12
Site Code:
Start Date: 04/12/2022

Turning Movement Peak Hour Data (12:00 PM)

Start Time	Awakino Road Southbound					State Highway 12 Westbound					Awakino Road Northbound					State Highway 12 Eastbound					
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
12:00 PM	8	8	10	0	26	10	56	9	0	75	4	16	3	0	23	15	46	2	0	63	187
12:15 PM	13	20	12	0	45	4	50	10	0	64	0	12	2	0	14	19	46	1	0	66	189
12:30 PM	8	23	17	0	48	5	59	10	0	74	4	9	1	0	14	15	44	6	0	65	201
12:45 PM	8	20	17	0	45	3	41	7	0	51	5	18	0	0	23	19	56	2	0	77	196
Total	37	71	56	0	164	22	206	36	0	264	13	55	6	0	74	68	192	11	0	271	773
Approach %	22.6	43.3	34.1	0.0	-	8.3	78.0	13.6	0.0	-	17.6	74.3	8.1	0.0	-	25.1	70.8	4.1	0.0	-	-
Total %	4.8	9.2	7.2	0.0	21.2	2.8	26.6	4.7	0.0	34.2	1.7	7.1	0.8	0.0	9.6	8.8	24.8	1.4	0.0	35.1	-
PHF	0.712	0.772	0.824	0.000	0.854	0.550	0.873	0.900	0.000	0.880	0.650	0.764	0.500	0.000	0.804	0.895	0.857	0.458	0.000	0.880	0.961
Lights	35	69	55	0	159	22	185	35	0	242	13	55	6	0	74	67	172	11	0	250	725
% Lights	94.6	97.2	98.2	-	97.0	100.0	89.8	97.2	-	91.7	100.0	100.0	100.0	-	100.0	98.5	89.6	100.0	-	92.3	93.8
Mediums	2	2	1	0	5	0	17	1	0	18	0	0	0	0	0	1	18	0	0	19	42
% Mediums	5.4	2.8	1.8	-	3.0	0.0	8.3	2.8	-	6.8	0.0	0.0	0.0	-	0.0	1.5	9.4	0.0	-	7.0	5.4
Articulated Trucks	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	6
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.0	1.9	0.0	-	1.5	0.0	0.0	0.0	-	0.0	0.0	1.0	0.0	-	0.7	0.8

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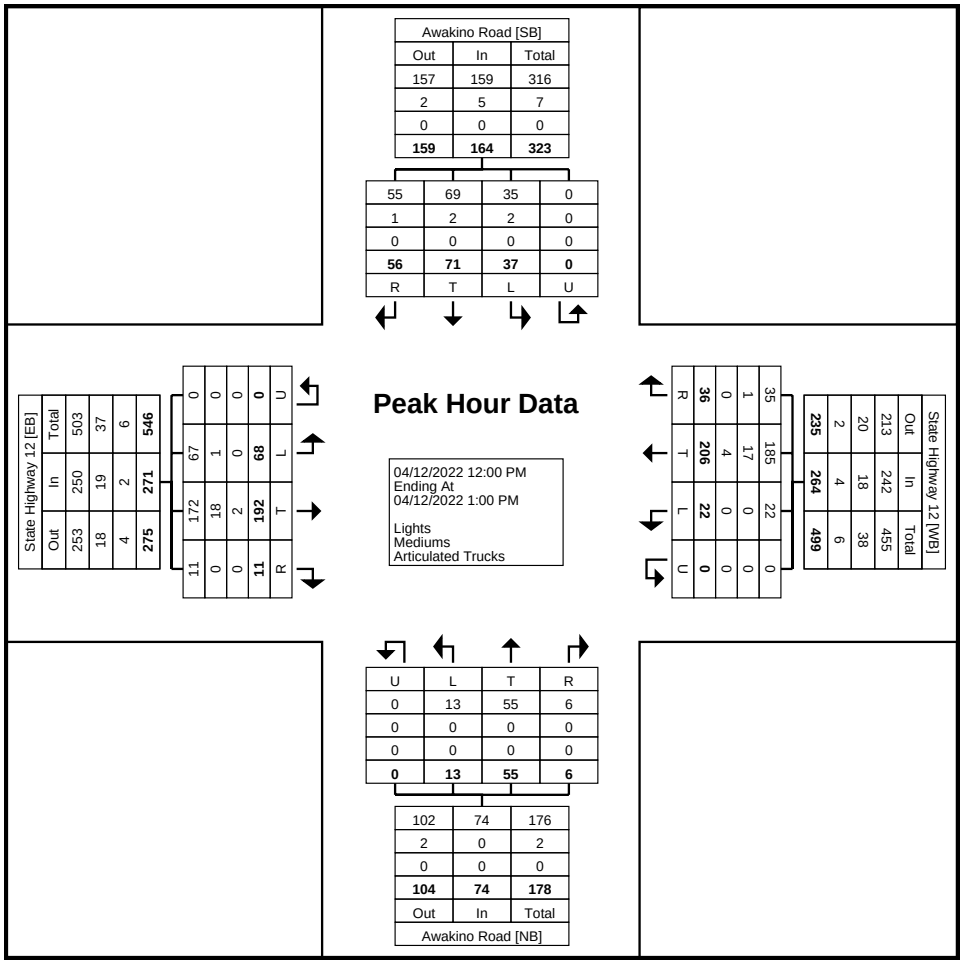

Turning Movement Peak Hour Data Plot (12:00 PM)

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Traffic Planning Consultants Ltd.

Count Name: Awakino and SH12
Site Code:
Start Date: 04/12/2022

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Awakino Road Southbound					State Highway 12 Westbound					Awakino Road Northbound					State Highway 12 Eastbound					
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
4:45 PM	9	11	8	0	28	8	47	7	0	62	0	16	3	0	19	7	43	5	0	55	164
5:00 PM	8	16	10	0	34	9	61	16	0	86	3	25	2	0	30	21	58	3	0	82	232
5:15 PM	4	13	13	0	30	5	66	18	0	89	1	8	1	0	10	10	38	2	0	50	179
5:30 PM	8	10	15	0	33	6	81	11	0	98	1	11	3	0	15	13	47	0	0	60	206
Total	29	50	46	0	125	28	255	52	0	335	5	60	9	0	74	51	186	10	0	247	781
Approach %	23.2	40.0	36.8	0.0	-	8.4	76.1	15.5	0.0	-	6.8	81.1	12.2	0.0	-	20.6	75.3	4.0	0.0	-	-
Total %	3.7	6.4	5.9	0.0	16.0	3.6	32.7	6.7	0.0	42.9	0.6	7.7	1.2	0.0	9.5	6.5	23.8	1.3	0.0	31.6	-
PHF	0.806	0.781	0.767	0.000	0.919	0.778	0.787	0.722	0.000	0.855	0.417	0.600	0.750	0.000	0.617	0.607	0.802	0.500	0.000	0.753	0.842
Lights	29	50	46	0	125	27	246	52	0	325	5	60	9	0	74	50	177	10	0	237	761
% Lights	100.0	100.0	100.0	-	100.0	96.4	96.5	100.0	-	97.0	100.0	100.0	100.0	-	100.0	98.0	95.2	100.0	-	96.0	97.4
Mediums	0	0	0	0	0	1	5	0	0	6	0	0	0	0	0	1	6	0	0	7	13
% Mediums	0.0	0.0	0.0	-	0.0	3.6	2.0	0.0	-	1.8	0.0	0.0	0.0	-	0.0	2.0	3.2	0.0	-	2.8	1.7
Articulated Trucks	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	3	0	0	3	7
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.0	1.6	0.0	-	1.2	0.0	0.0	0.0	-	0.0	0.0	1.6	0.0	-	1.2	0.9

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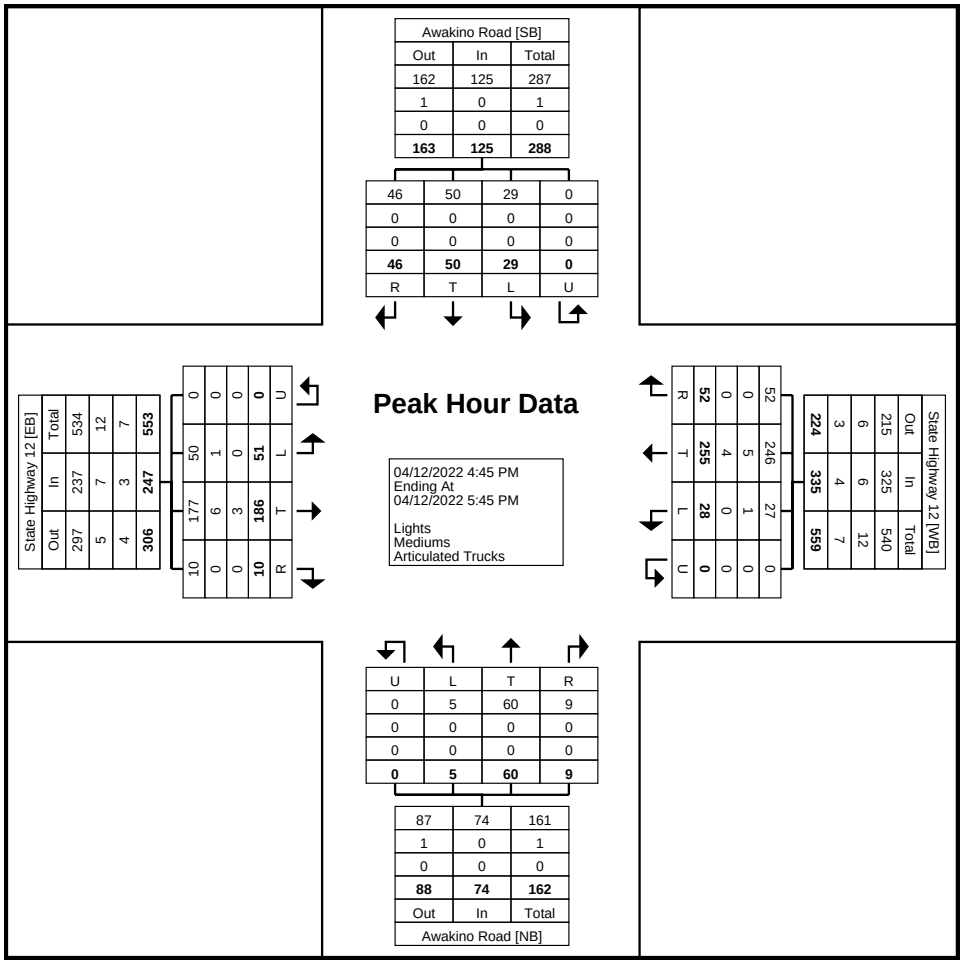

Turning Movement Peak Hour Data Plot (4:45 PM)

Awakino Road and Dargaville Hospital

Time:		Vehicles						Trucks / Buses						Pedestrians				Totals	
		Westbound		Northbound		Southbound		Westbound		Northbound		Southbound							
Start	End	Left	Right	Thru	Right	Left	Thru	Left	Right	Thru	Right	Left	Thru	East	West	North	South	15min	1 hr
6:30	6:45	0	0	3	2	0	9							1			2	14	
6:45	7:00	0	0	3	9	1	10			1								24	
7:00	7:15	1	0	2	3	0	12											18	
7:15	7:30	3	0	5	16	0	11							1	3			35	91
7:30	7:45	2	0	12	12	4	16			1					2			47	124
7:45	8:00	2	0	8	24	0	17								1		2	51	151
8:00	8:15	5	0	5	24	3	13						2		1		1	52	185
8:15	8:30	7	0	16	22	0	7						1	1	2		1	53	203
8:30	8:45	9	1	13	21	0	21								1			65	221
8:45	9:00	5	1	16	17	0	18								1		1	57	227
9:00	9:15	13	1	12	18	0	16				1						4	61	236
9:15	9:30	12	0	15	15	2	13	1		1			1				1	60	243
																			243

Time:		Vehicles						Trucks / Buses						Pedestrians				Totals	
		Westbound		Northbound		Southbound		Westbound		Northbound		Southbound							
Start	End	Left	Right	Thru	Right	Left	Thru	Left	Right	Thru	Right	Left	Thru	East	West	North	South	15min	1 hr
11:00	11:15	16	2	24	12	2	18			1							4	75	
11:15	11:30	9	1	13	20	1	20						1				3	65	
11:30	11:45	12	0	21	14	0	17			3			1		2			68	
11:45	12:00	23	0	13	7	1	14			1			2	1			1	61	269
12:00	12:15	14	1	18	10	2	12			1					1		1	58	252
12:15	12:30	26	2	17	16	2	7			1			1				1	72	259
12:30	12:45	12	2	14	5	0	10						1		1			44	235
12:45	13:00	20	0	24	23	1	25			2			1					96	270
																			270

Time:		Vehicles						Trucks / Buses						Pedestrians				Totals	
		Westbound		Northbound		Southbound		Westbound		Northbound		Southbound							
Start	End	Left	Right	Thru	Right	Left	Thru	Left	Right	Thru	Right	Left	Thru	East	West	North	South	15min	1 hr
15:00	15:15	12	0	24	7	0	20								1			63	
15:15	15:30	12	1	15	8	0	14			1					3		1	51	
15:30	15:45	10	0	5	4	0	13							1	1		2	32	
15:45	16:00	10	0	15	6	0	13				1		1					46	192
16:00	16:15	19	0	16	6	0	16	1		1					2			59	188
16:15	16:30	11	0	18	2	1	6							1	2			38	175
16:30	16:45	25	0	11	7	0	8		1								1	52	195
16:45	17:00	12	1	14	6	1	12											46	195
17:00	17:15	15	0	23	1	0	8								2			47	183
17:15	17:30	10	0	18	1	0	9							1				38	183
17:30	17:45	11	0	17	2	0	12							1				42	173
17:45	18:00	2	0	15	0	0	10	1						3				28	155

Awakino and Ranfurly

Time:		Vehicles												Trucks / Buses										Pedestrians				Totals	
		Eastbound			Westbound			Northbound			Southbound			Eastbound			Westbound			Northbound			Southbound							
Start	End	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	East	West	North	South	15min	1 hr
6:30	6:45	1	0	4	6	1	0	3	8	2	1	12	0								1							2		39	
6:45	7:00	3	0	3	6	0	1	2	5	3	0	8	2																	33	
7:00	7:15	2	0	5	10	0	0	4	3	2	0	9	4			1											1			40	
7:15	7:30	1	0	4	3	1	0	3	25	2	1	12	3															1		55	167
7:30	7:45	6	1	6	8	1	3	3	17	8	0	23	2								1						5	1		79	207
7:45	8:00	6	0	3	10	2	0	2	23	5	1	15	2																	69	243
8:00	8:15	9	3	5	9	5	1	7	20	5	0	13	6											1	1	1	5	1		85	288
8:15	8:30	9	4	6	5	4	0	11	30	2	2	11	1											1		5	4	3		86	319
8:30	8:45	6	4	9	11	4	2	16	28	4	3	24	8													1	1	1	2	119	359
8:45	9:00	5	1	3	13	4	1	8	25	6	2	21	6			1											2			96	386
9:00	9:15	10	1	5	8	0	0	7	25	5	0	21	2														1			84	385
9:15	9:30	4	2	4	7	3	0	8	30	6	0	25	7													3	1	1		96	395
																															395

Time:		Vehicles												Trucks / Buses										Pedestrians				Totals	
		Eastbound			Westbound			Northbound			Southbound			Eastbound			Westbound			Northbound			Southbound							
Start	End	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	East	West	North	South	15min	1 hr
11:00	11:15	8	0	6	11	0	1	5	26	3	2	28	4	1												3				95	
11:15	11:30	8	1	6	10	0	0	5	28	4	0	22	8																	92	
11:30	11:45	8	0	4	8	1	1	1	30	7	1	21	7	1							2				1		2	2		93	
11:45	12:00	2	0	1	1	0	0	2	20	10	1	34	5								1			2			1			79	359
12:00	12:15	6	2	0	4	0	0	9	25	11	0	22	7								1							1		87	351
12:15	12:30	3	0	5	2	3	0	4	28	6	0	24	0		1												1			76	335
12:30	12:45	5	0	8	10	0	0	5	19	9	0	24	6								1			1						88	330
12:45	13:00	6	1	8	11	1	1	3	39	9	0	27	10				1				1			1						119	370
																															370

Time:		Vehicles												Trucks / Buses										Pedestrians				Totals	
		Eastbound			Westbound			Northbound			Southbound			Eastbound			Westbound			Northbound			Southbound							
Start	End	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	East	West	North	South	15min	1 hr
15:00	15:15	8	1	12	12	8	2	11	24	14	1	24	6														3			123	
15:15	15:30	4	1	19	9	3	0	5	19	8	1	20	5								1						8	9	5	95	
15:30	15:45	2	1	5	4	1	0	6	7	11	2	18	4														4	1	1	61	
15:45	16:00	3	1	5	9	2	1	6	20	16	2	19	4														2			88	367
16:00	16:15	1	3	2	5	1	1	6	24	9	3	28	5	1							1						2		1	90	334
16:15	16:30	0	1	3	7	4	0	8	18	11	0	13	2																	67	306
16:30	16:45	3	1	2	8	1	1	8	18	6	2	24	8																	82	327
16:45	17:00	3	1	4	6	0	0	5	17	6	3	18	4																	67	306
17:00	17:15	1	1	3	11	0	0	8	24	17	1	25	2														2		1	93	309
17:15	17:30	1	2	3	12	0	2	8	23	12	1	17	3														1	2		84	326
17:30	17:45	3	0	1	11	0	0	1	18	17	1	17	9																	78	322
17:45	18:00	1	0	1	8	2	0	5	16	10	0	11	5														1			59	314

ATTACHMENT 2:

EXISTING TRAFFIC INTERSECTION OPERATIONS

MOVEMENT SUMMARY

Site: 101 [Awakino+Hospital_EX_AM (Site Folder: Awakino +Hospital)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Awakino Road														
2	T1	57	2.0	60	2.0	0.077	0.2	LOS A	0.3	2.5	0.16	0.30	0.16	47.9
3	R2	72	1.0	76	1.0	0.077	4.8	LOS A	0.3	2.5	0.16	0.30	0.16	47.0
Approach		129	1.4	136	1.4	0.077	2.8	NA	0.3	2.5	0.16	0.30	0.16	47.4
East: Dargaville Hospital														
4	L2	40	3.0	42	3.0	0.031	4.8	LOS A	0.1	0.9	0.16	0.50	0.16	46.2
6	R2	3	0.0	3	0.0	0.031	5.3	LOS A	0.1	0.9	0.16	0.50	0.16	45.8
Approach		43	2.8	45	2.8	0.031	4.8	LOS A	0.1	0.9	0.16	0.50	0.16	46.2
North: Awakino Road														
7	L2	2	0.0	2	0.0	0.039	4.6	LOS A	0.0	0.0	0.00	0.02	0.00	49.4
8	T1	69	1.0	73	1.0	0.039	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	49.9
Approach		71	1.0	75	1.0	0.039	0.1	NA	0.0	0.0	0.00	0.02	0.00	49.9
All Vehicles		243	1.5	256	1.5	0.077	2.4	NA	0.3	2.5	0.11	0.25	0.11	47.9

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

MOVEMENT SUMMARY

Site: 101 [Awakino+Hospital_EX_PM (Site Folder: Awakino +Hospital)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Awakino Road														
2	T1	60	2.0	63	2.0	0.046	0.0	LOS A	0.1	0.9	0.07	0.14	0.07	49.0
3	R2	21	0.0	22	0.0	0.046	4.7	LOS A	0.1	0.9	0.07	0.14	0.07	48.1
Approach		81	1.5	85	1.5	0.046	1.3	NA	0.1	0.9	0.07	0.14	0.07	48.8
East: Dargaville Hospital														
4	L2	68	1.0	72	1.0	0.048	4.7	LOS A	0.2	1.4	0.12	0.50	0.12	46.3
6	R2	2	50.0	2	50.0	0.048	5.7	LOS A	0.2	1.4	0.12	0.50	0.12	45.1
Approach		70	2.4	74	2.4	0.048	4.7	LOS A	0.2	1.4	0.12	0.50	0.12	46.3
North: Awakino Road														
7	L2	2	0.0	2	0.0	0.024	4.6	LOS A	0.0	0.0	0.00	0.02	0.00	49.4
8	T1	42	0.0	44	0.0	0.024	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	49.8
Approach		44	0.0	46	0.0	0.024	0.2	NA	0.0	0.0	0.00	0.02	0.00	49.8
All Vehicles		195	1.5	205	1.5	0.048	2.3	NA	0.2	1.4	0.07	0.24	0.07	48.1

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

MOVEMENT SUMMARY

Site: 101v [Awakino+Ranfurly_EX_AM (Site Folder: Awakino +Hospital - Copy)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Awakino Road														
1	L2	40	3.0	42	3.0	0.095	4.7	LOS A	0.2	1.3	0.08	0.19	0.08	48.2
2	T1	108	0.0	114	0.0	0.095	0.1	LOS A	0.2	1.3	0.08	0.19	0.08	48.7
3	R2	21	0.0	22	0.0	0.095	4.9	LOS A	0.2	1.3	0.08	0.19	0.08	47.8
Approach		169	0.7	178	0.7	0.095	1.8	NA	0.2	1.3	0.08	0.19	0.08	48.5
East: Ranfurly Street														
4	L2	39	0.0	41	0.0	0.049	7.8	LOS A	0.2	1.3	0.21	0.91	0.21	44.9
5	T1	11	0.0	12	0.0	0.049	8.7	LOS A	0.2	1.3	0.21	0.91	0.21	44.7
6	R2	3	0.0	3	0.0	0.049	8.8	LOS A	0.2	1.3	0.21	0.91	0.21	44.5
Approach		53	0.0	56	0.0	0.049	8.0	LOS A	0.2	1.3	0.21	0.91	0.21	44.8
North: Awakino Road														
7	L2	5	0.0	5	0.0	0.068	5.0	LOS A	0.2	1.2	0.12	0.13	0.12	48.5
8	T1	91	0.0	96	0.0	0.068	0.1	LOS A	0.2	1.2	0.12	0.13	0.12	48.9
9	R2	23	0.0	24	0.0	0.068	5.0	LOS A	0.2	1.2	0.12	0.13	0.12	48.0
Approach		119	0.0	125	0.0	0.068	1.3	NA	0.2	1.2	0.12	0.13	0.12	48.7
West: Ranfurly Street														
10	L2	25	0.0	26	0.0	0.063	7.9	LOS A	0.2	1.6	0.27	0.90	0.27	44.7
11	T1	8	0.0	8	0.0	0.063	8.6	LOS A	0.2	1.6	0.27	0.90	0.27	44.5
12	R2	22	0.0	23	0.0	0.063	9.1	LOS A	0.2	1.6	0.27	0.90	0.27	44.3
Approach		55	0.0	58	0.0	0.063	8.5	LOS A	0.2	1.6	0.27	0.90	0.27	44.5
All Vehicles		396	0.3	417	0.3	0.095	3.4	NA	0.2	1.6	0.13	0.37	0.13	47.4

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

MOVEMENT SUMMARY

Site: 101v [Awakino+Ranfurly_EX_PM (Site Folder: Awakino +Hospital - Copy)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Awakino Road														
1	L2	28	0.0	29	0.0	0.086	4.8	LOS A	0.3	2.3	0.15	0.27	0.15	47.6
2	T1	71	1.0	75	1.0	0.086	0.2	LOS A	0.3	2.3	0.15	0.27	0.15	48.0
3	R2	49	0.0	52	0.0	0.086	4.8	LOS A	0.3	2.3	0.15	0.27	0.15	47.1
Approach		148	0.5	156	0.5	0.086	2.6	NA	0.3	2.3	0.15	0.27	0.15	47.7
East: Ranfurly Street														
4	L2	34	0.0	36	0.0	0.047	7.7	LOS A	0.2	1.3	0.20	0.92	0.20	44.9
5	T1	14	0.0	15	0.0	0.047	8.5	LOS A	0.2	1.3	0.20	0.92	0.20	44.7
6	R2	3	0.0	3	0.0	0.047	8.5	LOS A	0.2	1.3	0.20	0.92	0.20	44.5
Approach		51	0.0	54	0.0	0.047	8.0	LOS A	0.2	1.3	0.20	0.92	0.20	44.8
North: Awakino Road														
7	L2	6	0.0	6	0.0	0.060	4.8	LOS A	0.1	1.0	0.09	0.13	0.09	48.6
8	T1	81	0.0	85	0.0	0.060	0.1	LOS A	0.1	1.0	0.09	0.13	0.09	49.0
9	R2	19	0.0	20	0.0	0.060	4.9	LOS A	0.1	1.0	0.09	0.13	0.09	48.1
Approach		106	0.0	112	0.0	0.060	1.2	NA	0.1	1.0	0.09	0.13	0.09	48.8
West: Ranfurly Street														
10	L2	17	0.0	18	0.0	0.077	7.7	LOS A	0.3	1.9	0.26	0.91	0.26	44.7
11	T1	4	0.0	4	0.0	0.077	8.5	LOS A	0.3	1.9	0.26	0.91	0.26	44.4
12	R2	41	0.0	43	0.0	0.077	8.8	LOS A	0.3	1.9	0.26	0.91	0.26	44.3
Approach		62	0.0	65	0.0	0.077	8.5	LOS A	0.3	1.9	0.26	0.91	0.26	44.4
All Vehicles		367	0.2	386	0.2	0.086	3.9	NA	0.3	2.3	0.16	0.43	0.16	47.0

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

MOVEMENT SUMMARY

Site: 101v [Awakino+Jervois_EX_AM (Site Folder: Awakino +Jervois)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Awakino Road														
1	L2	11	9.0	12	9.0	0.134	9.2	LOS A	0.5	3.7	0.59	0.97	0.59	42.0
2	T1	38	3.0	40	3.0	0.134	15.5	LOS C	0.5	3.7	0.59	0.97	0.59	41.9
3	R2	5	0.0	5	0.0	0.134	17.1	LOS C	0.5	3.7	0.59	0.97	0.59	41.9
Approach		54	3.9	57	3.9	0.134	14.4	LOS B	0.5	3.7	0.59	0.97	0.59	42.0
East: Jervois Street (SH12)														
4	L2	13	0.0	14	0.0	0.137	4.6	LOS A	0.0	0.0	0.00	0.03	0.00	49.3
5	T1	221	12.0	233	12.0	0.137	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.7
6	R2	51	4.0	54	4.0	0.041	5.6	LOS A	0.2	1.3	0.39	0.58	0.39	45.3
Approach		285	10.0	300	10.0	0.137	1.3	NA	0.2	1.3	0.07	0.13	0.07	48.9
North: Awakino Road														
7	L2	27	4.0	28	4.0	0.322	10.0	LOS B	1.5	10.6	0.63	1.02	0.76	41.1
8	T1	54	2.0	57	2.0	0.322	16.6	LOS C	1.5	10.6	0.63	1.02	0.76	41.1
9	R2	45	2.0	47	2.0	0.322	19.6	LOS C	1.5	10.6	0.63	1.02	0.76	41.0
Approach		126	2.4	133	2.4	0.322	16.3	LOS C	1.5	10.6	0.63	1.02	0.76	41.1
West: Jervois Street (SH12)														
10	L2	67	0.0	71	0.0	0.160	4.6	LOS A	0.0	0.0	0.00	0.13	0.00	48.7
11	T1	217	6.0	228	6.0	0.160	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	49.2
12	R2	8	0.0	8	0.0	0.006	5.3	LOS A	0.0	0.2	0.34	0.53	0.34	45.5
Approach		292	4.5	307	4.5	0.160	1.2	NA	0.0	0.2	0.01	0.14	0.01	49.0
All Vehicles		757	6.2	797	6.2	0.322	4.7	NA	1.5	10.6	0.18	0.34	0.20	46.9

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

MOVEMENT SUMMARY

Site: 101v [Awakino+Jervois_EX_PM (Site Folder: Awakino +Jervois)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Awakino Road														
1	L2	5	0.0	5	0.0	0.192	9.0	LOS A	0.7	5.2	0.64	0.99	0.64	41.8
2	T1	60	0.0	63	0.0	0.192	15.0	LOS C	0.7	5.2	0.64	0.99	0.64	41.7
3	R2	9	0.0	9	0.0	0.192	17.5	LOS C	0.7	5.2	0.64	0.99	0.64	41.6
Approach		74	0.0	78	0.0	0.192	14.9	LOS B	0.7	5.2	0.64	0.99	0.64	41.7
East: Jervois Street (SH12)														
4	L2	28	4.0	29	4.0	0.158	4.6	LOS A	0.0	0.0	0.00	0.05	0.00	49.1
5	T1	255	4.0	268	4.0	0.158	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	49.6
6	R2	52	0.0	55	0.0	0.038	5.4	LOS A	0.2	1.2	0.35	0.56	0.35	45.5
Approach		335	3.4	353	3.4	0.158	1.3	NA	0.2	1.2	0.05	0.13	0.05	48.9
North: Awakino Road														
7	L2	29	0.0	31	0.0	0.311	9.4	LOS A	1.4	9.9	0.60	1.00	0.72	41.4
8	T1	50	0.0	53	0.0	0.311	16.3	LOS C	1.4	9.9	0.60	1.00	0.72	41.3
9	R2	46	0.0	48	0.0	0.311	19.1	LOS C	1.4	9.9	0.60	1.00	0.72	41.2
Approach		125	0.0	132	0.0	0.311	15.8	LOS C	1.4	9.9	0.60	1.00	0.72	41.3
West: Jervois Street (SH12)														
10	L2	51	2.0	54	2.0	0.133	4.6	LOS A	0.0	0.0	0.00	0.12	0.00	48.8
11	T1	186	5.0	196	5.0	0.133	0.0	LOS A	0.0	0.0	0.00	0.12	0.00	49.3
12	R2	10	0.0	11	0.0	0.008	5.5	LOS A	0.0	0.2	0.37	0.54	0.37	45.4
Approach		247	4.2	260	4.2	0.133	1.2	NA	0.0	0.2	0.02	0.13	0.02	49.0
All Vehicles		781	2.8	822	2.8	0.311	4.9	NA	1.4	9.9	0.18	0.35	0.20	46.8

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

ATTACHMENT 3:

2029 BACKGROUND TRAFFIC INTERSECTION OPERATIONS

MOVEMENT SUMMARY

Site: 101 [Awakino+Hospital_BG_AM (Site Folder: Awakino +Hospital)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Awakino Road														
2	T1	61	2.0	64	2.0	0.083	0.2	LOS A	0.4	2.7	0.17	0.30	0.17	47.9
3	R2	77	1.0	81	1.0	0.083	4.8	LOS A	0.4	2.7	0.17	0.30	0.17	47.0
Approach		138	1.4	145	1.4	0.083	2.8	NA	0.4	2.7	0.17	0.30	0.17	47.4
East: Dargaville Hospital														
4	L2	43	3.0	45	3.0	0.033	4.8	LOS A	0.1	0.9	0.16	0.50	0.16	46.2
6	R2	3	0.0	3	0.0	0.033	5.4	LOS A	0.1	0.9	0.16	0.50	0.16	45.8
Approach		46	2.8	48	2.8	0.033	4.8	LOS A	0.1	0.9	0.16	0.50	0.16	46.2
North: Awakino Road														
7	L2	2	0.0	2	0.0	0.041	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.4
8	T1	74	1.0	78	1.0	0.041	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach		76	1.0	80	1.0	0.041	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
All Vehicles		260	1.5	274	1.5	0.083	2.4	NA	0.4	2.7	0.12	0.25	0.12	47.9

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

MOVEMENT SUMMARY

Site: 101 [Awakino+Hospital_BG_PM (Site Folder: Awakino +Hospital)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Awakino Road														
2	T1	64	2.0	67	2.0	0.049	0.1	LOS A	0.1	1.0	0.07	0.15	0.07	49.0
3	R2	23	0.0	24	0.0	0.049	4.7	LOS A	0.1	1.0	0.07	0.15	0.07	48.0
Approach		87	1.5	92	1.5	0.049	1.3	NA	0.1	1.0	0.07	0.15	0.07	48.7
East: Dargaville Hospital														
4	L2	73	1.0	77	1.0	0.051	4.7	LOS A	0.2	1.5	0.12	0.50	0.12	46.3
6	R2	2	50.0	2	50.0	0.051	5.8	LOS A	0.2	1.5	0.12	0.50	0.12	45.1
Approach		75	2.3	79	2.3	0.051	4.7	LOS A	0.2	1.5	0.12	0.50	0.12	46.3
North: Awakino Road														
7	L2	2	0.0	2	0.0	0.025	4.6	LOS A	0.0	0.0	0.00	0.02	0.00	49.4
8	T1	45	0.0	47	0.0	0.025	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	49.9
Approach		47	0.0	49	0.0	0.025	0.2	NA	0.0	0.0	0.00	0.02	0.00	49.8
All Vehicles		209	1.4	220	1.4	0.051	2.3	NA	0.2	1.5	0.07	0.25	0.07	48.1

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

MOVEMENT SUMMARY

Site: 101v [Awakino+Ranfurly_BG_AM (Site Folder: Awakino +Hospital - Copy)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Awakino Road														
1	L2	43	3.0	45	3.0	0.103	4.7	LOS A	0.2	1.4	0.08	0.19	0.08	48.2
2	T1	116	0.0	122	0.0	0.103	0.1	LOS A	0.2	1.4	0.08	0.19	0.08	48.7
3	R2	23	0.0	24	0.0	0.103	4.9	LOS A	0.2	1.4	0.08	0.19	0.08	47.8
Approach		182	0.7	192	0.7	0.103	1.8	NA	0.2	1.4	0.08	0.19	0.08	48.4
East: Ranfurly Street														
4	L2	42	0.0	44	0.0	0.053	7.8	LOS A	0.2	1.4	0.22	0.91	0.22	44.9
5	T1	12	0.0	13	0.0	0.053	8.9	LOS A	0.2	1.4	0.22	0.91	0.22	44.6
6	R2	3	0.0	3	0.0	0.053	8.9	LOS A	0.2	1.4	0.22	0.91	0.22	44.5
Approach		57	0.0	60	0.0	0.053	8.1	LOS A	0.2	1.4	0.22	0.91	0.22	44.8
North: Awakino Road														
7	L2	5	0.0	5	0.0	0.073	5.0	LOS A	0.2	1.3	0.13	0.13	0.13	48.5
8	T1	98	0.0	103	0.0	0.073	0.2	LOS A	0.2	1.3	0.13	0.13	0.13	48.9
9	R2	25	0.0	26	0.0	0.073	5.1	LOS A	0.2	1.3	0.13	0.13	0.13	48.0
Approach		128	0.0	135	0.0	0.073	1.3	NA	0.2	1.3	0.13	0.13	0.13	48.7
West: Ranfurly Street														
10	L2	27	0.0	28	0.0	0.070	7.9	LOS A	0.3	1.8	0.29	0.91	0.29	44.7
11	T1	9	0.0	9	0.0	0.070	8.8	LOS A	0.3	1.8	0.29	0.91	0.29	44.4
12	R2	24	0.0	25	0.0	0.070	9.3	LOS A	0.3	1.8	0.29	0.91	0.29	44.3
Approach		60	0.0	63	0.0	0.070	8.6	LOS A	0.3	1.8	0.29	0.91	0.29	44.5
All Vehicles		427	0.3	449	0.3	0.103	3.4	NA	0.3	1.8	0.14	0.37	0.14	47.4

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

MOVEMENT SUMMARY

Site: 101v [Awakino+Ranfurly_BG_PM (Site Folder: Awakino +Hospital - Copy)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Awakino Road														
1	L2	30	0.0	32	0.0	0.093	4.8	LOS A	0.4	2.6	0.16	0.27	0.16	47.6
2	T1	76	1.0	80	1.0	0.093	0.2	LOS A	0.4	2.6	0.16	0.27	0.16	48.0
3	R2	53	0.0	56	0.0	0.093	4.9	LOS A	0.4	2.6	0.16	0.27	0.16	47.1
Approach		159	0.5	167	0.5	0.093	2.6	NA	0.4	2.6	0.16	0.27	0.16	47.6
East: Ranfurly Street														
4	L2	36	0.0	38	0.0	0.051	7.8	LOS A	0.2	1.3	0.21	0.92	0.21	44.9
5	T1	15	0.0	16	0.0	0.051	8.6	LOS A	0.2	1.3	0.21	0.92	0.21	44.6
6	R2	3	0.0	3	0.0	0.051	8.6	LOS A	0.2	1.3	0.21	0.92	0.21	44.5
Approach		54	0.0	57	0.0	0.051	8.1	LOS A	0.2	1.3	0.21	0.92	0.21	44.8
North: Awakino Road														
7	L2	6	0.0	6	0.0	0.064	4.8	LOS A	0.1	1.0	0.09	0.12	0.09	48.6
8	T1	87	0.0	92	0.0	0.064	0.1	LOS A	0.1	1.0	0.09	0.12	0.09	49.0
9	R2	20	0.0	21	0.0	0.064	4.9	LOS A	0.1	1.0	0.09	0.12	0.09	48.1
Approach		113	0.0	119	0.0	0.064	1.2	NA	0.1	1.0	0.09	0.12	0.09	48.8
West: Ranfurly Street														
10	L2	18	0.0	19	0.0	0.083	7.7	LOS A	0.3	2.1	0.27	0.91	0.27	44.6
11	T1	4	0.0	4	0.0	0.083	8.6	LOS A	0.3	2.1	0.27	0.91	0.27	44.4
12	R2	44	0.0	46	0.0	0.083	9.0	LOS A	0.3	2.1	0.27	0.91	0.27	44.2
Approach		66	0.0	69	0.0	0.083	8.6	LOS A	0.3	2.1	0.27	0.91	0.27	44.3
All Vehicles		392	0.2	413	0.2	0.093	4.0	NA	0.4	2.6	0.17	0.42	0.17	47.0

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

MOVEMENT SUMMARY

Site: 101v [Awakino+Jervois_BG_AM (Site Folder: Awakino +Jervois)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Awakino Road														
1	L2	12	9.0	13	9.0	0.156	9.3	LOS A	0.6	4.2	0.61	0.97	0.61	41.6
2	T1	41	3.0	43	3.0	0.156	16.7	LOS C	0.6	4.2	0.61	0.97	0.61	41.5
3	R2	5	0.0	5	0.0	0.156	18.5	LOS C	0.6	4.2	0.61	0.97	0.61	41.5
Approach		58	4.0	61	4.0	0.156	15.3	LOS C	0.6	4.2	0.61	0.97	0.61	41.5
East: Jervois Street (SH12)														
4	L2	14	0.0	15	0.0	0.147	4.6	LOS A	0.0	0.0	0.00	0.03	0.00	49.3
5	T1	237	12.0	249	12.0	0.147	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.7
6	R2	55	4.0	58	4.0	0.045	5.7	LOS A	0.2	1.4	0.40	0.59	0.40	45.3
Approach		306	10.0	322	10.0	0.147	1.3	NA	0.2	1.4	0.07	0.13	0.07	48.9
North: Awakino Road														
7	L2	29	4.0	31	4.0	0.373	10.9	LOS B	1.8	12.9	0.66	1.05	0.87	40.3
8	T1	58	2.0	61	2.0	0.373	18.5	LOS C	1.8	12.9	0.66	1.05	0.87	40.3
9	R2	48	2.0	51	2.0	0.373	22.0	LOS C	1.8	12.9	0.66	1.05	0.87	40.2
Approach		135	2.4	142	2.4	0.373	18.1	LOS C	1.8	12.9	0.66	1.05	0.87	40.3
West: Jervois Street (SH12)														
10	L2	72	0.0	76	0.0	0.172	4.6	LOS A	0.0	0.0	0.00	0.13	0.00	48.7
11	T1	233	6.0	245	6.0	0.172	0.1	LOS A	0.0	0.0	0.00	0.13	0.00	49.2
12	R2	9	0.0	9	0.0	0.007	5.4	LOS A	0.0	0.2	0.36	0.53	0.36	45.4
Approach		314	4.5	331	4.5	0.172	1.2	NA	0.0	0.2	0.01	0.14	0.01	48.9
All Vehicles		813	6.2	856	6.2	0.373	5.1	NA	1.8	12.9	0.18	0.35	0.22	46.6

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

MOVEMENT SUMMARY

Site: 101v [Awakino+Jervois_BG_PM (Site Folder: Awakino +Jervois)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Awakino Road														
1	L2	5	0.0	5	0.0	0.222	9.3	LOS A	0.9	6.2	0.68	1.00	0.70	41.2
2	T1	64	0.0	67	0.0	0.222	16.3	LOS C	0.9	6.2	0.68	1.00	0.70	41.1
3	R2	10	0.0	11	0.0	0.222	19.2	LOS C	0.9	6.2	0.68	1.00	0.70	41.1
Approach		79	0.0	83	0.0	0.222	16.2	LOS C	0.9	6.2	0.68	1.00	0.70	41.1
East: Jervois Street (SH12)														
4	L2	30	4.0	32	4.0	0.170	4.6	LOS A	0.0	0.0	0.00	0.05	0.00	49.1
5	T1	273	4.0	287	4.0	0.170	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	49.6
6	R2	56	0.0	59	0.0	0.042	5.4	LOS A	0.2	1.3	0.36	0.56	0.36	45.4
Approach		359	3.4	378	3.4	0.170	1.3	NA	0.2	1.3	0.06	0.13	0.06	48.9
North: Awakino Road														
7	L2	31	0.0	33	0.0	0.360	10.2	LOS B	1.7	12.1	0.63	1.03	0.82	40.6
8	T1	54	0.0	57	0.0	0.360	18.1	LOS C	1.7	12.1	0.63	1.03	0.82	40.5
9	R2	49	0.0	52	0.0	0.360	21.3	LOS C	1.7	12.1	0.63	1.03	0.82	40.5
Approach		134	0.0	141	0.0	0.360	17.5	LOS C	1.7	12.1	0.63	1.03	0.82	40.5
West: Jervois Street (SH12)														
10	L2	55	2.0	58	2.0	0.143	4.6	LOS A	0.0	0.0	0.00	0.12	0.00	48.8
11	T1	199	5.0	209	5.0	0.143	0.0	LOS A	0.0	0.0	0.00	0.12	0.00	49.3
12	R2	11	0.0	12	0.0	0.009	5.6	LOS A	0.0	0.3	0.39	0.55	0.39	45.4
Approach		265	4.2	279	4.2	0.143	1.2	NA	0.0	0.3	0.02	0.14	0.02	49.0
All Vehicles		837	2.8	881	2.8	0.360	5.3	NA	1.7	12.1	0.19	0.36	0.23	46.5

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

ATTACHMENT 4:

2029 TOTAL TRAFFIC INTERSECTION OPERATIONS

MOVEMENT SUMMARY

Site: 101 [Awakino+Hospital_TOT_AM (Site Folder: Awakino +Hospital)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Awakino Road														
2	T1	123	2.0	129	2.0	0.131	0.8	LOS A	0.6	4.1	0.34	0.24	0.34	48.0
3	R2	77	1.0	81	1.0	0.131	5.9	LOS A	0.6	4.1	0.34	0.24	0.34	47.0
Approach		200	1.6	211	1.6	0.131	2.8	NA	0.6	4.1	0.34	0.24	0.34	47.6
East: Dargaville Hospital														
4	L2	43	3.0	45	3.0	0.044	5.8	LOS A	0.2	1.2	0.39	0.58	0.39	45.7
6	R2	4	0.0	4	0.0	0.044	7.0	LOS A	0.2	1.2	0.39	0.58	0.39	45.3
Approach		47	2.7	49	2.7	0.044	5.9	LOS A	0.2	1.2	0.39	0.58	0.39	45.6
North: Awakino Road														
7	L2	7	0.0	7	0.0	0.177	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.4
8	T1	319	1.0	336	1.0	0.177	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach		326	1.0	343	1.0	0.177	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
All Vehicles		573	1.3	603	1.3	0.177	1.5	NA	0.6	4.1	0.15	0.14	0.15	48.7

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

MOVEMENT SUMMARY

Site: 101 [Awakino+Hospital_TOT_PM (Site Folder: Awakino +Hospital)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Awakino Road														
2	T1	309	2.0	325	2.0	0.184	0.0	LOS A	0.2	1.3	0.04	0.04	0.04	49.7
3	R2	23	0.0	24	0.0	0.184	5.0	LOS A	0.2	1.3	0.04	0.04	0.04	48.7
Approach		332	1.9	349	1.9	0.184	0.4	NA	0.2	1.3	0.04	0.04	0.04	49.6
East: Dargaville Hospital														
4	L2	73	1.0	77	1.0	0.064	4.9	LOS A	0.3	1.8	0.21	0.51	0.21	46.1
6	R2	7	50.0	7	50.0	0.064	8.5	LOS A	0.3	1.8	0.21	0.51	0.21	44.9
Approach		80	5.3	84	5.3	0.064	5.2	LOS A	0.3	1.8	0.21	0.51	0.21	46.0
North: Awakino Road														
7	L2	3	0.0	3	0.0	0.059	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.4
8	T1	107	0.0	113	0.0	0.059	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach		110	0.0	116	0.0	0.059	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
All Vehicles		522	2.0	549	2.0	0.184	1.1	NA	0.3	1.8	0.06	0.11	0.06	49.1

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

MOVEMENT SUMMARY

Site: 101v [Awakino+Ranfurly_TOT_AM (Site Folder: Awakino+Hospital - Copy)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Awakino Road														
1	L2	43	3.0	45	3.0	0.132	5.1	LOS A	0.3	1.8	0.13	0.15	0.13	48.3
2	T1	164	0.0	173	0.0	0.132	0.2	LOS A	0.3	1.8	0.13	0.15	0.13	48.8
3	R2	23	0.0	24	0.0	0.132	5.8	LOS A	0.3	1.8	0.13	0.15	0.13	47.8
Approach		230	0.6	242	0.6	0.132	1.7	NA	0.3	1.8	0.13	0.15	0.13	48.6
East: Ranfurly Street														
4	L2	42	0.0	44	0.0	0.075	8.7	LOS A	0.3	1.9	0.43	0.91	0.43	44.3
5	T1	12	0.0	13	0.0	0.075	11.5	LOS B	0.3	1.9	0.43	0.91	0.43	44.1
6	R2	5	0.0	5	0.0	0.075	12.4	LOS B	0.3	1.9	0.43	0.91	0.43	43.9
Approach		59	0.0	62	0.0	0.075	9.6	LOS A	0.3	1.9	0.43	0.91	0.43	44.2
North: Awakino Road														
7	L2	13	0.0	14	0.0	0.216	5.4	LOS A	0.6	4.5	0.17	0.13	0.17	48.3
8	T1	286	0.0	301	0.0	0.216	0.3	LOS A	0.6	4.5	0.17	0.13	0.17	48.8
9	R2	74	0.0	78	0.0	0.216	5.4	LOS A	0.6	4.5	0.17	0.13	0.17	47.9
Approach		373	0.0	393	0.0	0.216	1.5	NA	0.6	4.5	0.17	0.13	0.17	48.6
West: Ranfurly Street														
10	L2	39	0.0	41	0.0	0.106	8.1	LOS A	0.4	2.7	0.37	0.92	0.37	43.9
11	T1	9	0.0	9	0.0	0.106	11.5	LOS B	0.4	2.7	0.37	0.92	0.37	43.7
12	R2	24	0.0	25	0.0	0.106	12.8	LOS B	0.4	2.7	0.37	0.92	0.37	43.6
Approach		72	0.0	76	0.0	0.106	10.1	LOS B	0.4	2.7	0.37	0.92	0.37	43.8
All Vehicles		734	0.2	773	0.2	0.216	3.0	NA	0.6	4.5	0.20	0.28	0.20	47.7

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

MOVEMENT SUMMARY

Site: 101v [Awakino+Ranfurly_TOT_PM (Site Folder: Awakino+Hospital - Copy)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Awakino Road														
1	L2	30	0.0	32	0.0	0.197	5.0	LOS A	0.5	3.4	0.12	0.13	0.12	48.5
2	T1	264	1.0	278	1.0	0.197	0.1	LOS A	0.5	3.4	0.12	0.13	0.12	48.9
3	R2	53	0.0	56	0.0	0.197	5.1	LOS A	0.5	3.4	0.12	0.13	0.12	48.0
Approach		347	0.8	365	0.8	0.197	1.3	NA	0.5	3.4	0.12	0.13	0.12	48.8
East: Ranfurly Street														
4	L2	36	0.0	38	0.0	0.078	8.0	LOS A	0.3	2.0	0.31	0.92	0.31	44.3
5	T1	15	0.0	16	0.0	0.078	10.7	LOS B	0.3	2.0	0.31	0.92	0.31	44.1
6	R2	11	0.0	12	0.0	0.078	11.8	LOS B	0.3	2.0	0.31	0.92	0.31	43.9
Approach		62	0.0	65	0.0	0.078	9.3	LOS A	0.3	2.0	0.31	0.92	0.31	44.2
North: Awakino Road														
7	L2	8	0.0	8	0.0	0.103	5.6	LOS A	0.3	2.0	0.19	0.13	0.19	48.3
8	T1	135	0.0	142	0.0	0.103	0.3	LOS A	0.3	2.0	0.19	0.13	0.19	48.8
9	R2	32	0.0	34	0.0	0.103	5.7	LOS A	0.3	2.0	0.19	0.13	0.19	47.9
Approach		175	0.0	184	0.0	0.103	1.6	NA	0.3	2.0	0.19	0.13	0.19	48.6
West: Ranfurly Street														
10	L2	67	0.0	71	0.0	0.164	8.7	LOS A	0.6	4.3	0.45	0.93	0.45	44.0
11	T1	4	0.0	4	0.0	0.164	10.9	LOS B	0.6	4.3	0.45	0.93	0.45	43.8
12	R2	44	0.0	46	0.0	0.164	12.0	LOS B	0.6	4.3	0.45	0.93	0.45	43.7
Approach		115	0.0	121	0.0	0.164	10.1	LOS B	0.6	4.3	0.45	0.93	0.45	43.9
All Vehicles		699	0.4	736	0.4	0.197	3.5	NA	0.6	4.3	0.21	0.33	0.21	47.4

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

MOVEMENT SUMMARY

Site: 101v [Awakino+Jervois_TOT_AM (Site Folder: Awakino +Jervois)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Awakino Road														
1	L2	12	9.0	13	9.0	0.205	9.4	LOS A	0.8	5.6	0.65	0.98	0.66	41.1
2	T1	54	3.0	57	3.0	0.205	17.5	LOS C	0.8	5.6	0.65	0.98	0.66	41.0
3	R2	5	0.0	5	0.0	0.205	21.8	LOS C	0.8	5.6	0.65	0.98	0.66	41.0
Approach		71	3.8	75	3.8	0.205	16.4	LOS C	0.8	5.6	0.65	0.98	0.66	41.0
East: Jervois Street (SH12)														
4	L2	14	0.0	15	0.0	0.147	4.6	LOS A	0.0	0.0	0.00	0.03	0.00	49.3
5	T1	237	12.0	249	12.0	0.147	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.7
6	R2	64	4.0	67	4.0	0.053	5.8	LOS A	0.2	1.7	0.42	0.60	0.42	45.3
Approach		315	9.8	332	9.8	0.147	1.4	NA	0.2	1.7	0.08	0.15	0.08	48.7
North: Awakino Road														
7	L2	67	4.0	71	4.0	0.772	21.2	LOS C	7.3	51.9	0.80	1.44	2.05	35.5
8	T1	108	2.0	114	2.0	0.772	31.2	LOS D	7.3	51.9	0.80	1.44	2.05	35.5
9	R2	98	2.0	103	2.0	0.772	36.3	LOS E	7.3	51.9	0.80	1.44	2.05	35.4
Approach		273	2.5	287	2.5	0.772	30.6	LOS D	7.3	51.9	0.80	1.44	2.05	35.5
West: Jervois Street (SH12)														
10	L2	85	0.0	89	0.0	0.179	4.6	LOS A	0.0	0.0	0.00	0.15	0.00	48.6
11	T1	233	6.0	245	6.0	0.179	0.1	LOS A	0.0	0.0	0.00	0.15	0.00	49.1
12	R2	9	0.0	9	0.0	0.007	5.4	LOS A	0.0	0.2	0.36	0.53	0.36	45.4
Approach		327	4.3	344	4.3	0.179	1.4	NA	0.0	0.2	0.01	0.16	0.01	48.8
All Vehicles		986	5.5	1038	5.5	0.772	10.6	NA	7.3	51.9	0.30	0.57	0.65	43.7

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

MOVEMENT SUMMARY

Site: 101v [Awakino+Jervois_TOT_PM (Site Folder: Awakino +Jervois)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Awakino Road														
1	L2	5	0.0	5	0.0	0.423	12.1	LOS B	2.1	14.6	0.78	1.10	1.09	38.8
2	T1	114	0.0	120	0.0	0.423	22.0	LOS C	2.1	14.6	0.78	1.10	1.09	38.8
3	R2	10	0.0	11	0.0	0.423	24.9	LOS C	2.1	14.6	0.78	1.10	1.09	38.7
Approach		129	0.0	136	0.0	0.423	21.8	LOS C	2.1	14.6	0.78	1.10	1.09	38.8
East: Jervois Street (SH12)														
4	L2	30	4.0	32	4.0	0.170	4.6	LOS A	0.0	0.0	0.00	0.05	0.00	49.1
5	T1	273	4.0	287	4.0	0.170	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	49.6
6	R2	94	0.0	99	0.0	0.075	5.7	LOS A	0.3	2.3	0.41	0.60	0.41	45.3
Approach		397	3.1	418	3.1	0.170	1.7	NA	0.3	2.3	0.10	0.18	0.10	48.5
North: Awakino Road														
7	L2	40	0.0	42	0.0	0.529	13.3	LOS B	3.0	21.1	0.71	1.13	1.17	38.2
8	T1	67	0.0	71	0.0	0.529	23.4	LOS C	3.0	21.1	0.71	1.13	1.17	38.1
9	R2	62	0.0	65	0.0	0.529	29.4	LOS D	3.0	21.1	0.71	1.13	1.17	38.1
Approach		169	0.0	178	0.0	0.529	23.2	LOS C	3.0	21.1	0.71	1.13	1.17	38.1
West: Jervois Street (SH12)														
10	L2	105	2.0	111	2.0	0.171	4.6	LOS A	0.0	0.0	0.00	0.19	0.00	48.4
11	T1	199	5.0	209	5.0	0.171	0.1	LOS A	0.0	0.0	0.00	0.19	0.00	48.9
12	R2	11	0.0	12	0.0	0.009	5.6	LOS A	0.0	0.3	0.39	0.55	0.39	45.4
Approach		315	3.8	332	3.8	0.171	1.8	NA	0.0	0.3	0.01	0.20	0.01	48.6
All Vehicles		1010	2.4	1063	2.4	0.529	7.9	NA	3.0	21.1	0.26	0.46	0.38	45.0

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

MOVEMENT SUMMARY

Site: 101v [Awakino+Jervois_TOT_AM_REM (Site Folder: Awakino+Jervois)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Awakino Road														
1	L2	12	9.0	13	9.0	0.206	9.4	LOS A	0.8	5.6	0.65	0.98	0.66	41.1
2	T1	54	3.0	57	3.0	0.206	17.5	LOS C	0.8	5.6	0.65	0.98	0.66	41.0
3	R2	5	0.0	5	0.0	0.206	22.1	LOS C	0.8	5.6	0.65	0.98	0.66	41.0
Approach		71	3.8	75	3.8	0.206	16.5	LOS C	0.8	5.6	0.65	0.98	0.66	41.0
East: Jervois Street (SH12)														
4	L2	14	0.0	15	0.0	0.147	4.6	LOS A	0.0	0.0	0.00	0.03	0.00	49.3
5	T1	237	12.0	249	12.0	0.147	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.7
6	R2	64	4.0	67	4.0	0.053	5.8	LOS A	0.2	1.7	0.42	0.59	0.42	45.4
Approach		315	9.8	332	9.8	0.147	1.4	NA	0.2	1.7	0.08	0.14	0.08	48.8
North: Awakino Road														
7	L2	67	4.0	71	4.0	0.079	9.0	LOS A	0.3	2.1	0.36	0.89	0.36	44.6
8	T1	108	2.0	114	2.0	0.692	27.3	LOS D	4.9	34.7	0.87	1.31	1.77	35.9
9	R2	98	2.0	103	2.0	0.692	32.0	LOS D	4.9	34.7	0.87	1.31	1.77	35.9
Approach		273	2.5	287	2.5	0.692	24.5	LOS C	4.9	34.7	0.74	1.21	1.43	37.7
West: Jervois Street (SH12)														
10	L2	85	0.0	89	0.0	0.179	4.6	LOS A	0.0	0.0	0.00	0.15	0.00	48.6
11	T1	233	6.0	245	6.0	0.179	0.1	LOS A	0.0	0.0	0.00	0.15	0.00	49.1
12	R2	9	0.0	9	0.0	0.007	5.4	LOS A	0.0	0.2	0.36	0.53	0.36	45.4
Approach		327	4.3	344	4.3	0.179	1.4	NA	0.0	0.2	0.01	0.16	0.01	48.8
All Vehicles		986	5.5	1038	5.5	0.692	8.9	NA	4.9	34.7	0.28	0.50	0.47	44.6

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

MOVEMENT SUMMARY

Site: 101v [Awakino+Jervois_TOT_PM_REM (Site Folder: Awakino+Jervois)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Awakino Road														
1	L2	5	0.0	5	0.0	0.423	12.1	LOS B	2.1	14.6	0.78	1.10	1.09	38.8
2	T1	114	0.0	120	0.0	0.423	22.0	LOS C	2.1	14.6	0.78	1.10	1.09	38.8
3	R2	10	0.0	11	0.0	0.423	24.9	LOS C	2.1	14.6	0.78	1.10	1.09	38.7
Approach		129	0.0	136	0.0	0.423	21.8	LOS C	2.1	14.6	0.78	1.10	1.09	38.8
East: Jervois Street (SH12)														
4	L2	30	4.0	32	4.0	0.170	4.6	LOS A	0.0	0.0	0.00	0.05	0.00	49.1
5	T1	273	4.0	287	4.0	0.170	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	49.6
6	R2	94	0.0	99	0.0	0.075	5.7	LOS A	0.3	2.3	0.41	0.59	0.41	45.5
Approach		397	3.1	418	3.1	0.170	1.7	NA	0.3	2.3	0.10	0.18	0.10	48.5
North: Awakino Road														
7	L2	40	0.0	42	0.0	0.044	8.5	LOS A	0.2	1.1	0.32	0.88	0.32	44.8
8	T1	67	0.0	71	0.0	0.485	22.4	LOS C	2.4	17.0	0.82	1.13	1.22	37.4
9	R2	62	0.0	65	0.0	0.485	28.2	LOS D	2.4	17.0	0.82	1.13	1.22	37.4
Approach		169	0.0	178	0.0	0.485	21.3	LOS C	2.4	17.0	0.70	1.07	1.00	38.9
West: Jervois Street (SH12)														
10	L2	105	2.0	111	2.0	0.171	4.6	LOS A	0.0	0.0	0.00	0.19	0.00	48.4
11	T1	199	5.0	209	5.0	0.171	0.1	LOS A	0.0	0.0	0.00	0.19	0.00	48.9
12	R2	11	0.0	12	0.0	0.009	5.6	LOS A	0.0	0.3	0.39	0.55	0.39	45.4
Approach		315	3.8	332	3.8	0.171	1.8	NA	0.0	0.3	0.01	0.20	0.01	48.6
All Vehicles		1010	2.4	1063	2.4	0.485	7.6	NA	2.4	17.0	0.26	0.45	0.35	45.2

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

TRAFFIC PLANNING CONSULTANTS LTD

Ref: 220035

14 November 2022

Alisa Neal
Associate
Barker and Associates

RESPONSE TO ADDITIONAL INFORMATION REQUEST – MOONLIGHT HEIGHTS, AWAKINO ROAD, DARGAVILLE

The following is a response to the additional information requests received from Kaipara District Council (via Northland Transport Alliance) and Waka Kotaki in response to the provided Transport Assessment. This letter follows a request-comment format, where requests/suggested change comments from Council are shown in *italic blue font* and those from WK are shown in *italic green font* followed by our response. It is intended that this response be read in conjunction with the Transport Assessment dated June 2022.

Request 1:

The Traffic Impact Assessment (TIA) provided with the request does not address effects of active transport connectivity requirements with the existing network, with the schools, playground, shops, civic centre/precinct – please provide mitigation measures in the ITA.

Response 1:

This was an oversight within the reporting, as footpath provisions to connect to the wider road network was discussed within the project team, prior to Plan Change Lodgement.

A footpath is provided on the western side of Awakino Road, terminating 215 metres north of Paritai Place. As part of any resultant subdivision and road construction within the Plan Change area the existing footpath will be extended to the north connecting to the northern most boundary of the subject site. See **Figure 1** below.

To supplement this footpath extension, and subject to detailed design a pedestrian crossing facility will be included as part of the main intersection design of Awakino Road and the Awakino Precinct area.

Lastly, as the Dargaville Spatial Plan looks to utilise Awakino Road as a main North-South pedestrian/cyclist route, there is opportunity to provide a shared pathway along the site frontage (eastern side of Awakino Road), which currently is without any public footpath between Cranley Street and its northern end. Providing the shared path along this side of the Awakino Road, in conjunction with long term planning by KDC, will allow for a great number of residents to have direct access to an active mode connection. It is noted that the applicant would only provide a shared path for the extent of their development area frontage which would be completed as part of subdivision enabling works.

With respect to walking/cycling catchment area, it is considered that Dargaville High School and Dargaville Hospital are within reasonable walking distances, which will be encouraged through the supporting active transport connections as a result of subsequent subdivisions. As for connection to playgrounds, as part of a future subdivision, green space and public park area will be included, allowing for good active mode connection. For shopping areas, given the distance being ~2.5 kilometres, it is unlikely that many trips will be made by active modes, as the distance will be discouraging for many, taking approximately 30 minutes one-way. However, with the improvements made to the existing public footpath network, safe connections will be available giving individuals the option of mode choice.

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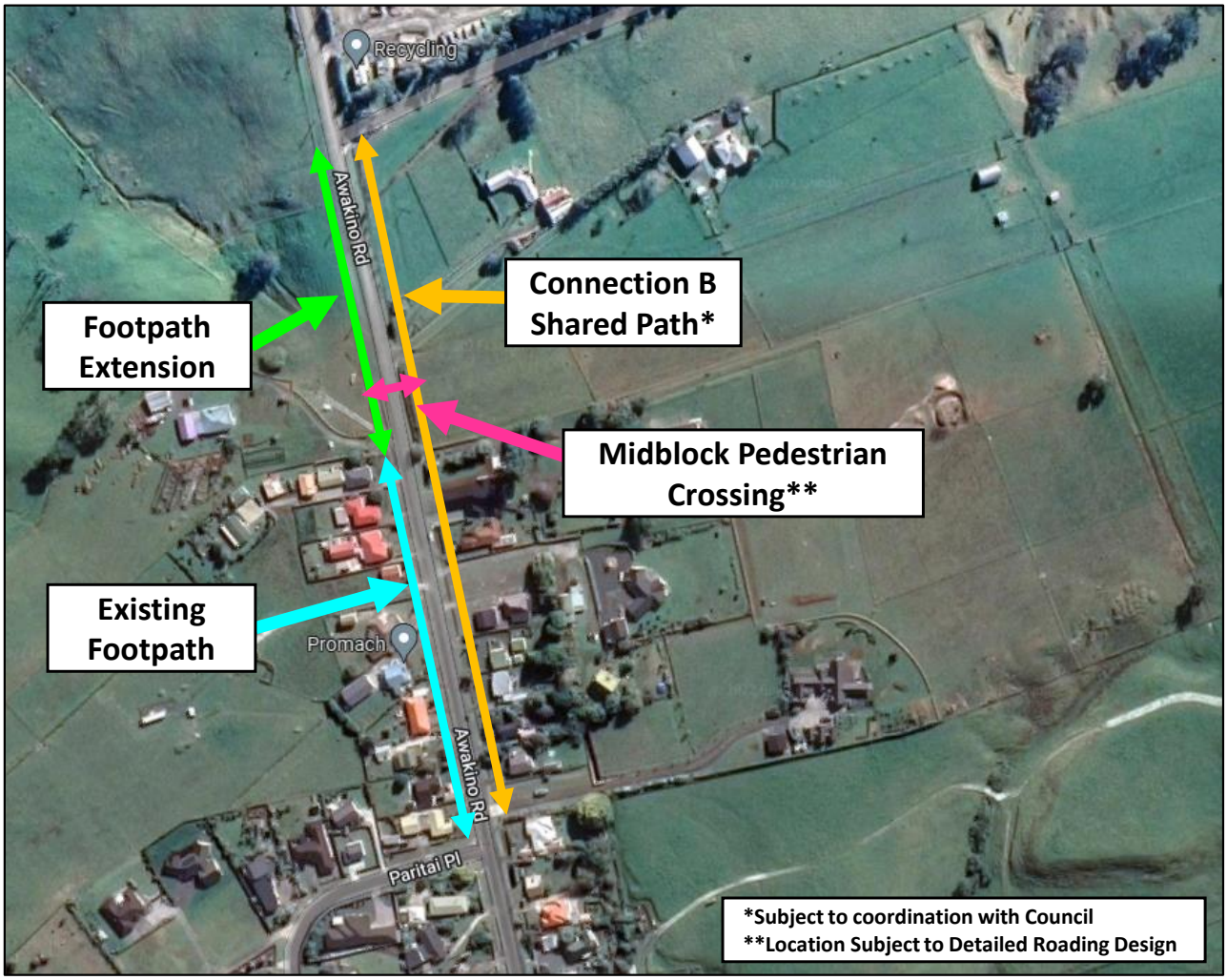

Figure 1: Awakino Precinct Existing Footpath Network Extension

Request 2:

Provision for cyclists – will this be on-road or off-road?

Response 2:

It is anticipated that cyclists will have the option to choose between an off-road 3 metre shared path, or cycle within the carriageway.

This matter will be investigated in greater detail at a future subdivision and road design stage, as it is considered to be a more detailed design matter.

Request 3:

Even though recent crashes that occurred in Awakino road are minor injury crashes, the cause is mainly due to turning movements, which will increase due to this plan change and this is due to the gridline alignment of Dargaville. Mitigations are to be provided to address the additional risk due to this plan change – please address in ITA.

Response 3:

Request 7 builds upon Request 3 and has been responded to in Response 7.

Request 4:

Please ensure the ITA provides recommendations for locations of pedestrian/cyclists crossing facilities, which should comply with "NZ Pedestrian Planning Design Guide 2022 and associated Pedestrian Crossing Selection Tool".

Response 4:

At least one pedestrian/cyclist crossing facility will be provided across Awakino Road near the site's frontage. However, as the exact location of the road network is unknown and subject to change following further engineering investigation, provided recommended locations would be of low value at this point in time.

Notwithstanding, the location of the pedestrian/cyclist facility can be investigated further at the subdivision design stage.

Request 5:

ITA to include how safe system compliant pedestrian and cycle routes will be provided to local schools (Primary & Secondary), parks and key destinations.

Response 5:

The site is located 1.2 kilometres from Dargaville High School and 2.0 kilometres from Selwyn Park Primary School. As identified previously, the existing public footpath network will be extended and supplemented by a robust pedestrian/cyclist network within the Plan Change Area, along with a mid-block pedestrian/cyclist facility (subject to further design at a later stage). Similarly, green space will be provided within the future area, allowing for close, well-connected access to parks.

Request 6:

Will the existing pavement design along Awakino Road be able to accommodate the additional traffic? – Please address in the ITA.

Response 6:

There is no reason to anticipate that Awakino Road pavement design would structurally fail as a result of the additional vehicle loading from the proposal. As the majority of traffic from the Awakino Precinct would be personal vehicle, the loading profile is fairly small, compared to that of larger trucks. If there are any as-built construction details of the road which Council could provide for Awakino Road, further investigation could be carried out. Additionally, it is noted that with the old landfill location north of the subject site and existing Transfer Station, heavy vehicles currently utilise the road regularly and this can be reasoned to have been a factor in the existing road/pavement design.

As part of the resultant intersection designs to serve the subject areas, there is opportunity to reform parts of Awakino Road near the subject site, as needed. However, a full reconstruction is not considered necessary at this stage in time. However, during construction phases with significant increases to heavy vehicle traffic, there is potential for increased wearing on the road. This can be addressed through a pre and post road survey, which will identify any existing deficiencies and any created deficiencies as a result of the construction process.

Request 7:

Proposed auxiliary left turn lane at SH 12 and Awakino Road intersection is not in compliance with Safe System, National Cycle Strategy, and the National Standards – Applicant to address this and propose a mitigation that is safe system compliant.

Response 7:

The auxiliary left turn lane for the southbound approach was proposed to help reduce average delays experienced at this approach. By reducing delays, it is considered that drivers will have more patience when looking to turn and therefore be less likely to attempt to take an unsuitable gap within the traffic stream, which can lead to a crash. It is not clear how this proposal is not in compliance with the standards mentioned and more specifics in relation to this would be appreciated.

When examining the specifics of the reported minor injury crashes; the following is noted:

- September 2020: Driver suspected to be under the influence of alcohol, travelling at excessive speed hit a vehicle's rear end, which hit multiple other vehicles.
- July 2021: Driver failed to stop at stop sign, hitting vehicle along Jervois Street (SH12)
- September 2019: Drivers on opposite sides of Awakino Road, both went to travel through intersection at same time with northbound through vehicle being hit by southbound right-turning vehicle, which failed to give-way.
- February 2017: Truck driver failed to stop at stop sign, hitting vehicle along Jervois Street (SH12).

As part of the Safe System Approach, the goal is to eliminate deaths and serious injuries on roads within New Zealand. As there has been four minor injuries at this intersection in the past 5+ years, (five serious injuries in the past 42 years, 1980-2022), it is considered that this intersection operates at a level that is generally consistent with the objectives of the SSA.

In terms of road improvements to reduce the potential of side-on collisions at this intersection as part of a SSA, a speed hump could be installed on the north intersection approach approximately 10 metres from the stop line position. As such drivers would be required to slow in advance of the intersection, thereby reducing the potential for travelling through the intersection without stopping. However it is noted that this improvement would not address driver's making mistakes and pulling into the path of oncoming vehicles. The only realistic ways to address this would be to reduce speed limits along SH12, install a raised speed table through the intersection, or construct a roundabout.

With respect to improvements outside of the road carriageway at this intersection, the pedestrian crossing along the north approach of the intersection of Awakino Road and SH12 can have its alignment improved, such that pedestrians are able to walk in a straight line across the carriageway, as illustrated in **Figure 2**.

Figure 2: Awakino Road Pedestrian Crossing

At this stage of the development process, it is considered that greater assessment and improvement investigation can be successfully be carried out following a successful Plan Change Application. To ensure this, a provision can be included within the Awakino Precinct Plan that would call for the intersection of Awakino Road and SH12 to undergo a full SSA Assessment for the development of more than 10 lots at a subdivision stage.

Request 8:

The Transport Assessment Report (dated 2 June 2022) states: At the intersection of Awakino Road and Jervois Street (SH12), the north intersection approach was forecast to result in increased average delays for all turning movements, such that the proposal would likely result in noticeable effects onto the operation to the intersection. To mitigate the effects of the proposal, an auxiliary left-turn lane, with 20 metres of storage can be constructed through road widening on the north approach to improve the intersection's capacity and reduce delays to an acceptable level. It is considered that the proposed provisions will trigger appropriate upgrading of the intersection of Awakino Road and Jervois Street (SH12) as necessary.

a. Can the precinct provision that would trigger this upgrade be clearly stipulated;

b. Can the applicant consult with Waka Kotahi in regard to any proposal resulting in works on State Highway 12 as per Chapter 11 Transport Network, Rule 11.10.2(1)(b) Road Construction and works in or on a road not undertaken by the Council or NZ Transport Agency (where Rule 11.10.1 does not apply).

c. In terms of the safe and efficient operation of the SH12/Awakino Road intersection, there is no discussion around a safer system treatment that would improve both the safety and efficiency of the intersection in the future for vehicles and active transportation modes.

d. The Transport Assessment notes that the major contributing factor for crashes at this intersection is human error and this is expected to occur to a degree within any road environment. It is highly likely that the increase in traffic using this intersection (particularly right turn movements) generated by this development will increase the safety risk. The addition of a left turn lane is targeting the efficiency of the intersection but it in no way addresses the safety performance and therefore can not be considered a safer system treatment.

e. Can evidence and a general arrangement plan be provided to Waka Kotahi that this is an appropriate intersection form and will provide the safest outcome for vehicle drivers, cyclists and pedestrians. The concern being that the intersection will involve three active lanes and visibility will be reduced.

f. In consideration of all the points above, can the applicant review the Transport Assessment and provide more detail in terms of road safety and the provision of walking and cycling facilities that would then enable Waka Kotahi to re-assess the proposal.

Response 8:

Following comments from Council and WK as part of this Plan Change Application, it has been identified that implementing an auxiliary left turn lane on the north intersection approach of Awakino Road and SH12 was not a preferred outcome following preliminary investigation. As such a precinct provision to implement this is not considered necessary at this stage, rather a Precinct Provision to trigger a Safe System Approach Assessment of the existing public footpath network along Awakino Road between the subject lands and Kauri Court, and the intersection of Awakino Road and SH12. Having this a precinct provision will aid in the outcomes as the context of any proposed subdivision, its roading, number of dwellings, and other supporting active transport infrastructure can be considered as a whole.

Any works on the SH will involve consultation and approval with WK. This would be a standard condition of any subsequent consent decision.

Request 9:

The applicant has stated that the plan change will be consistent with the planned urban built form anticipated for Dargaville giving effect to the Dargaville Spatial Plan. Could the following matters please be clarified:

a. How will this policy: PREC1-P1 Awakino Precinct Subdivision [c. Have a well-connected transportation network, including walking and cycling corridors] be achieved without wider transportation connections to the town centre or adjoining land parcels.

b. Will the applicant develop a portion of the walking and cycling connection along Awakino Road as shown in the Dargaville Spatial Plan, Primary Cycle/walking connection B.

c. There is no mention of the KDC Walking & Cycling Strategy 2017 in Section 7.4 Council Strategic Plans and Policies of the AEE. The strategy recognises that the compact size of Dargaville provides an ideal opportunity to encourage residents to walk and cycle for local trips. Could detail please be provided on how this will be addressed.

Response 9:

As part of any subsequent subdivision and development, the public footpath along Awakino Road will be extended along the west side of the road to meet the subject lands and integrate with the new public footpath/cycle network within the Awakino Precinct. Following a successful plan change, Precinct Provisions can allow for both the extension of the existing footpath and a shared path to be constructed along Awakino Road (potentially on its eastern side) in aligning with the cycle/walking connection B. However, this provision will require further design investigation and coordination with Council following a successful plan change. There are no immediate concerns that implementing these changes and upgrading existing infrastructure cannot be achieved following the Plan Change.

With these new active infrastructure facilities constructed and connecting into the existing public footpath, provisions will be in place to allow resident to walk and cycle for local trips, should they so choose.

Request 10:

The Draft Precinct Plan shows the internal transport loop road connection and green street connection.

a. Waka Kotahi considers there would be benefit in creating further connections to the north and south of the site or implementing a mechanism for broader connectivity to future subdivisions in the future.

b. Waka Kotahi considers there would be benefit in enforcing a mechanism (ie. easement) for future proofing of public access to the rear extent of the plan change area to provide future access for Primary Cycle/walking connection C as shown in the Dargaville Spatial Plan.

Response 10:

Based on the contours of the surrounding area, no provisions for future road connects to the north and south have been made as from an engineering standpoint, they would be cost-prohibitive to build and would likely result in roads with steep gradients not appropriate for a public road.

As part of the future subdivision, provisions will be made for public walkways and can be included to connect to the future shared path along the river and stream network. This allowance would be mutually beneficial and is recommended to be provided for within the Precinct Plan provisions.

Request 11:

The applicant has not proposed any changes to the KDC District Plan which will reduce the need for parking.

a. National Policy Statement on Urban Development 2020, Subpart 8 – Car Parking 3.38 Requires that: If the district plan of a tier 1, 2, or 3 territorial authority contains objectives, policies, rules, or assessment criteria that have the effect of requiring a minimum number of car parks to be provided for a particular development, land use, or activity, the territorial authority must change its district plan to remove that effect, other than in respect of accessible car parks.

b. Does the applicant intend for each residential dwelling to meet the minimum requirements as per Appendix 25C Parking, Loading and Manoeuvring Standards of 2 car parking spaces required per unit. This would amount to approx. 736 car parks within the plan change area. Can this be clarified as parking is not discussed in the AEE or Transport Assessment Report.

Response 11:

Parking for the Awakino Precinct has been provided in line with the Kaipara District Plan requirements. Given the limited availability of public transport within Dargaville and the walk distances which would be required to reach the town centre/trip attractors, it is forecast that personal vehicle will form a large portion of trips to/from the site. It is noted that Dargaville the population of Dargaville, does not subject it to the removal of parking minimums and as such, parking is to still be provided in accordance with the Operative District Plan.

There is currently no parking number proposed for the development area, as first the Plan Change must be approved, followed by a Subdivision Consent. It is then anticipated that each dwelling construction will be subject to its own Resource Consent Application, where the prospective residents would be able to determine their own parking/access provisions in accordance with the Precinct Plan.

From a baseline perspective it can be expected that at least two parking spaces will be available per each developed lot, or some 696 on-site parking spaces (~348 lots). Additionally, the Precinct Plan requires indented parking to be provided, but the extent and number of on-street spaces will be subject to greater engineering design at a higher detailed stage.

Request 12:

How will the plan change ensure consistency with the strategic priorities of the NPS 2021, those of relevance being: Safety: Developing a transport system where no one is killed or seriously injured; Better Travel Options: Providing people with better transport options to access social and economic opportunities; and Climate Change: Developing a low carbon transport system that supports emissions reductions, while improving safety and inclusive access.

Response 12:

The development will look to provide supporting active mode transportation in the form of public shared paths. As outlined within the Precinct Plan provisions, roads serving more than six dwellings will be required to provide a 3-metre-wide shared path, on at least one side of the road. With the other side having a 1.8-metre-wide public footpath.

A provision will be included within the Precinct Plan to carryout a SSA Assessment for the existing pedestrian network along Awakino Road between the subject area and Kauri Court, along with the existing intersection of Awakino Road and SH12.

Request 13:

In May 2022, the Government launched Te hau mārohi ki anamata, Aotearoa New Zealand's first emissions reduction plan. The ERP contains wide ranging actions and outcomes for multiple sectors and transport has a significant role to play, with the ERP calling for a 41% reduction in emissions for the transport sector by 2035 (from 2019 levels).

a. If the applicant does not provide the relevant transport infrastructure to encourage modal shift, how will this plan change reduce reliance on private vehicles and support people to walk, cycle and use public transport and in turn reduce vehicle emissions.

Response 13:

The development will look to provide supporting active mode transportation in the form of public shared paths. As outlined within the Precinct Plan provisions, roads serving more than six dwellings will be required to provide a 3-metre-wide shared path, on at least one side of the road. With the other side having a 1.8-metre-wide public footpath.

As the development plan matures following the result of this Plan Change, the expectation is that greater engineering design will be carried out ensuring a safe and robust active transport network within the Awakino Precinct, which then connects to existing public roads.

Conclusion:

Following the review of Council's and Waka Kotahi's comments, it has been realised that the previous Precinct Plan Provisions contained a gap within them, that failed to address the required pedestrian and cyclist improvements needed to facilitate the development within the Plan Change area. As such the Provisions have been updated to reflect this to ensure that as part of any subsequent development, the necessary upgrades to the active transport network and assessment on the Awakino Road and State Highway 12 is carried out. The provision is:

8.a.iii) Any Integrated Transport Assessment shall be commensurate to the scale and effect of the proposed development, and identify of any necessary mitigation measures that will be required to address any impacts on the transport network, including:

- Potential mitigation measures needed both within the proposed development and on the immediately adjacent transport network including any improvements, upgrades, alterations or extensions to the transport network (including at level crossings).
- Any mitigation required to achieve convenient and safe operation of access points for all users and safe and efficient pedestrian and cycle connections and crossings.
- Any recommendations and necessary mitigation to establish active transport connectivity and compliance with NZ Pedestrian Planning Design Guide 2022, including the consideration of the following:
    - Extensions of existing footpaths on Awakino Road where necessary.
    - The need to establish a shared path connecting the development to any existing shared path facilities.
    - Provision for pedestrian crossing facilities near new public road connections to Awakino Precinct.
- A summary of the Integrated Transport Assessment including key findings and implications that the development will have for transport including any proposed mitigation measures.
- Any development which requires new public road infrastructure to be constructed and vested to Council shall undergo a Safe System Approach Assessment.

- Any development which generates more than 70 vehicle movements within a peak hour (not daily) at the intersection of Awakino Road and State Highway 12, shall carry out a Safe System Approach Assessment of the intersection.

We trust that the preceding provides sufficient additional information as related to your requests. However, should you have any queries or require further clarification, please contact the undersigned.

Yours faithfully
TRAFFIC PLANNING CONSULTANTS LTD

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