APPENDIX A

TAUPŌ TRANSPORT MODEL FUTURE YEAR REPORT TECHNICAL NOTE PREPARED BY ABLEY

Note: Where it says 2053, this references 2053+ (Full Development Scenario).

Taupō Transport Model Future Year Report

Technical Note

Prepared for	Taupō District Council
Job Number	WNZL-J020
Revision	1
Issue Date	16 February 2024
Prepared by	Regan Toogood, Graduate Transportation Modeller
Reviewed by	Dave Smith, Technical Director - Transportation Planning

1. Introduction

Abley were commissioned by WSP on behalf of Taupō District Council (TDC) to prepare 2033 and 2053 future years for the Taupō Transportation Model. The future year models are intended an assessment tool to support the Taupō Northern Access Study. This technical note builds off the *Taupō 2023 Model Validation technical note* prepared by Abley which reports the process for updated the base year model from 2013 to a revised 2023 base, and subsequent local area validation results in the vicinity of the Northern Access study area.

This future year technical note outlines the future year building methodology and presents outputs results from the future year models.

2. Assessment Methodology

2.1 Network

The 2033 and 2053 do minimum road networks are unchanged from the 2023 network (which does include the recent Taupō town centre transformation improvements).

2.2 Households

Taupō District Council supplied a summary of all future greenfield developments as well as projections by SA2 for total new households. This development has been aggregated into those areas located to the north/west of the Control Gate Bridge (CGB) and areas to the south/east of the CGB. This aggregation has been made to understand how much potential development could occur in areas where traffic would need to travel across the Waikato River to reach the Taupō town centre.

The aggregated greenfield totals as supplied by Council and their phasing (presented as percentage uptake) at 2033 and 2053 is presented in Table 2.1.

Table 2.1 Aggregated Greenfield Developments Summary

Development Location	Capacity	# Households 2033	% Developed 2033	# Households 2053	%Developed 2053
North/West of CGB	5050	706	14%	3432	68%
South/East of CGB	2616	798	31%	2167	83%
Total	**7666**	**1504**	**20%**	**5599**	**73%**

Infill values were taken directly from infill projections in 2033. 2053 Infill values were informed by the infill projections by SA2, and then increased pro-rata to get a total of 1800 infills. This guarantees that the total infill at 2053 is approximately 15% of the current number of households, as guided by council.

Greenfields were adjusted to ensure that the total number of additional households matched the projection for each SA2. In the case where a given greenfield project exceeds it's planned capacity, the additional households are added pro-rata to other greenfield projects in the model area.

This methodology ensures the following:

- Infill is no greater than 15% of the total household supply
- Total additional households by SA2 match their corresponding projections

Table 2.2 shows the total number of greenfield and infill households included in the model at 2023 and 2053.

Table 2.2 Infill and Greenfield Totals

Type of development	2033	2053
Infill	1052	1800
Greenfield	1000	5658
Total	2052	7458

Note that the total number of greenfield lots included is different to the total in Table 2.1. This is a reflection of the greenfield totals being factored to match the total household projections for each SA2. The adjusted aggregated greenfield household numbers are given in Table 2.3.

Table 2.3 List of Adjustments to Aggregated Greenfield Households

Development Location	2033 Supplied Data	2033 Adjusted Data	2053 Supplied Data	2053 Adjusted Data
North/West of CGB	706	469	3432	3570
South/East of CGB	798	531	2167	2088
Total	**1504**	**1000**	**5599**	**5658**

Note that the 2033 and 2053 Adjusted totals match the values expected from Table 2.2.

2.3 Population, Employment and Vehicles

It was assumed that the ratios of the number of people per household, number of jobs per household and number of cars per household remains constant from 2023. This is consistent with observed trends from Statistics New Zealand (based on population and household projections) for the District and aligns with industry best practice.

2.4 Jobs

It was assumed that the number of jobs was directly proportional to the growth in population, so jobs were simply factored up by the percentage growth in population. The growth in population (and jobs) can be found in Table 2.4. Given uncertainty around future rezoning in light of recent plan changes, it is recommended that potential commercial and industrial rezoning scenarios (such as Rangatira B) are treated as sensitivity tests.

2.5 Students

Growth projections from Stats NZ indicate that the school-aged population will have little to no growth from 2023-2053. Therefore, there is no growth assumed in the future year models in the number of students. No new schools have been added or existing schools removed from the model.

2.6 Tourism

Historical Tourism data from 1979 to 2023 was used to create projections up to 2033. Adjustments were made to reflect the downturn in tourism due to Covid-19. The projections from 2033 to 2053 have been extrapolated on a linear basis using the 2023 to 2033 projections as a guide. This was done to prevent unbounded exponential growth in tourism numbers.

2.7 Externals

Similar to tourism, historical data back to 1999 was used to extrapolate linear growth in external traffic volumes out to 2053 with adjustments made due to Covid-19.

2.8 Land Use Totals

A summary of land use variable totals for each model year is presented in Table 2.4.

Table 2.4 Summary of land use variables

	2023	2033	2053	2033-2023 % Growth	2053-2023 % Growth
Persons/HH	31914	37383	52121	17%	63%
Employees/HH	16754	19658	27542	17%	64%
Cars/HH	20512	24029	33651	17%	64%
Household	12028	14080	19487	17%	62%
Students	5882	5882	5882	0%	0%
Retail Jobs	1541	1805	2516	17%	63%
Manufacturing Jobs	521	611	851	17%	63%
Wholesale Jobs	440	516	719	17%	63%
Office Jobs	2079	2436	3396	17%	63%
Community Jobs	2677	3136	4372	17%	63%
Agriculture Jobs	714	836	1166	17%	63%
Accommodation Jobs	1718	2012	2806	17%	63%
Total Jobs	12301	14409	20090	17%	63%
Visitors	2499	3315	4945	33%	98%

3. Modelled Outputs

The following sections include model outputs as follows:

- Traffic volume plots for the morning and evening peak hours in 2023, 2033 and 2053 are presented in Figure 3.1 through Figure 3.6 in section 3.1;
- Traffic volume change plots for the morning and evening peak hours comparing 2033 back against 2023 are presented in Figure 3.7 through Figure 3.8 in section 3.2;
- Traffic volume change plots for the morning and evening peak hours comparing 2053 back against 2023 are presented in Figure 3.9 through Figure 3.10 in section 3.3;
- Level of Service (LoS) plots for the morning and evening peak hours in 2023, 2033 and 2053 are presented in Figure 3.11 through Figure 3.16 in section 3.4 with the addition of plots with a wider view at 2053; and
- Travel time results for the routes presented in the model validation technical note are presented in section 3.5.

The intersection and link LoS thresholds applied for the model and colour coding are presented in Appendix A.

3.1 Hourly Traffic Volume Plots

Figure 3.1 2023 Morning Peak Hour Volumes Town Centre

Figure 3.2 2023 Evening Peak Hour Volumes Town Centre

Figure 3.3 2033 Morning Peak Hour Volumes Town Centre

Figure 3.4 2033 Evening Peak Hour Volumes Town Centre

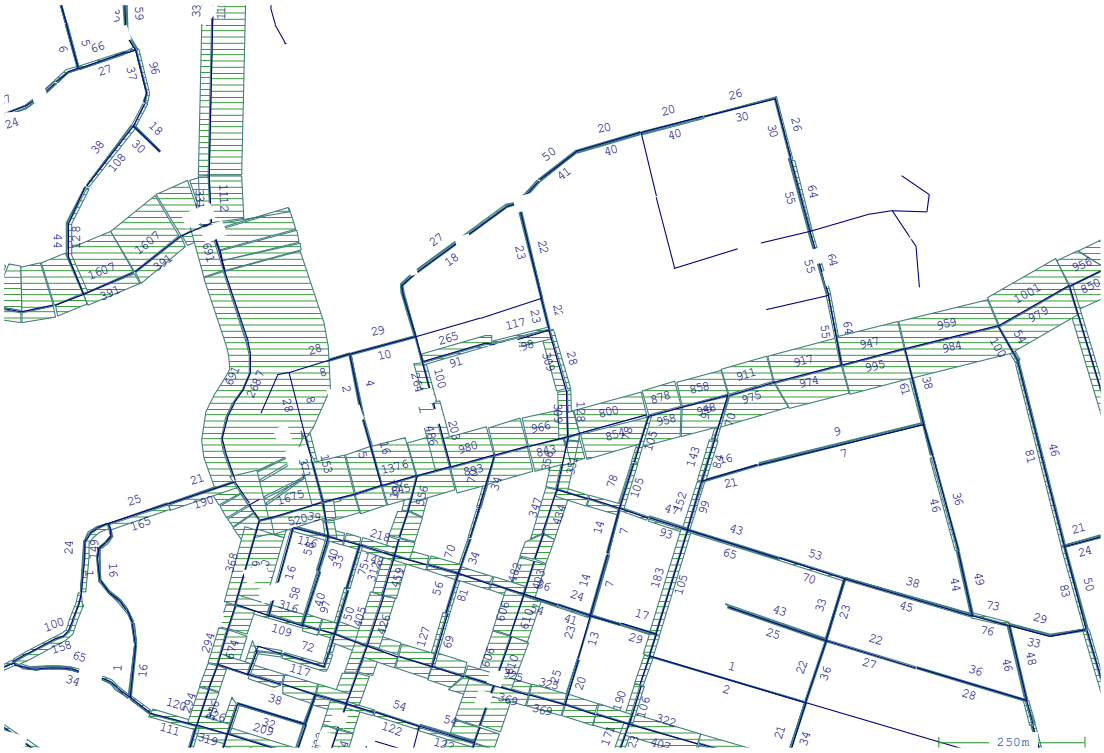

Figure 3.5 2053 Morning Peak Hour Volumes Town Centre

Figure 3.6 2053 Evening Peak Hour Volumes Town Centre

3.2 Hourly Traffic Volume Change Plots (2023-2033)

Figure 3.7 2033 Morning Peak Volume Change Town Centre

Figure 3.8 2033 Evening Peak Hour Volume Change Town Centre

3.3 Volume Change Plots (2023-2053)

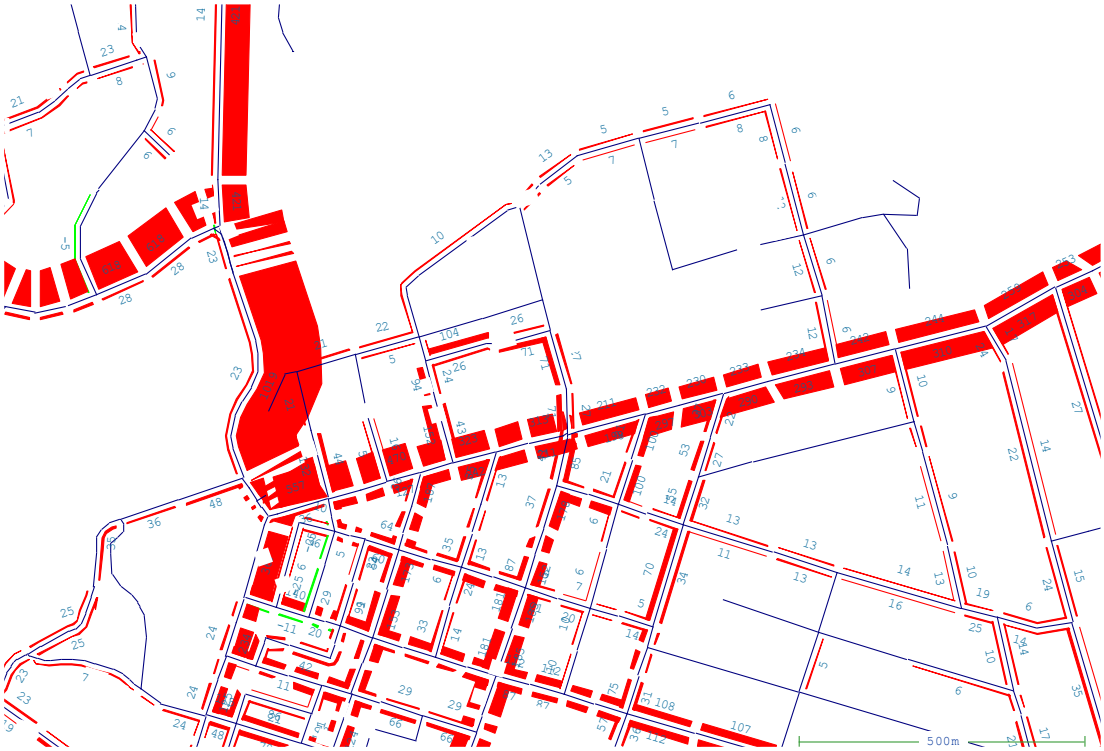

Figure 3.9 2053 Morning Peak Hour Volume Change Town Centre

Figure 3.10 2053 Evening Peak Hour Volume Change Town Centre

3.4 Peak Hourly Level of Service (LoS) Plots

Figure 3.11 2023 Morning Peak Hour LoS Town Centre

Figure 3.12 2023 Evening Peak Hour LoS Town Centre

Figure 3.13 2033 Morning Peak Hour LoS Town Centre

Figure 3.14 2033 Evening Peak Hour LoS Town Centre

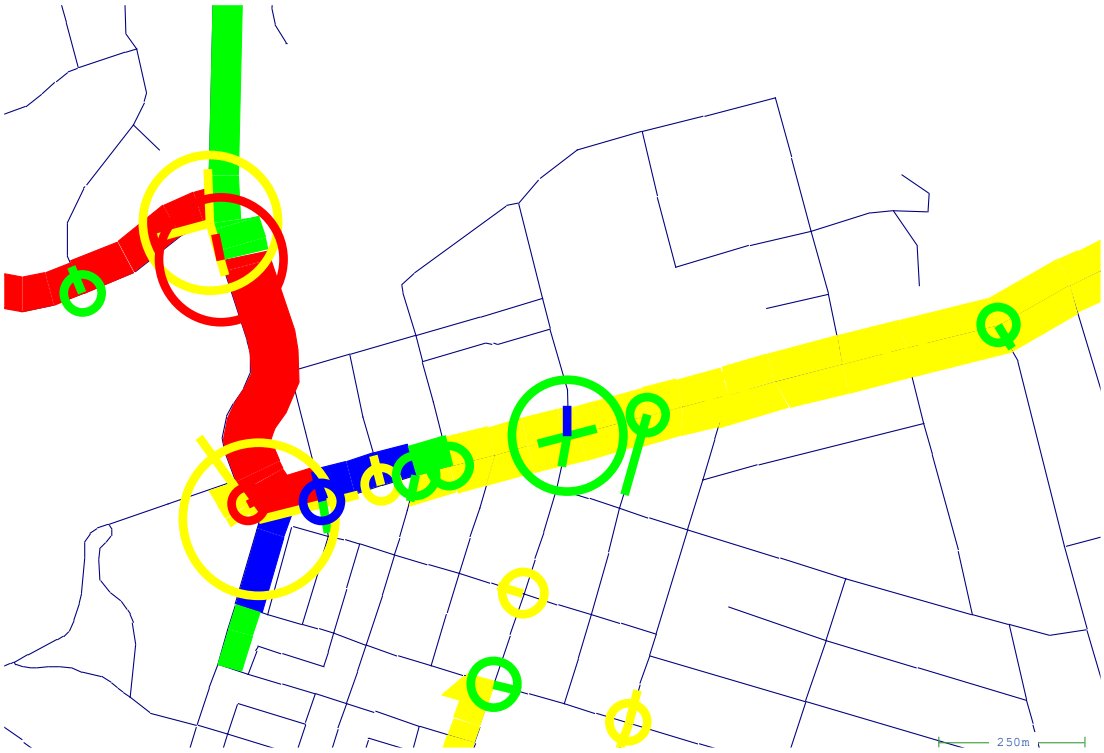

Figure 3.15 2053 Morning Peak Hour LoS Town Centre

Figure 3.16 2053 Evening Peak Hour LoS Town Centre

Figure 3.17 2053 Morning Peak Hour LOS Wider Network

Figure 3.18 2053 Evening Peak Hour LOS Wider Network

3.5 Travel Times

TomTom Analytics data was sourced to validate travel times in the 2023 base model along the routes shown in Figure 3.19 and Figure 3.20. The same routes were analysed once the future models were developed to measure the modelled increase in travel times along these key paths due to future land use and traffic growth out to 2033 and 2053. The journey times for the morning and evening peak hours can be found in Figure 3.21 and Figure 3.22 respectively.

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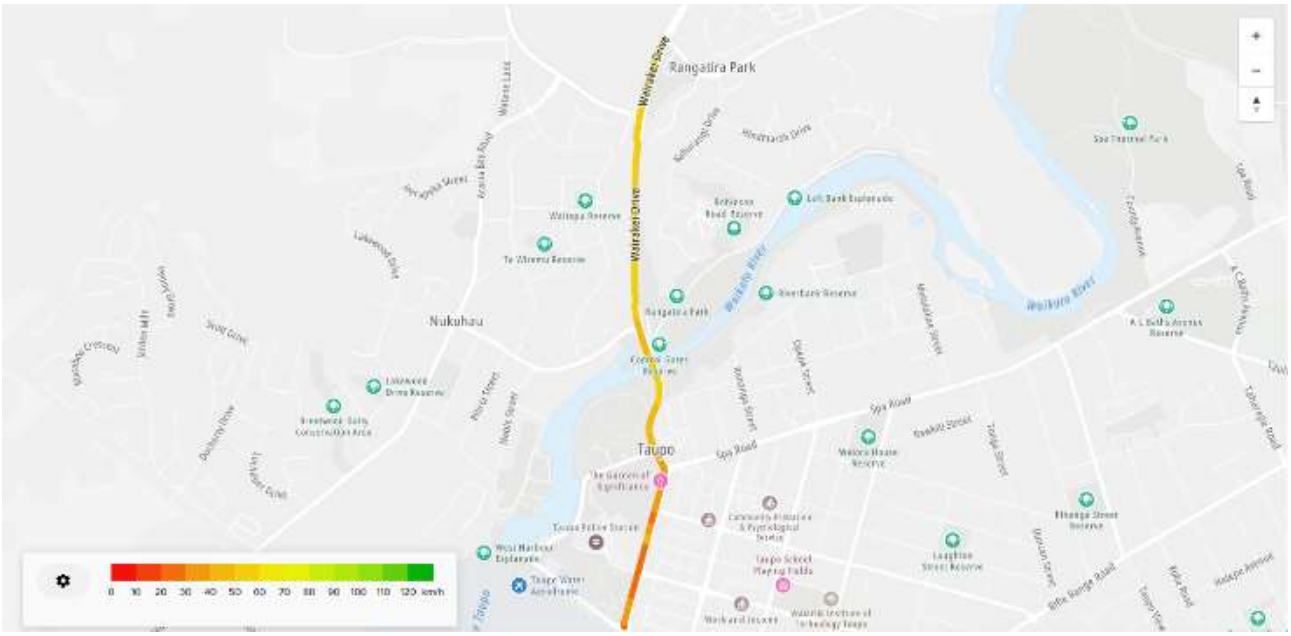

Figure 3.19 Huka Falls Rd to Tongariro St/ Tongariro St to Huka Falls Rd Routes

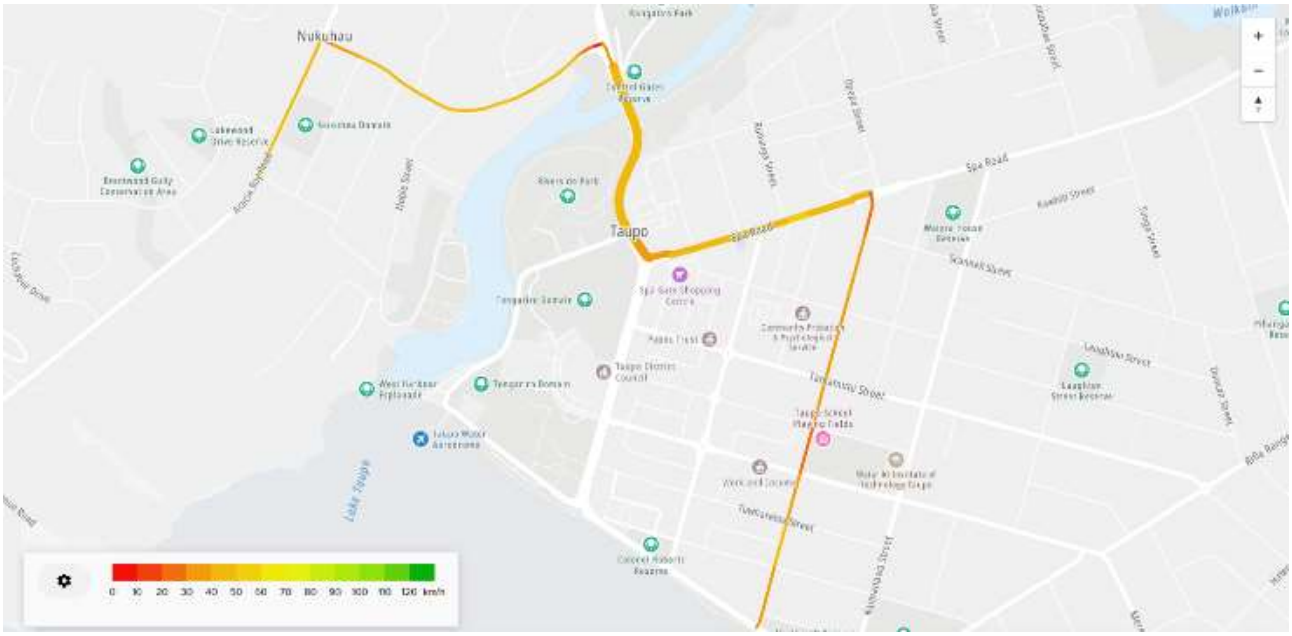

Figure 3.20 Acacia Bay Rd to Tītīraupenga St/ Tītīraupenga St to Acacia Bay Rd Routes

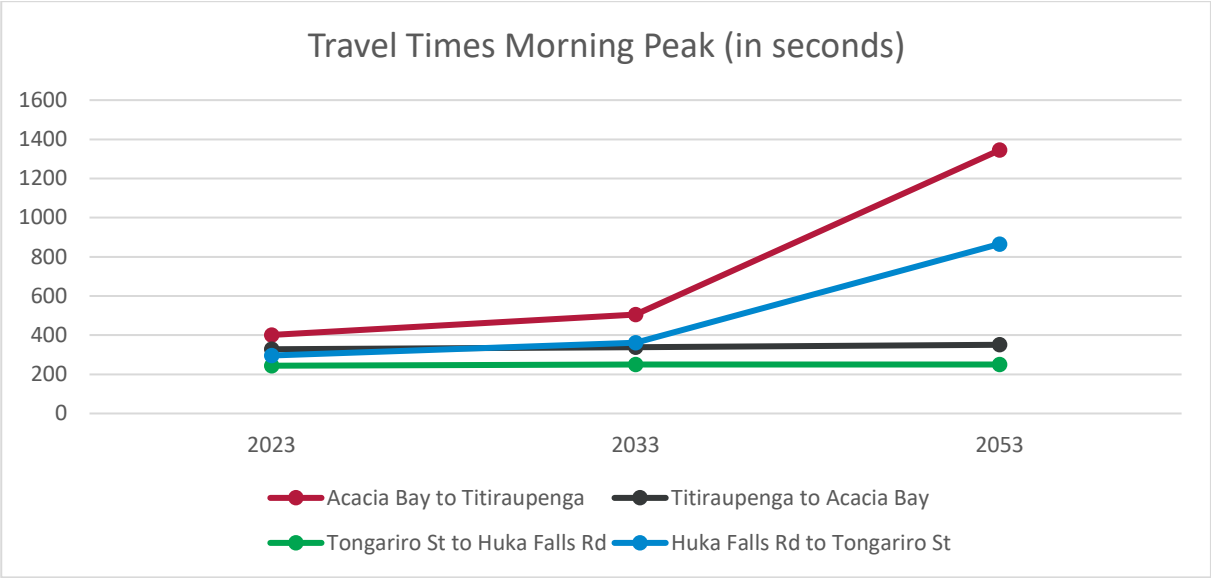

Figure 3.21 Morning Peak Hour Journey Times

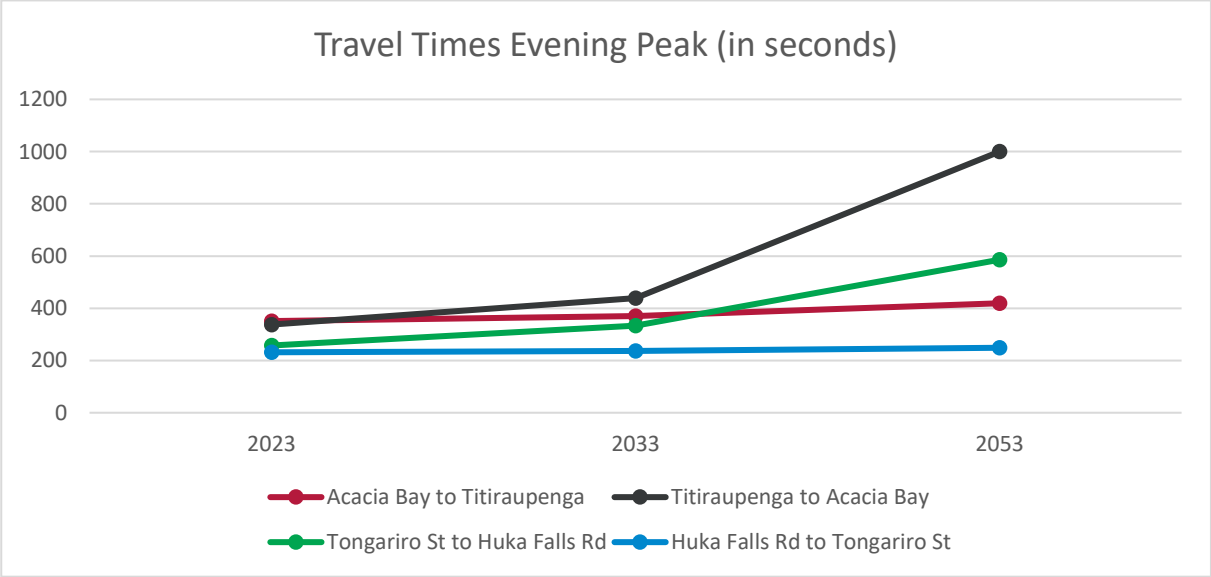

Figure 3.22 Evening Peak Hour Journey Times

4. Convergence

All period models have been converged until there is no difference between the output statistics on the penultimate and final model runs. The key model statistics are presented in Table 4.1 and this is in line with the convergence requirements of NZTA's Transport Model Development Guidelines[1].

[1] https://www.nzta.govt.nz/resources/transport-model-development-guidelines/

Table 4.1 Model Convergence Checks

Variable to check	Final	Penultimate	Difference
2033 Morning Peak			
Trips Total	15011	15011	0.00%
Vehicle Minutes	112193	112194	0.00%
Vehicle Kilometres	94009	94010	0.00%
Ave Trip Length (min)	7.47	7.47	0.00%
Ave Trip Length (km)	6.26	6.26	0.00%
Intrazonal Trips	413	413	0.00%
2033 Evening Peak			
Trips Total	13784	13784	0.00%
Vehicle Minutes	85843	85841	0.00%
Vehicle Kilometres	68103	68103	0.00%
Ave Trip Length (min)	6.23	6.23	0.00%
Ave Trip Length (km)	4.94	4.94	0.00%
Intrazonal Trips	805	805	0.00%
2053 Morning Peak			
Trips Total	20233	20233	0.00%
Vehicle Minutes	198565	197878	-0.35%
Vehicle Kilometres	126541	126466	-0.06%
Ave Trip Length (min)	9.81	9.78	-0.31%
Ave Trip Length (km)	6.25	6.25	0.00%
Intrazonal Trips	775	777	0.26%
2053 Evening Peak			
Trips Total	18599	18599	0.00%
Vehicle Minutes	151428	150717	-0.47%
Vehicle Kilometres	94964	94889	-0.08%
Ave Trip Length (min)	8.140	8.1	-0.49%
Ave Trip Length (km)	5.110	5.1	-0.20%
Intrazonal Trips	1094	1097	0.27%

5. Discussion

5.1 Intersection and Link Level of Service

In the base year (2023), the only notable LoS issues, in order of severity are:

- Tongariro St between Spa Rd and Norman Smith St at peak times
- Norman Smith St near Wairakei Dr, particularly in the eastbound direction in the morning peak
- Spa Rd near Tongariro St, particularly in the westbound direction in the morning peak

These issues remain in 2033, but the severity of each in terms of LoS classification has worsened. This indicates that the current problems experienced on the network in these locations will be exacerbated by growth out beyond 2023.

Additional LoS issues arise by 2053 based on the modelled outputs, specifically:

- Wairakei Dr north of Norman Smith St particularly in the southbound direction in the morning peak, which likely arises due to the poor performance of the merge on the opposite side of the Tongariro St/ Wairakei Dr/ Norman Smith St intersection. This merge also has poor LoS
- Tongariro St south of Spa Rd
- Spa Rd intersections with Tītīraupenga St, Motukaiko St, Gascoigne St, Runanga St.
- Tongariro/Spa Rd Roundabout, particularly in the evening peak from the South and East approaches

Observing the change in volume in the 2033 and 2053 years, it is predicted that there will be far higher usage of Tongariro St between Norman Smith St and Spa Rd, with about half of the additional use coming from Wairakei Dr and the other half coming from Norman Smith St. Due to further development to the north and west of Taupō requiring access to the Taupō town centre via the control bridge, this piece of key infrastructure is operating over capacity in the future models.

The quantum of growth out to 2053 results in wider LoS issues on the transport network including along the length of Acacia Bay Road and Norman Smith Street in both peak periods, and along Lake Terrace to the south.

5.2 Subsequent increases to travel times

The worsening network performance based on LoS results in slower network speeds and increased delays. Both routes travelling south towards the Taupō town centre in the morning peak almost triple in travel time.

The corresponding impact in the evening peak is not as severe, but there is still at least double in travel times travelling northbound across the Control Gate Bridge.

5.3 Travel Total Changes

Table 5.1 shows a summary of the change in travel totals across the model study area. These results provide an overview of how travel time, travel distance and average trip lengths change in response to the future land use growth.

Table 5.1 Summary of change in travel totals

		2023	2033	2053	2023-2033 % Growth	2023-2053 % Growth
Morning Peak Hour	Trips Total	12830	15011	20233	17%	58%
	Vehicle Minutes	88313	112193	198565	27%	125%
	Vehicle Kilometres	76344	94009	126541	23%	66%
	Ave Trip Length (min)	6.88	7.47	9.81	9%	43%
	Ave Trip Length (km)	5.95	6.26	6.25	5%	5%
Evening Peak Hour	Trips Total	12028	13784	18599	15%	55%
	Vehicle Minutes	69905	85843	151428	23%	117%
	Vehicle Kilometres	57142	68103	94964	19%	66%
	Ave Trip Length (min)	5.81	6.23	8.14	7%	40%
	Ave Trip Length (km)	4.75	4.94	5.11	4%	8%

Demographic growth is anticipated in the model to increase by 17-18% between 2023 and 2033 and 60-62% between 2023 and 2053. The growth in trip totals and total vehicle kilometres travelled is generally in line with these totals, however average trip lengths in terms of time travelled increase at a far greater rate due to worsening congestion.

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Appendix A.
Level of Service Methodology

Level of Service (LoS) gives an indicator for the degree of amenity to vehicle users on a network. In the context of this report, LoS is used as an indicator of network performance.

Figure 5.1 shows how Link LoS varies depending on link type. It shows that the higher the vehicle volume and the lower the free speed the worse the LoS becomes. Link types are defined as follows:

- Link type 1 equates to road speeds of 10km/hr
- Link type 2 and 12 equate to road speeds of 20km/hr and 25km/hr
- Link type 3 and 13 equate to road speeds of 30km/hr and 35km/hr
- Link type 4 and 14 equate to road speeds of 40km/hr and 45km/hr
- Link type 5 and 15 equate to road speeds of 50km/hr and 55km/hr
- Link type 6 and 16 equate to road speeds of 60km/hr and 65km/hr
- Link type 7 and 17 equate to road speeds of 70km/hr and 75km/hr
- Link type 8 and 18 equate to road speeds of 80km/hr and 85km/hr
- Link type 9 and 19 equate to road speeds of 90km/hr and 95km/hr
- Link type 10 and 11 equate to road speeds of 100km/hr and 110km/hr
- Link type 20 equates to road speeds of 105km/hr

Intersection LoS is based on the delay values as given in Table 5.2. The colour coding in the table and figure corresponds to the colours applied in the LoS plots in section 3.4 of this report.

Table 5.2 Level of Service definitions and criteria

Definitions Of LoS				
LoS	**Description**	**Taupō Transportation Model LoS criteria**		
		Link (vehicles per hour)	**Intersection (delay/veh)**	
			Priority	**Signal/Rotary**
LoS F	Forced flow. The amount of traffic approaching a point exceeds that which can pass it. Flow break-downs occur, and queuing and delays occur.	In excess of **900-1700** depending on link type	50 sec	80 sec
LoS E	Traffic volumes are at or close to *capacity and there is virtually no freedom* to select desired speed and to manoeuvre within the traffic stream. Flow is unstable and *minor disturbances within the traffic stream will cause break-downs in operation*.	Between **720-1360** depending on link type	35 sec	55 sec
LoS D	Approaching unstable flow where *all drivers are severely restricted* in their freedom to select desired speed and to manoeuvre within the traffic stream. The general level of *comfort and convenience is poor* and small increases in traffic flow will cause operational problems.	Between **585-1105** depending on link type	25 sec	35 sec

Definitions Of LoS				
LoS	**Description**	**Taupō Transportation Model LoS criteria**		
		Link (vehicles per hour)	**Intersection (delay/veh)**	
			Priority	**Signal/Rotary**
LoS C	Stable flow but most drivers *are restricted to some extent* in their freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of *comfort and convenience has declined noticeably*.	Between **450-850** depending on link type	15 sec	20 sec
LoS B	Stable flow where drivers still *have reasonable freedom* to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience is less than LoS A.	Not Applicable	Not Applicable	
LoS A	Free flow in which drivers are *virtually unaffected* by the presence of others in the traffic stream. Freedom to select desired speeds and to manoeuvre within the traffic stream is extremely high and the general level of *comfort and convenience is excellent*.			

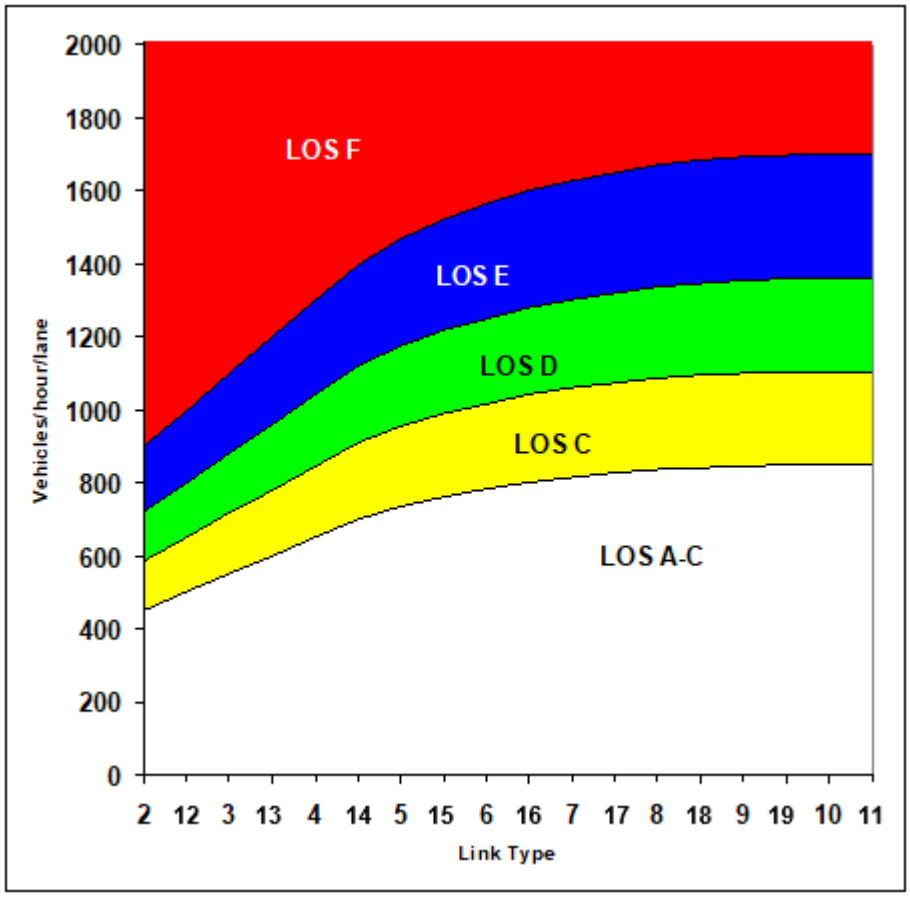

Figure 5.1 Taupō Transportation Model Link LoS Criteria (Vehicles per Lane per Hour)

Auckland
Level 1/70 Shortland Street
Auckland 1010
Aotearoa New Zealand

Wellington
Level 1/119-123 Featherston Street
Wellington 6011
Aotearoa New Zealand

Christchurch
Level 1/137 Victoria Street
PO Box 36446, Merivale
Christchurch 8146
Aotearoa New Zealand

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APPENDIX B

SIDRA MODEL RESULTS: 2023 BASE, 2033 BASE, 2053 BASE

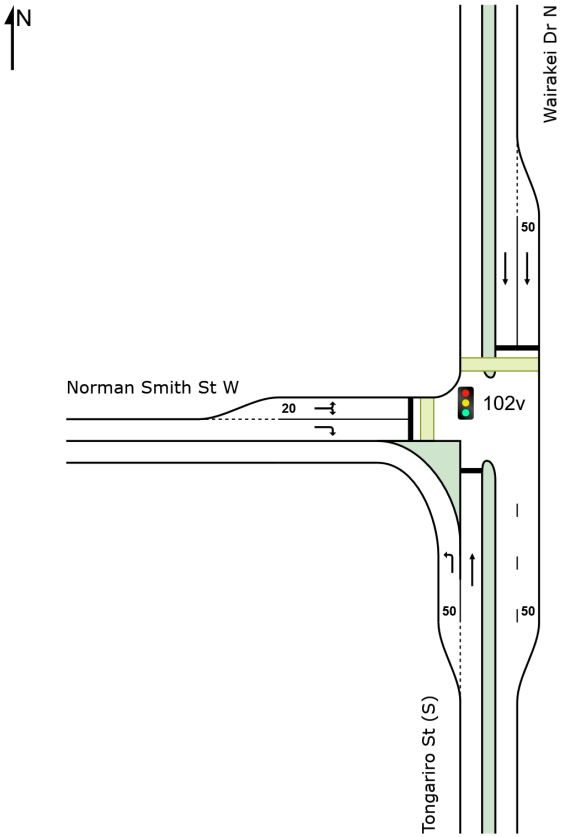
Note: Where it says 2053, this references 2053+ (Full Development Scenario).

SITE LAYOUT

Site: 102v [Norman / Wairakei 2023 AM Base (Site Folder: 2023)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 102v [Norman / Wairakei 2023 AM Base (Site Folder: 2023)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tongariro St (S)														
1	L2	378	28	398	7.4	0.226	4.5	LOS A	0.0	0.0	0.00	0.46	0.00	48.1
2	T1	362	26	381	7.2	0.597	20.8	LOS C	11.0	81.4	0.88	0.76	0.88	48.1
Approach		740	54	779	7.3	0.597	12.5	LOS B	11.0	81.4	0.43	0.61	0.43	48.1
North: Wairakei Dr N														
8	T1	676	30	712	4.4	* 0.897	32.5	LOS C	21.8	158.2	0.92	1.01	1.20	47.2
Approach		676	30	712	4.4	0.897	32.5	LOS C	21.8	158.2	0.92	1.01	1.20	47.2
West: Norman Smith St W														
10	L2	8	0	8	0.0	0.288	16.8	LOS B	4.9	35.3	0.65	0.74	0.65	48.5
12	R2	816	24	859	2.9	* 0.920	35.6	LOS D	26.3	188.5	0.79	0.95	1.12	35.7
Approach		824	24	867	2.9	0.920	35.4	LOS D	26.3	188.5	0.79	0.95	1.11	36.3
All Vehicles		2240	108	2358	4.8	0.920	27.0	LOS C	26.3	188.5	0.71	0.86	0.91	45.9

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.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [Ped	Dist]	Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed

		ped/h	ped/h	sec		ped	m			sec	m	m/sec
North: Wairakei Dr N												
P3	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	55.4	33.9	0.61
West: Norman Smith St W												
P4	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	53.9	31.9	0.59
All Pedestrians		0	105	29.3	LOS C	0.1	0.1	0.92	0.92	54.6	32.9	0.60

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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PHASING SUMMARY

Site: 102v [Norman / Wairakei 2023 AM Base (Site Folder: 2023)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site User-Given Cycle Time)

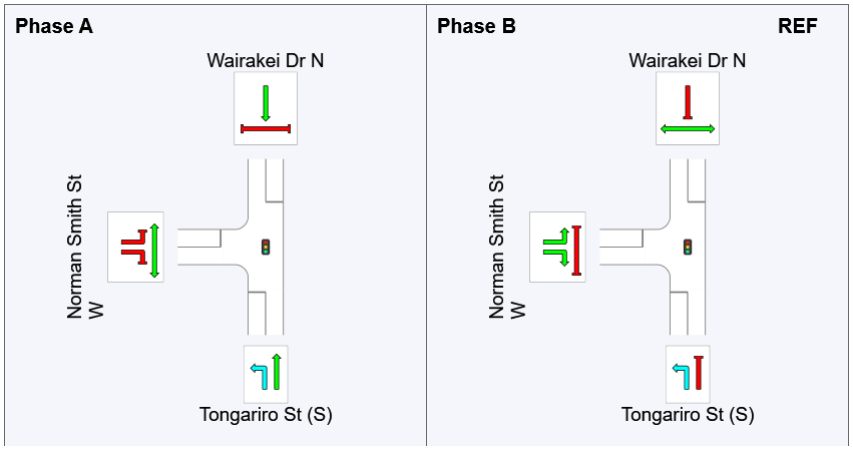
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase B
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Summary

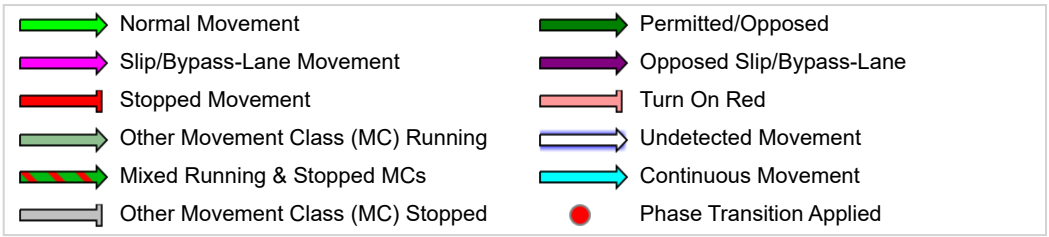
Phase	A	B
Phase Change Time (sec)	40	0
Green Time (sec)	24	34
Phase Time (sec)	30	40
Phase Split	43%	57%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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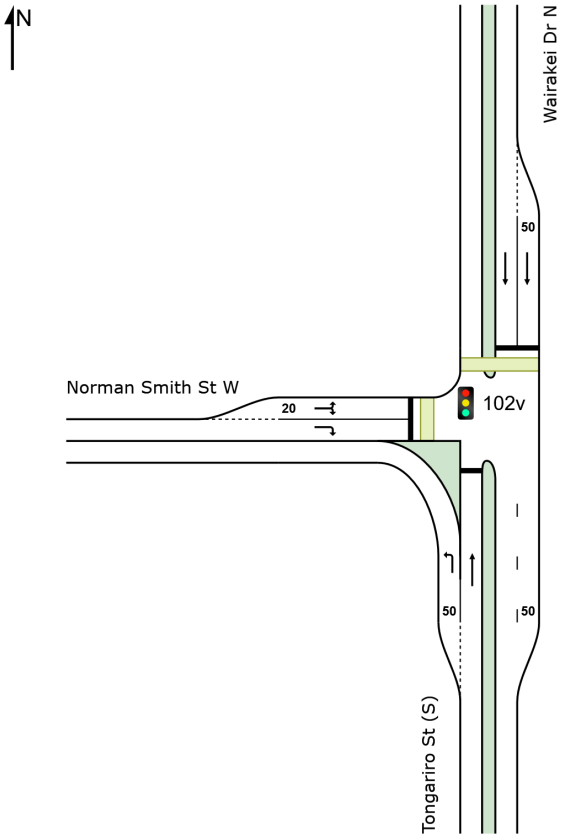
SITE LAYOUT

Site: 102v [Norman / Wairakei 2023 PM Base (Site Folder: 2023)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 102v [Norman / Wairakei 2023 PM Base (Site Folder: 2023)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tongariro St (S)														
1	L2	896	35	943	3.9	0.522	4.7	LOS A	0.0	0.0	0.00	0.46	0.00	47.9
2	T1	591	28	622	4.7	* 1.044	91.1	LOS F	38.2	278.2	1.00	1.99	2.68	42.8
Approach		1487	63	1565	4.2	1.044	39.0	LOS D	38.2	278.2	0.40	1.07	1.07	43.7
North: Wairakei Dr N														
8	T1	501	30	527	6.0	0.535	12.3	LOS B	7.7	56.6	0.78	0.66	0.78	48.9
Approach		501	30	527	6.0	0.535	12.3	LOS B	7.7	56.6	0.78	0.66	0.78	48.9
West: Norman Smith St W														
10	L2	5	0	5	0.0	* 0.176	17.4	LOS B	1.8	13.0	0.74	0.73	0.74	48.4
12	R2	412	17	434	4.1	0.564	18.5	LOS B	6.7	48.5	0.81	0.78	0.81	41.1
Approach		417	17	439	4.1	0.564	18.5	LOS B	6.7	48.5	0.81	0.78	0.81	41.6
All Vehicles		2405	110	2532	4.6	1.044	29.9	LOS C	38.2	278.2	0.55	0.94	0.96	45.4

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.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [Ped	Dist]	Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed

		ped/h	ped/h	sec		ped	m			sec	m	m/sec
North: Wairakei Dr N												
P3	Full	50	53	19.4	LOS B	0.1	0.1	0.88	0.88	45.5	33.9	0.75
West: Norman Smith St W												
P4	Full	50	53	19.4	LOS B	0.1	0.1	0.88	0.88	43.9	31.9	0.73
All Pedestrians		0	105	19.4	LOS B	0.1	0.1	0.88	0.88	44.7	32.9	0.74

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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PHASING SUMMARY

Site: 102v [Norman / Wairakei 2023 PM Base (Site Folder: 2023)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site User-Given Cycle Time)

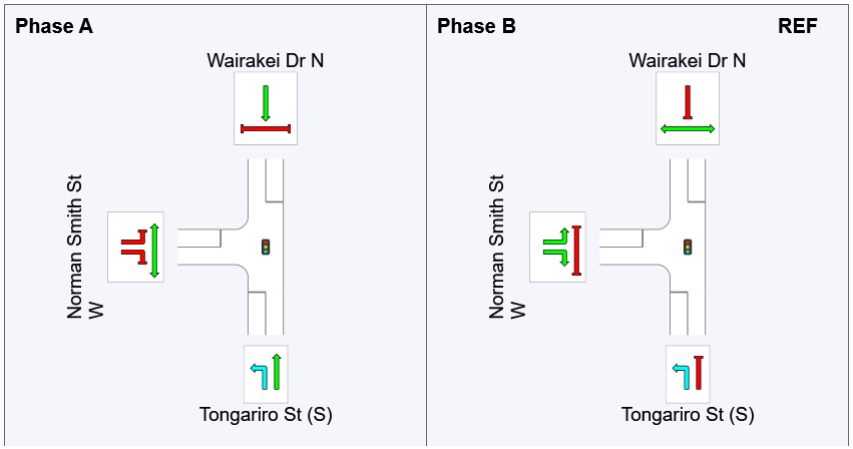
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase B
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Summary

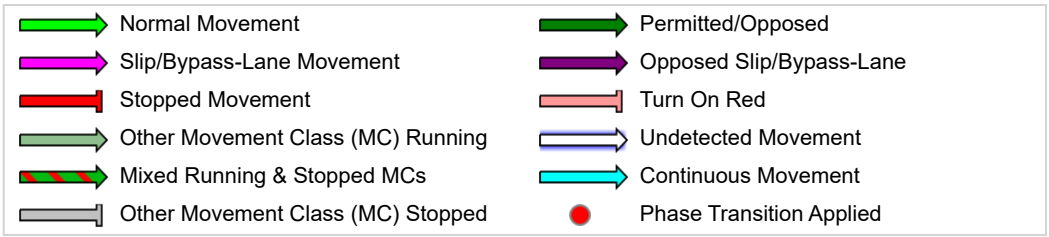
Phase	A	B
Phase Change Time (sec)	24	0
Green Time (sec)	20	18
Phase Time (sec)	26	24
Phase Split	52%	48%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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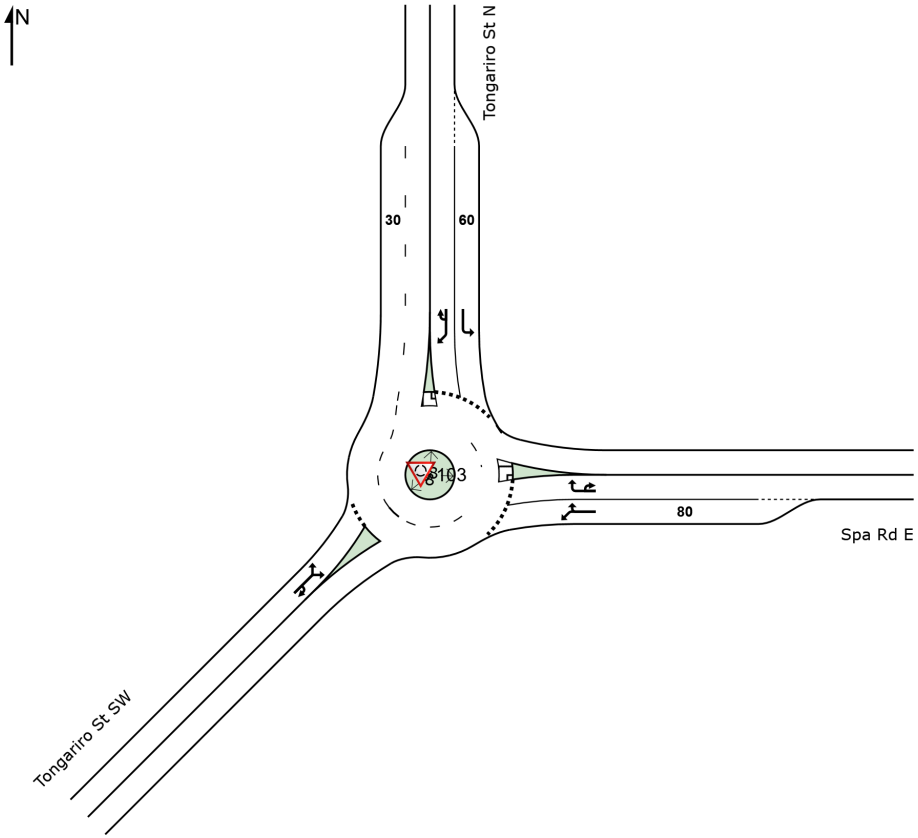
SITE LAYOUT

Site: 103 [Spa / Tongariro 2023 AM Base (Site Folder: 2023)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 103 [Spa / Tongariro 2023 AM Base (Site Folder: 2023)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
East: Spa Rd E														
4a	L1	66	3	69	4.5	0.179	8.6	LOS A	1.0	7.0	0.69	0.79	0.69	43.7
6	R2	542	47	571	8.7	0.585	13.3	LOS B	5.7	42.9	0.84	0.95	1.02	42.9
6u	U	6	0	6	0.0	0.585	14.4	LOS B	5.7	42.9	0.85	0.96	1.04	43.0
Approach		614	50	646	8.1	0.585	12.8	LOS B	5.7	42.9	0.83	0.93	0.99	43.0
North: Tongariro St N														
7	L2	943	45	993	4.8	0.635	4.9	LOS A	7.4	54.1	0.38	0.50	0.38	45.6
9a	R1	555	8	584	1.4	0.465	6.5	LOS A	4.0	28.6	0.31	0.56	0.31	45.0
9u	U	27	1	28	3.7	0.465	8.9	LOS A	4.0	28.6	0.31	0.56	0.31	46.3
Approach		1525	54	1605	3.5	0.635	5.6	LOS A	7.4	54.1	0.35	0.52	0.35	45.4
SouthWest: Tongariro St SW														
30a	L1	192	5	202	2.6	0.372	4.3	LOS A	2.1	14.8	0.71	0.75	0.71	29.3
32a	R1	39	2	41	5.1	0.372	6.9	LOS A	2.1	14.8	0.71	0.75	0.71	29.4
32u	U	8	1	8	12.5	0.372	8.6	LOS A	2.1	14.8	0.71	0.75	0.71	29.9
Approach		239	8	252	3.3	0.372	4.9	LOS A	2.1	14.8	0.71	0.75	0.71	29.3
All Vehicles		2378	112	2503	4.7	0.635	7.4	LOS A	7.4	54.1	0.51	0.65	0.55	42.6

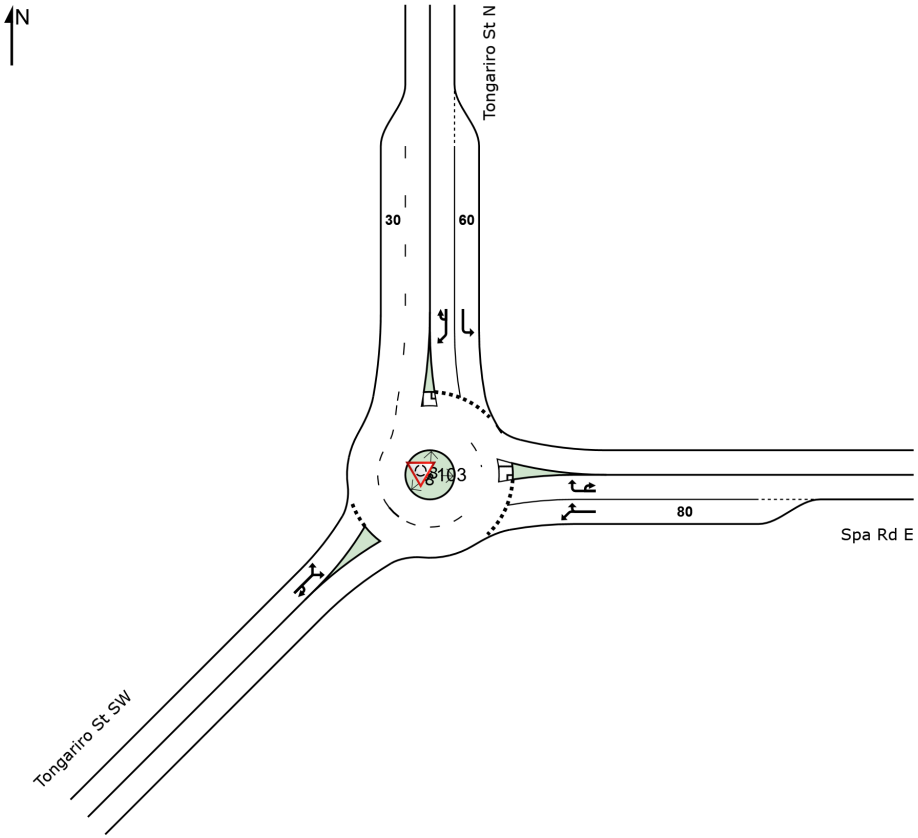
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 103 [Spa / Tongariro 2023 PM Base (Site Folder: 2023)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 103 [Spa / Tongariro 2023 PM Base (Site Folder: 2023)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
East: Spa Rd E														
4a	L1	47	5	49	10.6	0.258	6.8	LOS A	1.4	10.3	0.59	0.74	0.59	43.9
6	R2	1077	45	1134	4.2	0.845	15.2	LOS B	15.7	114.2	0.91	0.95	1.25	42.2
6u	U	7	1	7	14.3	0.845	17.4	LOS B	15.7	114.2	0.96	0.98	1.34	41.8
Approach		1131	51	1191	4.5	0.845	14.9	LOS B	15.7	114.2	0.90	0.94	1.22	42.2
North: Tongariro St N														
7	L2	577	36	607	6.2	0.395	4.7	LOS A	3.4	25.1	0.26	0.50	0.26	45.9
9a	R1	314	12	331	3.8	0.276	6.4	LOS A	2.0	14.4	0.25	0.56	0.25	45.1
9u	U	22	1	23	4.5	0.276	9.0	LOS A	2.0	14.4	0.25	0.56	0.25	46.4
Approach		913	49	961	5.4	0.395	5.4	LOS A	3.4	25.1	0.26	0.52	0.26	45.6
SouthWest: Tongariro St SW														
30a	L1	313	9	329	2.9	0.936	44.6	LOS D	13.7	98.7	1.00	2.00	2.71	22.1
32a	R1	32	2	34	6.3	0.936	46.1	LOS D	13.7	98.7	1.00	2.00	2.71	21.9
32u	U	6	0	6	0.0	0.936	47.0	LOS D	13.7	98.7	1.00	2.00	2.71	21.5
Approach		351	11	369	3.1	0.936	44.7	LOS D	13.7	98.7	1.00	2.00	2.71	22.1
All Vehicles		2395	111	2521	4.6	0.936	15.7	LOS B	15.7	114.2	0.67	0.94	1.07	38.6

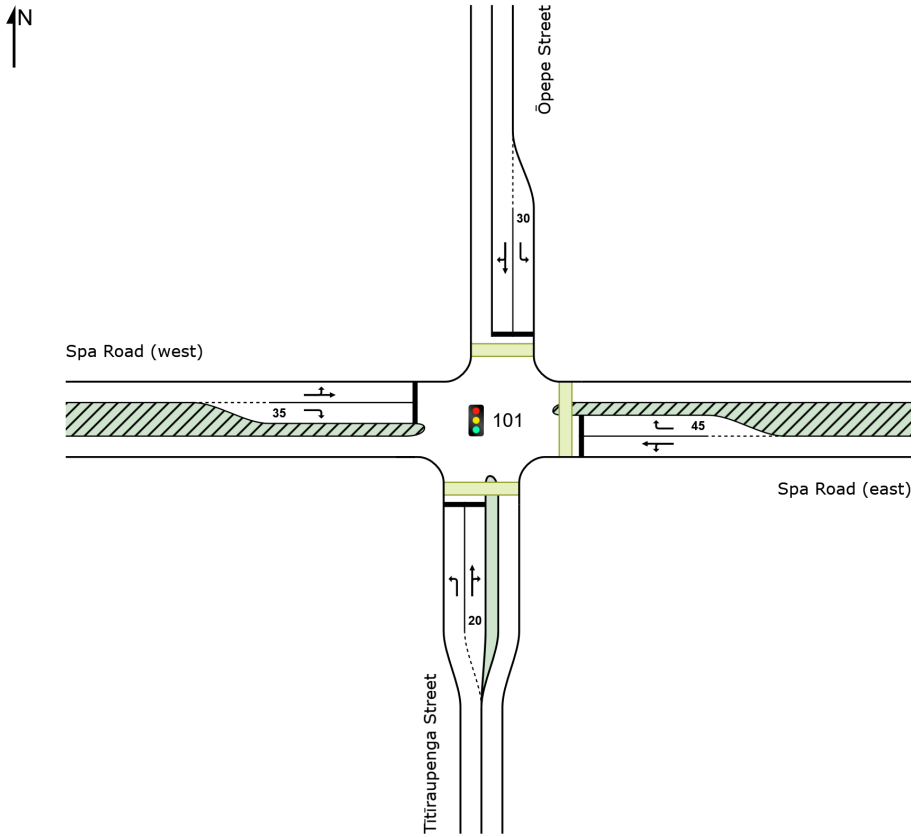
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 101 [Spa / Ōpepe/ Tītīraupenga 2023 AM Base (Site Folder: 2023)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga 2023 AM Base (Site Folder: 2023)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 117 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street														
1	L2	187	1	197	0.5	0.548	41.8	LOS D	9.2	64.4	0.86	0.78	0.86	33.0
2	T1	121	1	127	0.8	*1.282	313.1	LOS F	20.9	147.1	1.00	1.72	3.08	15.1
3	R2	7	0	7	0.0	1.282	317.7	LOS F	20.9	147.1	1.00	1.72	3.08	30.6
Approach		315	2	332	0.6	1.282	152.2	LOS F	20.9	147.1	0.92	1.17	1.76	21.0
East: Spa Road (east)														
4	L2	99	1	104	1.0	1.212	259.0	LOS F	81.1	586.7	1.00	2.08	2.62	33.1
5	T1	444	20	467	4.5	*1.212	252.8	LOS F	81.1	586.7	1.00	2.08	2.62	32.9
6	R2	114	1	120	0.9	0.423	53.9	LOS D	6.3	44.7	0.95	0.79	0.95	45.6
Approach		657	22	692	3.3	1.212	219.2	LOS F	81.1	586.7	0.99	1.85	2.33	34.8
North: Ōpepe Street														
7	L2	43	1	45	2.3	*0.153	30.9	LOS C	1.5	11.0	0.89	0.72	0.89	47.3
8	T1	56	1	59	1.8	0.148	40.2	LOS D	2.8	20.1	0.85	0.66	0.85	38.9
9	R2	2	0	2	0.0	0.148	44.8	LOS D	2.8	20.1	0.85	0.66	0.85	38.1
Approach		101	2	106	2.0	0.153	36.4	LOS D	2.8	20.1	0.87	0.68	0.87	44.9
West: Spa Road (west)														
10	L2	2	0	2	0.0	0.971	81.0	LOS F	42.9	311.1	0.99	1.23	1.43	32.0
11	T1	539	22	567	4.1	0.971	74.6	LOS E	42.9	311.1	0.99	1.23	1.43	43.6
12	R2	112	1	118	0.9	0.415	53.8	LOS D	6.2	43.9	0.95	0.78	0.95	30.0
Approach		653	23	687	3.5	0.971	71.1	LOS E	42.9	311.1	0.98	1.15	1.35	42.9
All Vehicles		1726	49	1817	2.8	1.282	140.2	LOS F	81.1	586.7	0.97	1.39	1.77	36.8

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.

Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Tītīraupenga Street												
P1	Full	50	53	52.8	LOS E	0.2	0.2	0.95	0.95	228.8	228.8	1.00
East: Spa Road (east)												
P2	Full	50	53	52.8	LOS E	0.2	0.2	0.95	0.95	219.5	216.8	0.99
North: Ōpepe Street												
P3	Full	50	53	52.8	LOS E	0.2	0.2	0.95	0.95	217.3	213.9	0.98
All Pedestrians		150	158	52.8	LOS E	0.2	0.2	0.95	0.95	221.9	219.8	0.99

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga 2023 AM Base (Site Folder: 2023)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 117 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

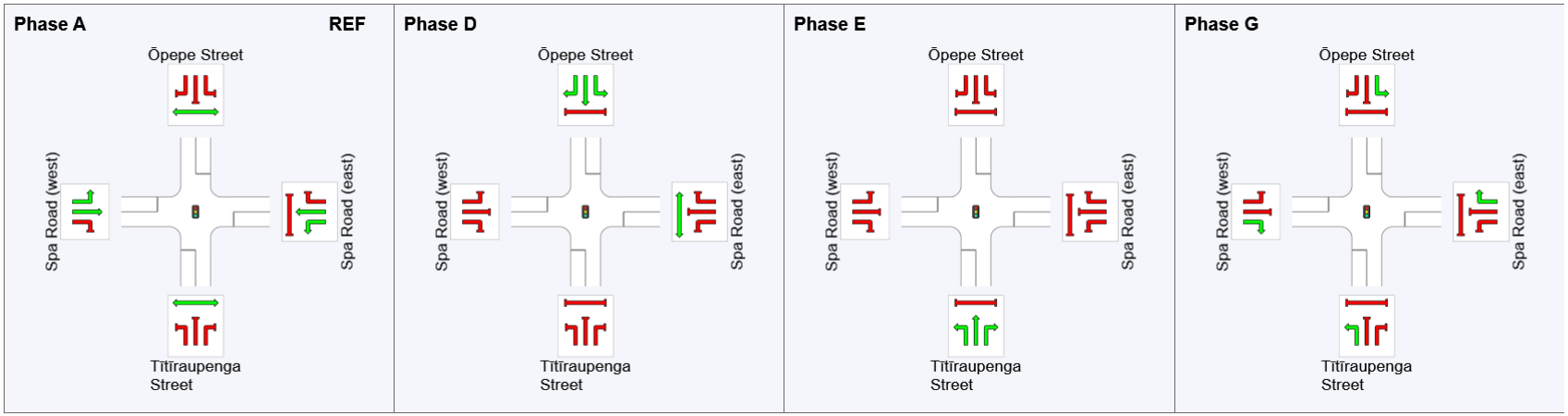
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G, G1*, G2*
Output Phase Sequence: A, D, E, G
(* Variable Phase)

Phase Timing Summary

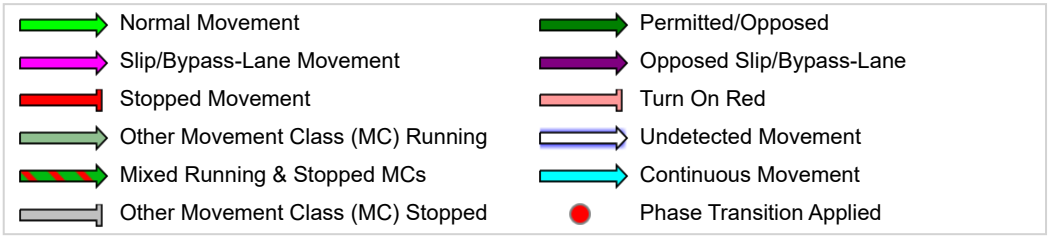
Phase	A	D	E	G
Phase Change Time (sec)	0	48	79	93
Green Time (sec)	42	25	8	18
Phase Time (sec)	48	31	14	24
Phase Split	41%	26%	12%	21%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

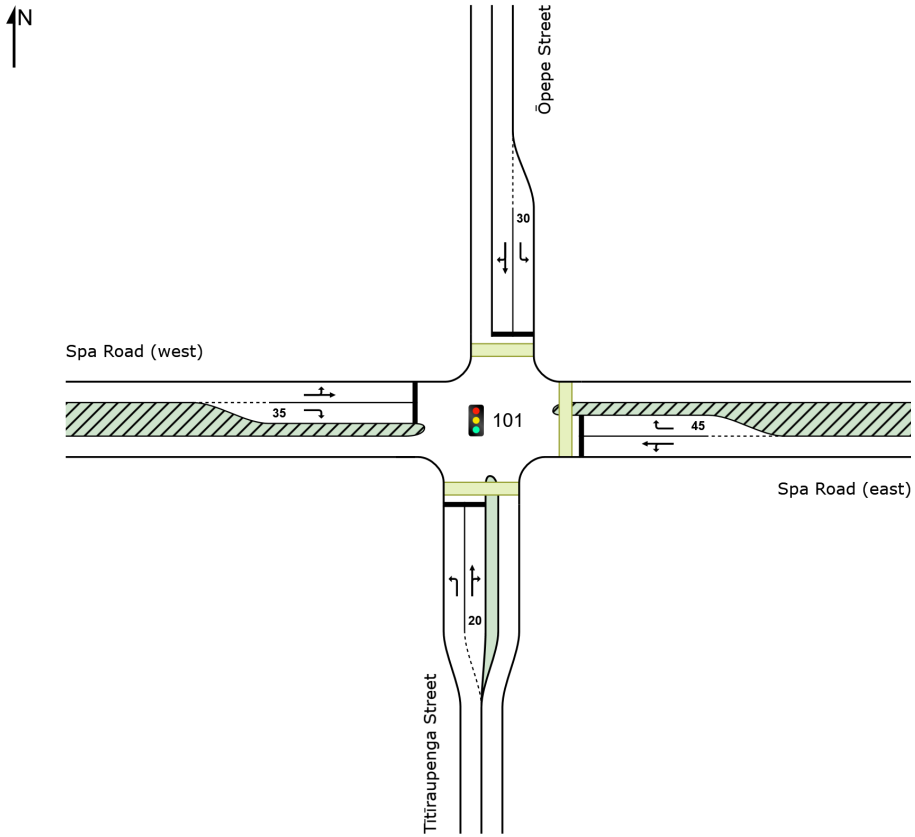


SITE LAYOUT

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2023 PM (Site Folder: 2023)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2023 PM (Site Folder: 2023)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 117 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street														
1	L2	90	1	95	1.1	0.201	41.3	LOS D	4.2	29.9	0.82	0.75	0.82	33.1
2	T1	34	0	36	0.0	*0.446	62.1	LOS E	2.6	18.4	1.00	0.73	1.00	34.6
3	R2	8	0	8	0.0	0.446	66.7	LOS E	2.6	18.4	1.00	0.73	1.00	44.5
Approach		132	1	139	0.8	0.446	48.2	LOS D	4.2	29.9	0.88	0.74	0.88	35.9
East: Spa Road (east)														
4	L2	52	0	55	0.0	0.969	81.4	LOS F	45.3	325.2	1.00	1.22	1.43	43.6
5	T1	507	17	534	3.4	*0.969	75.2	LOS E	45.3	325.2	1.00	1.22	1.43	43.5
6	R2	22	1	23	4.5	0.084	50.7	LOS D	1.1	8.3	0.89	0.70	0.89	45.8
Approach		581	18	612	3.1	0.969	74.9	LOS E	45.3	325.2	1.00	1.20	1.41	43.6
North: Ōpepe Street														
7	L2	50	1	53	2.0	*0.177	31.7	LOS C	1.9	13.2	0.90	0.73	0.90	47.3
8	T1	74	0	78	0.0	0.190	40.7	LOS D	3.7	25.9	0.86	0.67	0.86	38.8
9	R2	1	0	1	0.0	0.190	45.2	LOS D	3.7	25.9	0.86	0.67	0.86	38.1
Approach		125	1	132	0.8	0.190	37.1	LOS D	3.7	25.9	0.87	0.70	0.87	44.6
West: Spa Road (west)														
10	L2	7	0	7	0.0	0.786	42.1	LOS D	26.6	191.9	0.93	0.85	0.97	39.4
11	T1	490	17	516	3.5	0.786	35.7	LOS D	26.6	191.9	0.93	0.85	0.97	46.7
12	R2	41	0	43	0.0	0.151	51.3	LOS D	2.2	15.1	0.90	0.73	0.90	30.6
Approach		538	17	566	3.2	0.786	37.0	LOS D	26.6	191.9	0.93	0.84	0.96	46.3
All Vehicles		1376	37	1448	2.7	0.969	54.1	LOS D	45.3	325.2	0.95	0.97	1.13	44.5

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.

Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Tītīraupenga Street												
P1	Full	50	53	52.8	LOS E	0.2	0.2	0.95	0.95	228.8	228.8	1.00
East: Spa Road (east)												
P2	Full	50	53	52.8	LOS E	0.2	0.2	0.95	0.95	219.5	216.8	0.99
North: Ōpepe Street												
P3	Full	50	53	52.8	LOS E	0.2	0.2	0.95	0.95	217.3	213.9	0.98
All Pedestrians		150	158	52.8	LOS E	0.2	0.2	0.95	0.95	221.9	219.8	0.99

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2023 PM (Site Folder: 2023)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 117 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

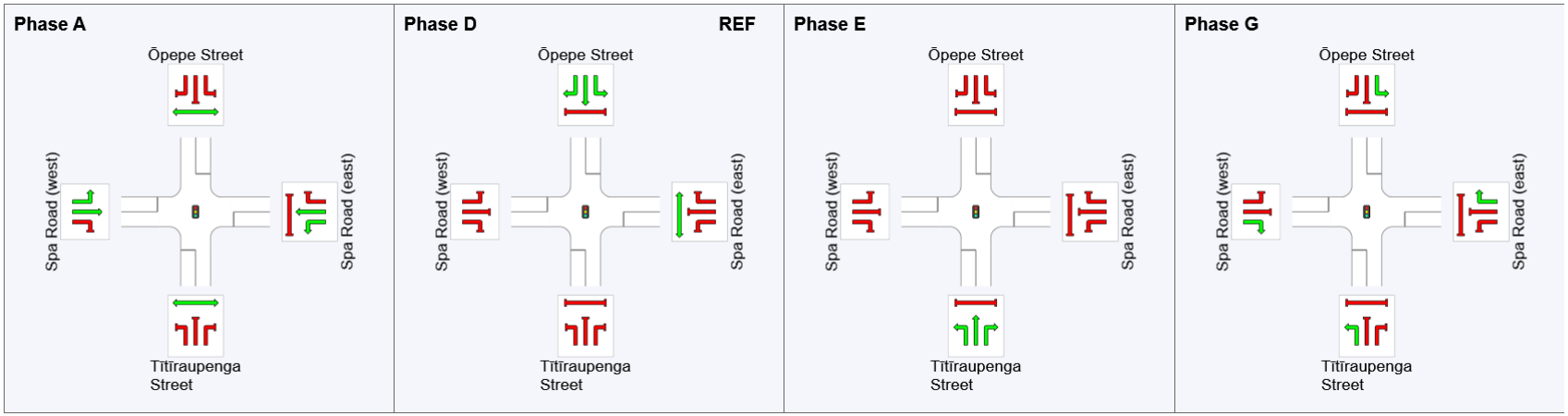
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase D
Input Phase Sequence: A, D, E, G, G1*, G2*
Output Phase Sequence: A, D, E, G
(* Variable Phase)

Phase Timing Summary

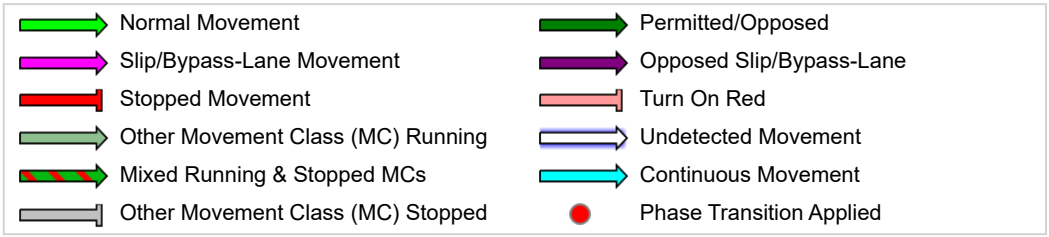
Phase	A	D	E	G
Phase Change Time (sec)	67	0	31	43
Green Time (sec)	44	25	6	18
Phase Time (sec)	50	31	12	24
Phase Split	43%	26%	10%	21%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

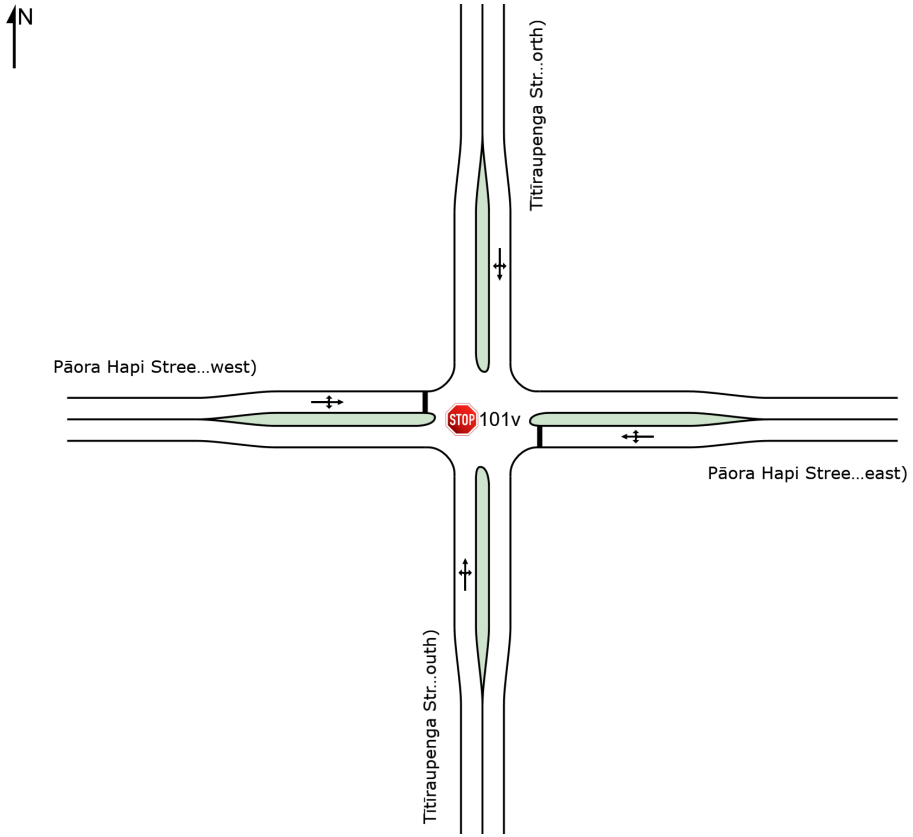


SITE LAYOUT

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2023 AM (Site Folder: 2023)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2023 AM (Site Folder: 2023)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street (south)														
1	L2	45	1	47	2.2	0.234	4.7	LOS A	0.1	0.7	0.02	0.07	0.02	40.6
2	T1	373	2	393	0.5	0.234	0.0	LOS A	0.1	0.7	0.02	0.07	0.02	49.3
3	R2	8	0	8	0.0	0.234	5.6	LOS A	0.1	0.7	0.02	0.07	0.02	47.6
Approach		426	3	448	0.7	0.234	0.6	NA	0.1	0.7	0.02	0.07	0.02	48.2
East: Pāora Hapi Street (east)														
4	L2	14	0	15	0.0	0.057	8.4	LOS A	0.2	1.4	0.46	0.94	0.46	40.0
5	T1	16	0	17	0.0	0.057	12.4	LOS B	0.2	1.4	0.46	0.94	0.46	31.2
6	R2	4	0	4	0.0	0.057	13.2	LOS B	0.2	1.4	0.46	0.94	0.46	37.6
Approach		34	0	36	0.0	0.057	10.9	LOS B	0.2	1.4	0.46	0.94	0.46	35.6
North: Tītīraupenga Street (north)														
7	L2	2	0	2	0.0	0.143	6.4	LOS A	0.2	1.5	0.10	0.05	0.10	47.9
8	T1	229	2	241	0.9	0.143	0.2	LOS A	0.2	1.5	0.10	0.05	0.10	49.1
9	R2	19	0	20	0.0	0.143	6.5	LOS A	0.2	1.5	0.10	0.05	0.10	38.0
Approach		250	2	263	0.8	0.143	0.8	NA	0.2	1.5	0.10	0.05	0.10	48.2
West: Pāora Hapi Street (west)														
10	L2	19	0	20	0.0	0.528	10.6	LOS B	2.8	19.6	0.74	1.22	1.18	28.3
11	T1	17	0	18	0.0	0.528	14.7	LOS B	2.8	19.6	0.74	1.22	1.18	27.4
12	R2	182	1	192	0.5	0.528	16.6	LOS C	2.8	19.6	0.74	1.22	1.18	30.4
Approach		218	1	229	0.5	0.528	16.0	LOS C	2.8	19.6	0.74	1.22	1.18	30.1
All Vehicles		928	6	977	0.6	0.528	4.6	NA	2.8	19.6	0.23	0.37	0.33	42.0

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.

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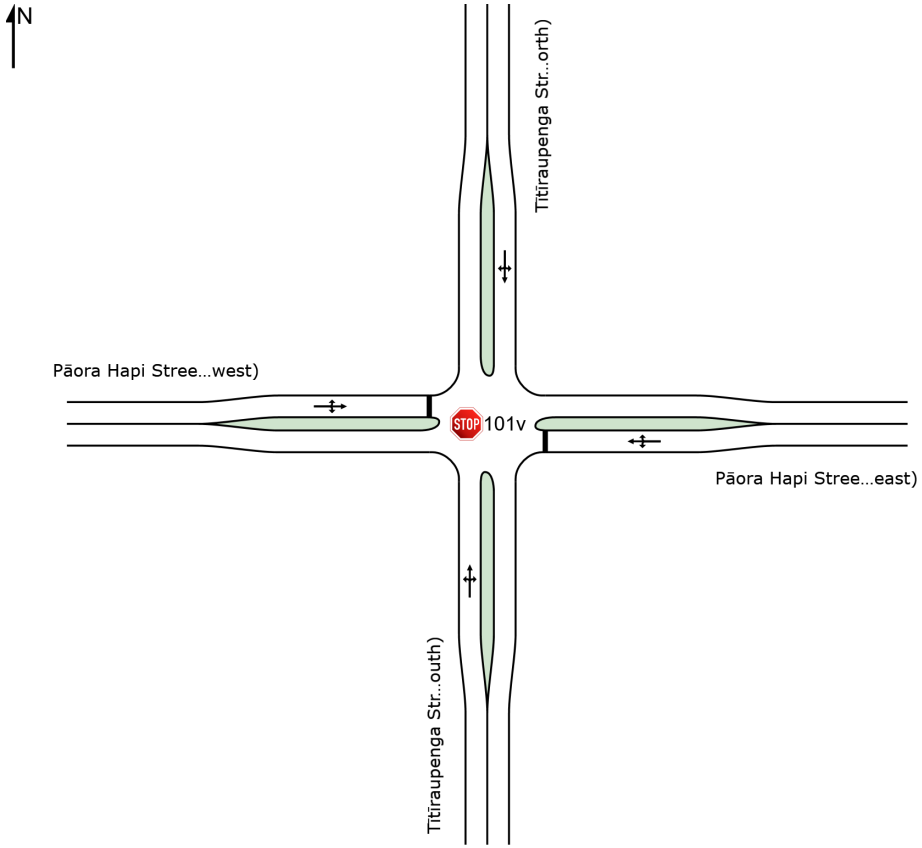
SITE LAYOUT

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2023 PM (Site Folder: 2023)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2023 PM (Site Folder: 2023)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street (south)														
1	L2	52	1	55	1.9	0.114	4.7	LOS A	0.1	0.6	0.04	0.15	0.04	40.0
2	T1	144	1	152	0.7	0.114	0.1	LOS A	0.1	0.6	0.04	0.15	0.04	48.3
3	R2	8	0	8	0.0	0.114	5.3	LOS A	0.1	0.6	0.04	0.15	0.04	46.7
Approach		204	2	215	1.0	0.114	1.4	NA	0.1	0.6	0.04	0.15	0.04	45.9
East: Pāora Hapi Street (east)														
4	L2	8	0	8	0.0	0.047	8.3	LOS A	0.2	1.2	0.42	0.93	0.42	41.0
5	T1	20	0	21	0.0	0.047	9.8	LOS A	0.2	1.2	0.42	0.93	0.42	32.0
6	R2	6	0	6	0.0	0.047	10.1	LOS B	0.2	1.2	0.42	0.93	0.42	38.7
Approach		34	0	36	0.0	0.047	9.5	LOS A	0.2	1.2	0.42	0.93	0.42	35.2
North: Tītīraupenga Street (north)														
7	L2	6	0	6	0.0	0.133	5.2	LOS A	0.2	1.5	0.09	0.07	0.09	47.7
8	T1	207	1	218	0.5	0.133	0.1	LOS A	0.2	1.5	0.09	0.07	0.09	49.0
9	R2	24	0	25	0.0	0.133	5.3	LOS A	0.2	1.5	0.09	0.07	0.09	37.9
Approach		237	1	249	0.4	0.133	0.8	NA	0.2	1.5	0.09	0.07	0.09	47.8
West: Pāora Hapi Street (west)														
10	L2	23	0	24	0.0	0.449	7.5	LOS A	2.5	17.6	0.56	1.11	0.77	30.7
11	T1	19	0	20	0.0	0.449	10.2	LOS B	2.5	17.6	0.56	1.11	0.77	29.9
12	R2	227	1	239	0.4	0.449	11.1	LOS B	2.5	17.6	0.56	1.11	0.77	32.7
Approach		269	1	283	0.4	0.449	10.8	LOS B	2.5	17.6	0.56	1.11	0.77	32.4
All Vehicles		744	4	783	0.5	0.449	5.0	NA	2.5	17.6	0.26	0.51	0.34	40.1

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.

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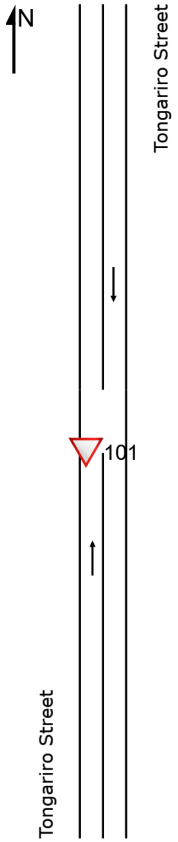
SITE LAYOUT

Site: 101 [TCG Bridge 2023 AM (Site Folder: 2023)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [TCG Bridge 2023 AM (Site Folder: 2023)]

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: Tongariro Street														
2	T1	668	7.2	703	7.2	0.377	4.3	LOS A	0.0	0.0	0.00	0.53	0.00	54.5
Approach		668	7.2	703	7.2	0.377	4.3	NA	0.0	0.0	0.00	0.53	0.00	54.5
North: Tongariro Street														
8	T1	1668	3.1	1756	3.1	0.918	6.0	LOS A	0.0	0.0	0.00	0.51	0.00	51.9
Approach		1668	3.1	1756	3.1	0.918	6.0	NA	0.0	0.0	0.00	0.51	0.00	51.9
All Vehicles		2336	4.3	2459	4.3	0.918	5.5	NA	0.0	0.0	0.00	0.51	0.00	52.6

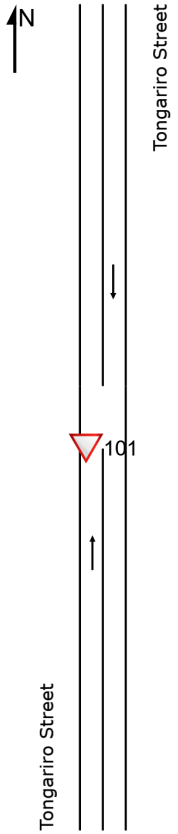
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and 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.

SITE LAYOUT

Site: 101 [TCG Bridge 2023 PM (Site Folder: 2023)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [TCG Bridge 2023 PM (Site Folder: 2023)]

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: Tongariro Street														
2	T1	1469	4.4	1546	4.4	0.816	4.9	LOS A	0.0	0.0	0.00	0.52	0.00	53.5
Approach		1469	4.4	1546	4.4	0.816	4.9	NA	0.0	0.0	0.00	0.52	0.00	53.5
North: Tongariro Street														
8	T1	877	4.7	923	4.7	0.488	4.3	LOS A	0.0	0.0	0.00	0.53	0.00	54.5
Approach		877	4.7	923	4.7	0.488	4.3	NA	0.0	0.0	0.00	0.53	0.00	54.5
All Vehicles		2346	4.6	2469	4.6	0.816	4.7	NA	0.0	0.0	0.00	0.52	0.00	53.9

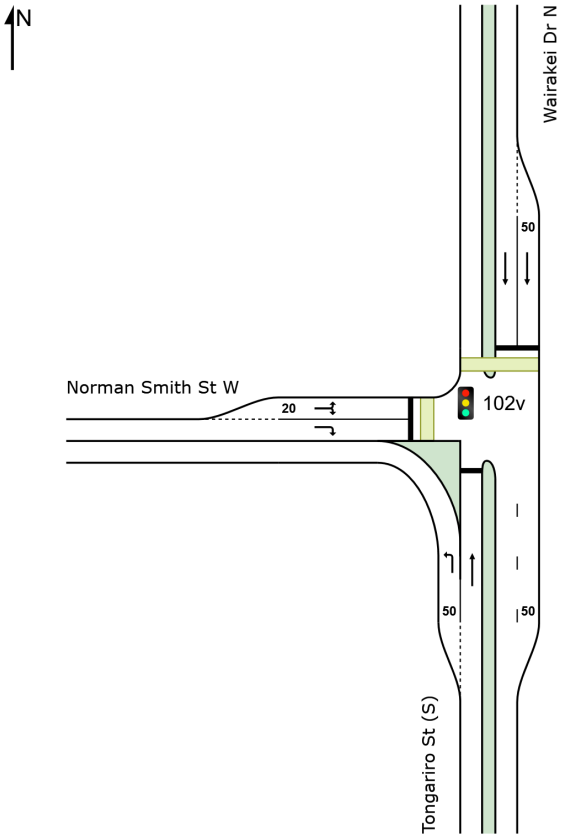
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and 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.

SITE LAYOUT

Site: 102v [Norman / Wairakei 2033 AM Base (Site Folder: 2033 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 102v [Norman / Wairakei 2033 AM Base (Site Folder: 2033 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tongariro St (S)														
1	L2	403	21	424	5.2	0.237	4.5	LOS A	0.0	0.0	0.00	0.46	0.00	48.1
2	T1	330	21	347	6.4	0.928	63.9	LOS E	23.1	170.7	0.90	1.08	1.30	44.7
Approach		733	42	772	5.7	0.928	31.2	LOS C	23.1	170.7	0.40	0.74	0.58	45.3
North: Wairakei Dr N														
8	T1	776	26	817	3.4	* 1.194	184.1	LOS F	82.7	595.5	0.95	1.69	2.04	37.1
Approach		776	26	817	3.4	1.194	184.1	LOS F	82.7	595.5	0.95	1.69	2.04	37.1
West: Norman Smith St W														
10	L2	13	0	14	0.0	0.336	18.5	LOS B	7.8	55.1	0.54	0.71	0.54	48.3
12	R2	1186	23	1248	1.9	* 1.073	113.6	LOS F	110.0	783.0	0.91	1.18	1.56	22.0
Approach		1199	23	1262	1.9	1.073	112.6	LOS F	110.0	783.0	0.90	1.17	1.55	22.8
All Vehicles		2708	91	2851	3.4	1.194	111.1	LOS F	110.0	783.0	0.78	1.20	1.43	35.6

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.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [Ped	Dist]	Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed

		ped/h	ped/h	sec		ped	m			sec	m	m/sec
North: Wairakei Dr N												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	80.3	33.9	0.42
West: Norman Smith St W												
P4	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	78.8	31.9	0.40
All Pedestrians		0	105	54.3	LOS E	0.2	0.2	0.95	0.95	79.6	32.9	0.41

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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PHASING SUMMARY

Site: 102v [Norman / Wairakei 2033 AM Base (Site Folder: 2033 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

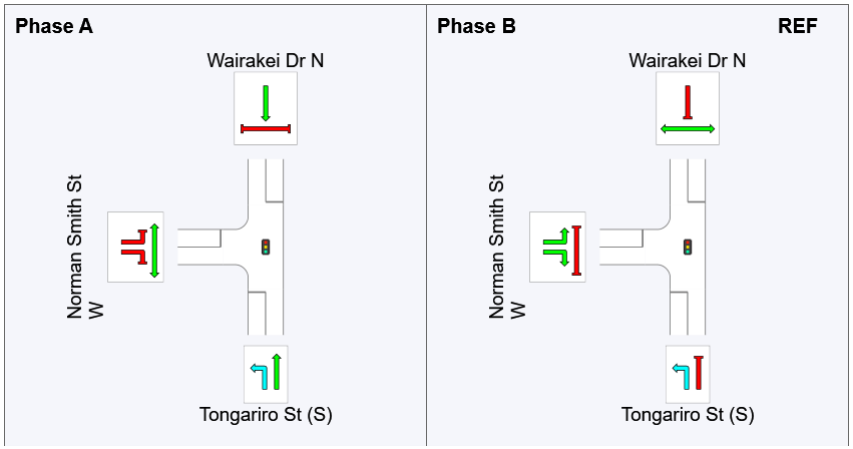
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase B
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Summary

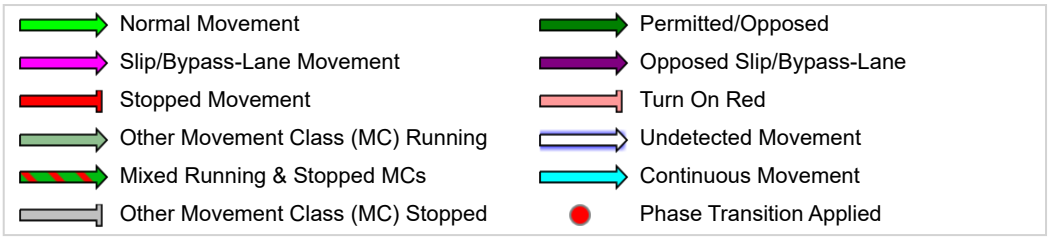
Phase	A	B
Phase Change Time (sec)	76	0
Green Time (sec)	38	70
Phase Time (sec)	44	76
Phase Split	37%	63%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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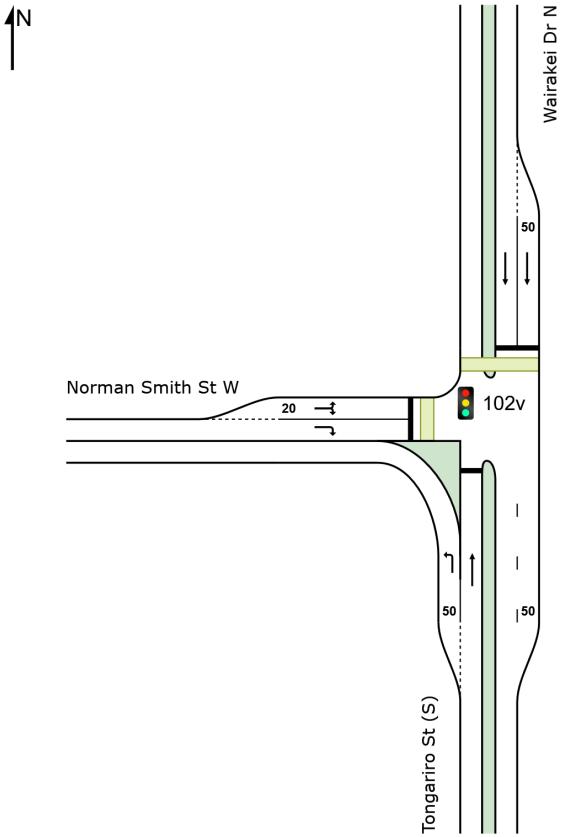
SITE LAYOUT

Site: 102v [Norman / Wairakei 2033 PM Base (Site Folder: 2033 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 102v [Norman / Wairakei 2033 PM Base (Site Folder: 2033 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tongariro St (S)														
1	L2	1110	19	1168	1.7	0.637	4.8	LOS A	0.0	0.0	0.00	0.46	0.00	47.7
2	T1	644	11	678	1.7	* 1.077	114.9	LOS F	48.1	341.6	1.00	2.25	3.04	41.2
Approach		1754	30	1846	1.7	1.077	45.2	LOS D	48.1	341.6	0.37	1.12	1.12	42.5
North: Wairakei Dr N														
8	T1	399	12	420	3.0	0.380	10.2	LOS B	5.4	38.4	0.69	0.58	0.69	49.1
Approach		399	12	420	3.0	0.380	10.2	LOS B	5.4	38.4	0.69	0.58	0.69	49.1
West: Norman Smith St W														
10	L2	10	0	11	0.0	0.327	20.6	LOS C	3.1	22.4	0.83	0.76	0.83	48.2
12	R2	622	19	655	3.1	* 1.045	79.5	LOS E	30.7	220.6	0.96	1.45	2.33	26.3
Approach		632	19	665	3.0	1.045	78.6	LOS E	30.7	220.6	0.96	1.44	2.30	27.5
All Vehicles		2785	61	2932	2.2	1.077	47.8	LOS D	48.1	341.6	0.55	1.11	1.33	42.2

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.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [Ped	Dist]	Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed

		ped/h	ped/h	sec		ped	m			sec	m	m/sec
North: Wairakei Dr N												
P3	Full	50	53	19.4	LOS B	0.1	0.1	0.88	0.88	45.5	33.9	0.75
West: Norman Smith St W												
P4	Full	50	53	19.4	LOS B	0.1	0.1	0.88	0.88	43.9	31.9	0.73
All Pedestrians		0	105	19.4	LOS B	0.1	0.1	0.88	0.88	44.7	32.9	0.74

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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PHASING SUMMARY

Site: 102v [Norman / Wairakei 2033 PM Base (Site Folder: 2033 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site Practical Cycle Time)

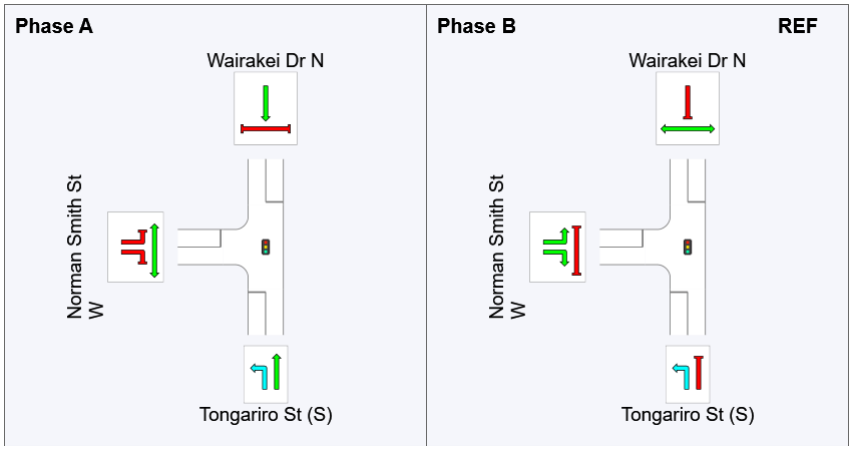
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase B
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Summary

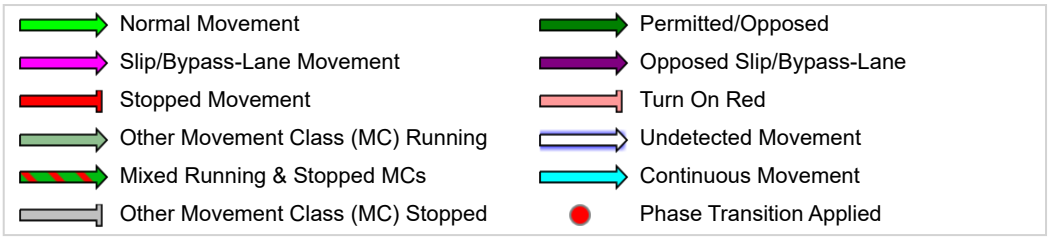
Phase	A	B
Phase Change Time (sec)	22	0
Green Time (sec)	22	16
Phase Time (sec)	28	22
Phase Split	56%	44%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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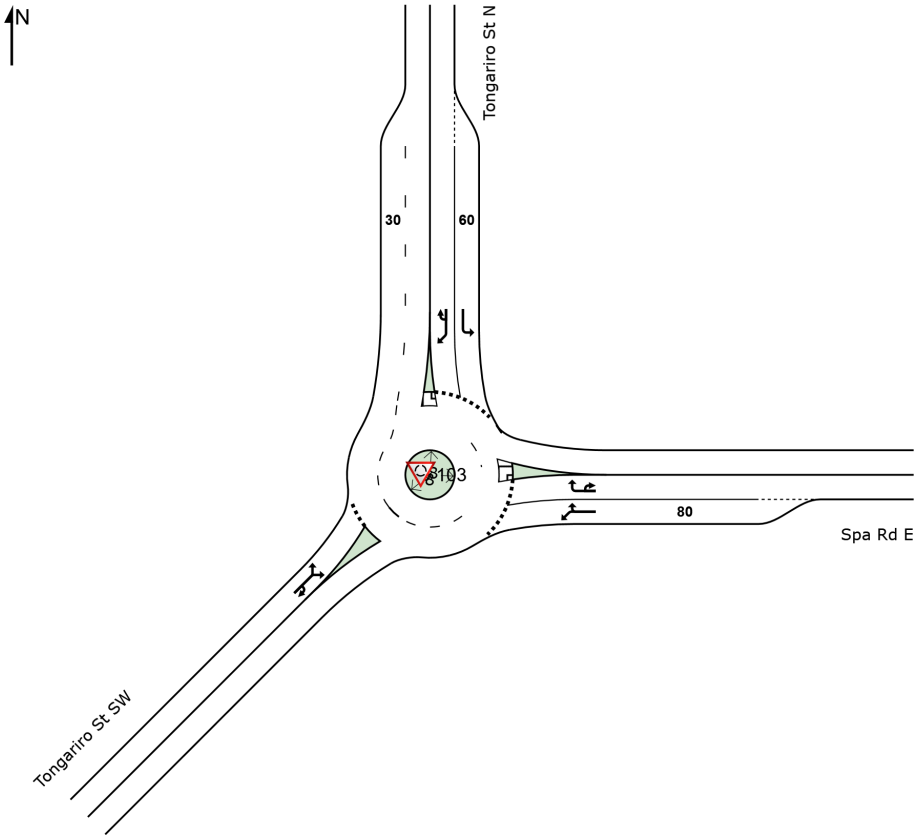
SITE LAYOUT

Site: 103 [Spa / Tongariro 2033 AM Base (Site Folder: 2033 Base Year)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 103 [Spa / Tongariro 2033 AM Base (Site Folder: 2033 Base Year)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
East: Spa Rd E														
4a	L1	42	0	44	0.0	0.169	9.6	LOS A	1.0	6.9	0.76	0.84	0.76	42.7
6	R2	470	27	495	5.7	0.554	14.5	LOS B	5.4	39.6	0.90	0.99	1.09	42.4
6u	U	1	0	1	0.0	0.554	15.7	LOS B	5.4	39.6	0.91	1.00	1.12	42.5
Approach		513	27	540	5.3	0.554	14.1	LOS B	5.4	39.6	0.89	0.98	1.06	42.4
North: Tongariro St N														
7	L2	1226	29	1291	2.4	0.828	5.4	LOS A	16.8	119.9	0.67	0.49	0.67	45.1
9a	R1	648	19	682	2.9	0.589	6.8	LOS A	6.3	45.2	0.44	0.56	0.44	44.7
9u	U	64	0	67	0.0	0.589	9.2	LOS A	6.3	45.2	0.44	0.56	0.44	46.0
Approach		1938	48	2040	2.5	0.828	6.0	LOS A	16.8	119.9	0.59	0.52	0.59	45.0
SouthWest: Tongariro St SW														
30a	L1	338	15	356	4.4	0.602	6.4	LOS A	4.7	33.7	0.80	0.96	0.98	28.8
32a	R1	66	0	69	0.0	0.602	8.8	LOS A	4.7	33.7	0.80	0.96	0.98	28.9
32u	U	1	0	1	0.0	0.602	10.2	LOS B	4.7	33.7	0.80	0.96	0.98	29.4
Approach		405	15	426	3.7	0.602	6.8	LOS A	4.7	33.7	0.80	0.96	0.98	28.8
All Vehicles		2856	90	3006	3.2	0.828	7.6	LOS A	16.8	119.9	0.67	0.66	0.73	41.5

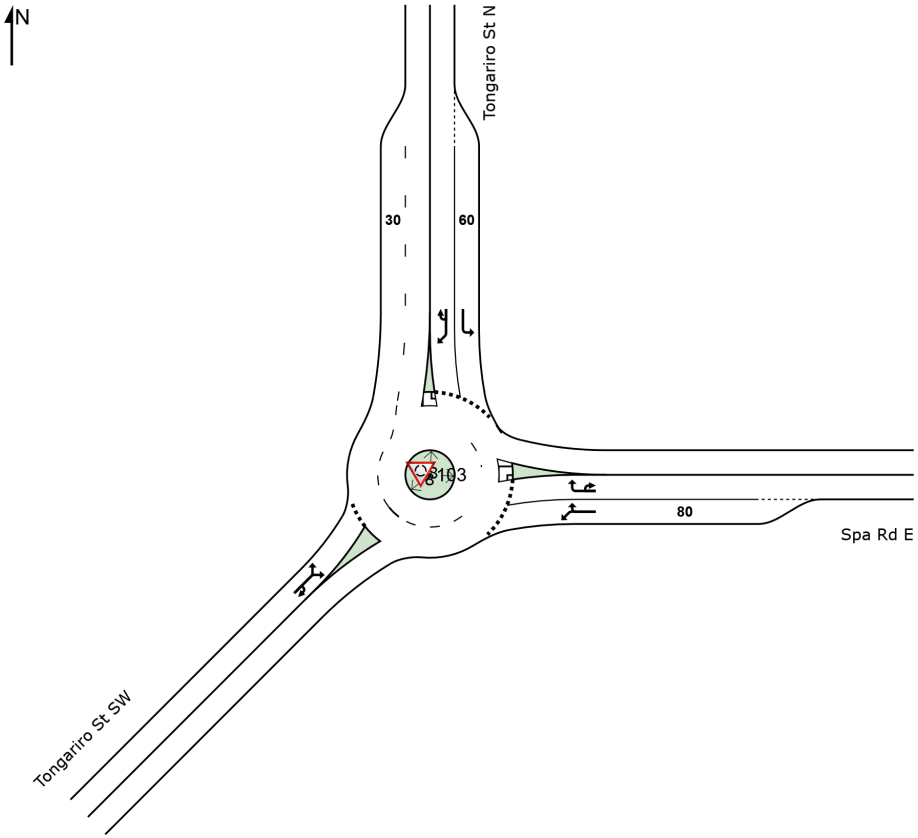
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 103 [Spa / Tongariro 2033 PM Base (Site Folder: 2033 Base Year)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 103 [Spa / Tongariro 2033 PM Base (Site Folder: 2033 Base Year)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
East: Spa Rd E														
4a	L1	33	0	35	0.0	0.303	7.4	LOS A	1.7	11.9	0.65	0.80	0.65	43.3
6	R2	1228	21	1293	1.7	0.992	39.3	LOS D	44.3	314.9	0.95	1.68	2.80	33.6
6u	U	1	1	1	100.0	0.992	50.9	LOS E	44.3	314.9	1.00	1.82	3.13	31.4
Approach		1262	22	1328	1.7	0.992	38.5	LOS D	44.3	314.9	0.95	1.66	2.74	33.7
North: Tongariro St N														
7	L2	628	22	661	3.5	0.402	4.6	LOS A	3.7	26.5	0.18	0.50	0.18	46.1
9a	R1	351	9	369	2.6	0.328	6.2	LOS A	2.6	18.8	0.17	0.57	0.17	45.1
9u	U	86	0	91	0.0	0.328	8.8	LOS A	2.6	18.8	0.17	0.57	0.17	46.5
Approach		1065	31	1121	2.9	0.402	5.5	LOS A	3.7	26.5	0.17	0.53	0.17	45.8
SouthWest: Tongariro St SW														
30a	L1	430	8	453	1.9	1.549	517.6	LOS F	119.6	850.0	1.00	8.25	13.69	5.5
32a	R1	30	0	32	0.0	1.549	517.9	LOS F	119.6	850.0	1.00	8.25	13.69	5.3
32u	U	1	0	1	0.0	1.549	519.3	LOS F	119.6	850.0	1.00	8.25	13.69	4.8
Approach		461	8	485	1.7	1.549	517.6	LOS F	119.6	850.0	1.00	8.25	13.69	5.5
All Vehicles		2788	61	2935	2.2	1.549	105.1	LOS F	119.6	850.0	0.66	2.32	3.57	20.1

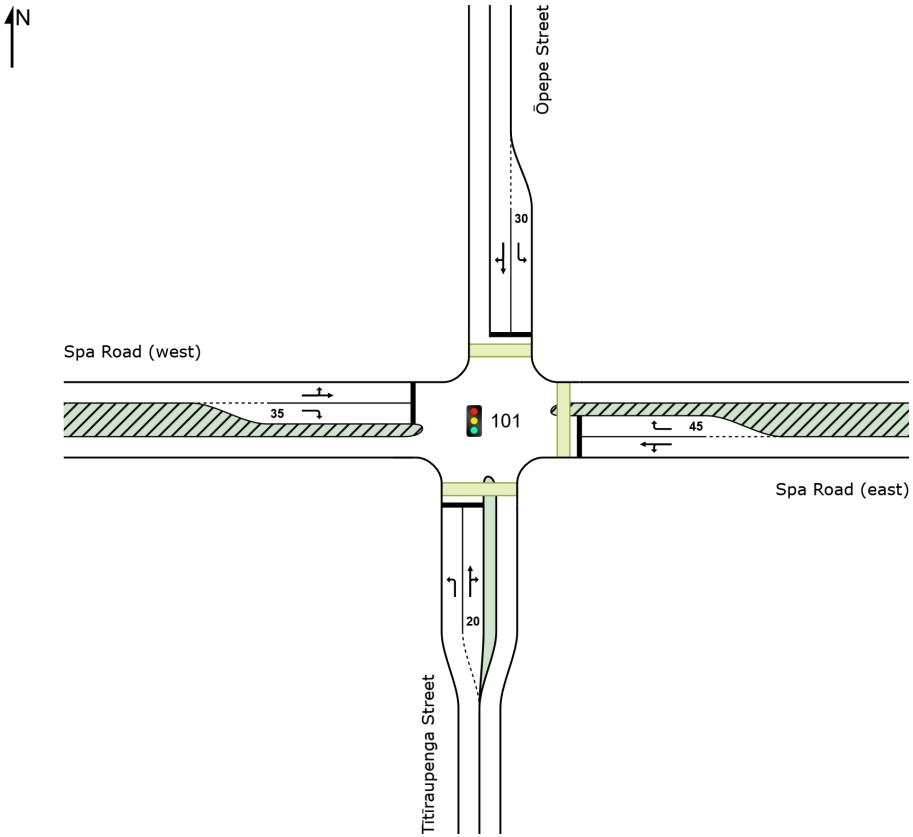
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 AM Base (current 2023 phasing) (Site Folder: 2033 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 AM Base (current 2023 phasing) (Site Folder: 2033 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street														
1	L2	191	2	201	1.0	0.607	44.6	LOS D	9.8	69.5	0.88	0.79	0.88	32.3
2	T1	121	1	127	0.8	* 1.404	419.0	LOS F	24.7	174.3	1.00	1.87	3.48	12.2
3	R2	7	0	7	0.0	1.404	423.6	LOS F	24.7	174.3	1.00	1.87	3.48	27.0
Approach		319	3	336	0.9	1.404	194.9	LOS F	24.7	174.3	0.93	1.22	1.92	18.0
East: Spa Road (east)														
4	L2	112	1	118	0.9	1.380	403.8	LOS F	120.1	870.9	1.00	2.56	3.26	27.8
5	T1	515	25	542	4.9	* 1.380	397.6	LOS F	120.1	870.9	1.00	2.56	3.26	27.6
6	R2	136	1	143	0.7	0.517	56.4	LOS E	7.9	55.7	0.97	0.80	0.97	45.4
Approach		763	27	803	3.5	1.380	337.7	LOS F	120.1	870.9	0.99	2.25	2.85	29.9
North: Ōpepe Street														
7	L2	47	1	49	2.1	* 0.203	35.0	LOS C	1.9	13.5	0.93	0.73	0.93	47.0
8	T1	61	1	64	1.6	0.165	42.0	LOS D	3.2	22.6	0.86	0.67	0.86	38.5
9	R2	2	0	2	0.0	0.165	46.6	LOS D	3.2	22.6	0.86	0.67	0.86	37.7
Approach		110	2	116	1.8	0.203	39.1	LOS D	3.2	22.6	0.89	0.69	0.89	44.5
West: Spa Road (west)														
10	L2	2	0	2	0.0	1.046	128.3	LOS F	64.3	468.0	1.00	1.50	1.76	25.8
11	T1	603	28	635	4.6	1.046	121.9	LOS F	64.3	468.0	1.00	1.50	1.76	40.2
12	R2	146	2	154	1.4	0.557	56.8	LOS E	8.6	60.6	0.98	0.80	0.98	29.4
Approach		751	30	791	4.0	1.046	109.3	LOS F	64.3	468.0	1.00	1.36	1.61	39.6
All Vehicles		1943	62	2045	3.2	1.404	209.1	LOS F	120.1	870.9	0.98	1.65	2.11	32.6

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.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Tītīraupenga Street												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	230.3	228.8	0.99
East: Spa Road (east)												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.0	216.8	0.98
North: Ōpepe Street												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	218.8	213.9	0.98
All Pedestrians		150	158	54.3	LOS E	0.2	0.2	0.95	0.95	223.4	219.8	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 AM Base (current 2023 phasing) (Site Folder: 2033 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

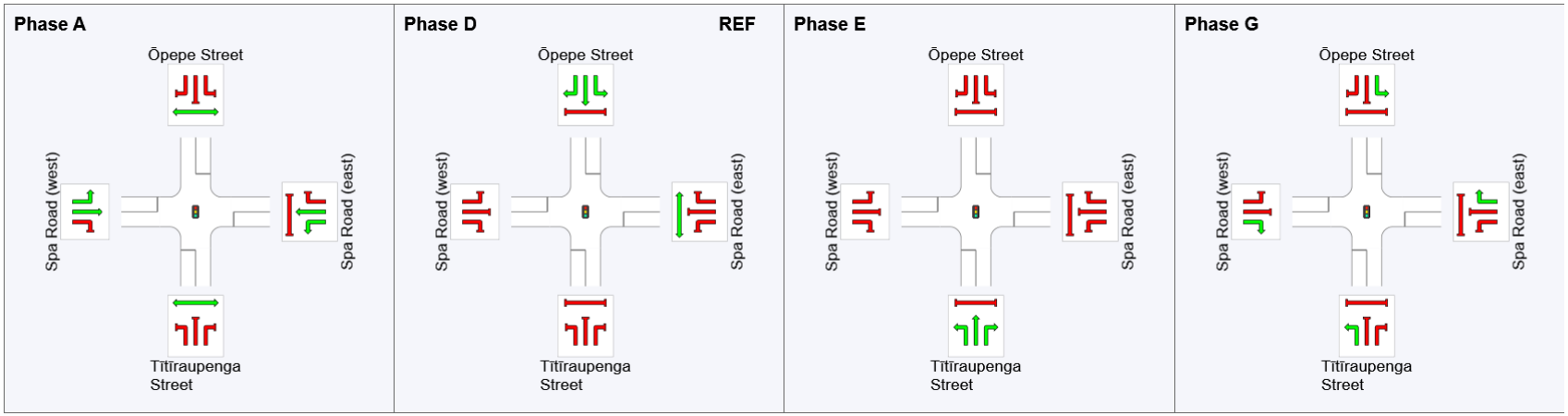
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase D
Input Phase Sequence: A, D, E, G, G1*, G2*
Output Phase Sequence: A, D, E, G
(* Variable Phase)

Phase Timing Summary

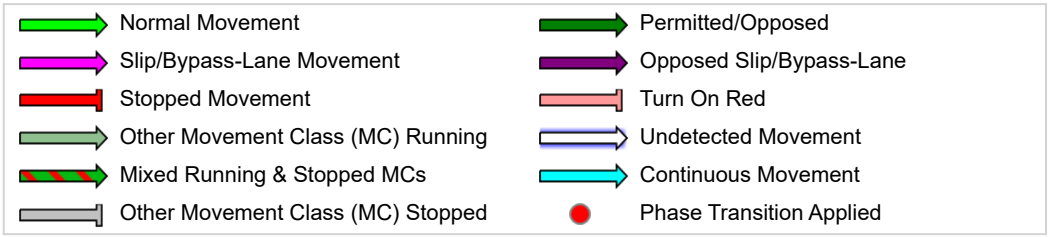
Phase	A	D	E	G
Phase Change Time (sec)	68	0	31	44
Green Time (sec)	46	25	7	18
Phase Time (sec)	52	31	13	24
Phase Split	43%	26%	11%	20%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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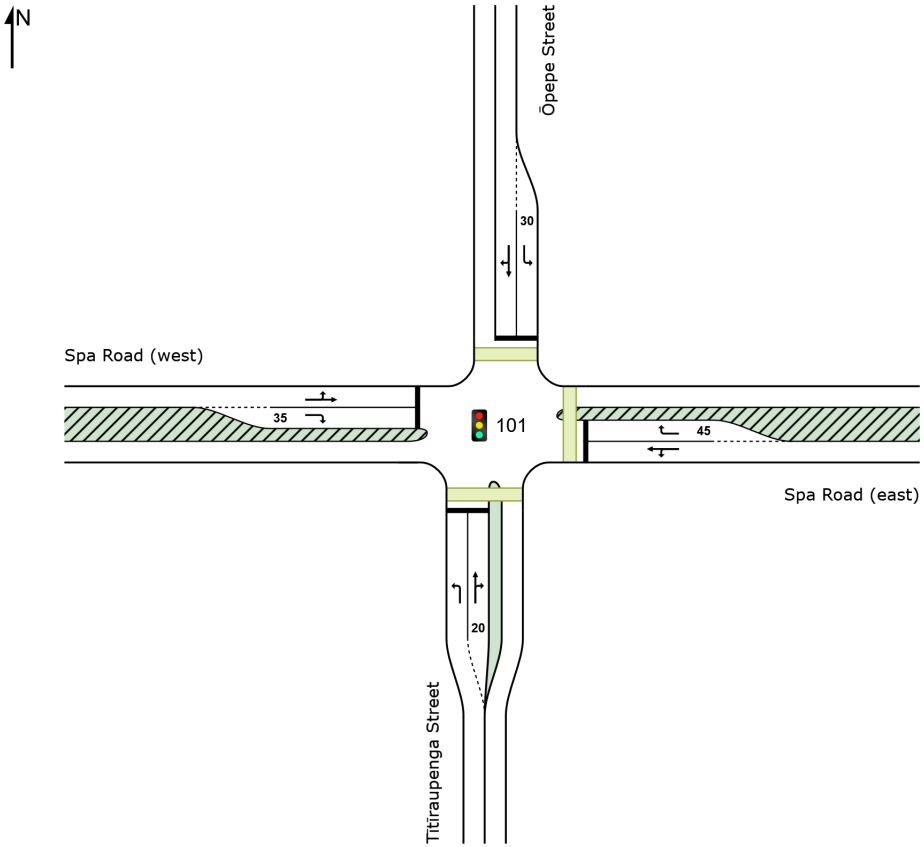
SITE LAYOUT

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 PM Base (current 2023 phasing) (Site Folder: 2033 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 PM Base (current 2023 phasing) (Site Folder: 2033 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street														
1	L2	105	1	111	1.0	0.256	43.2	LOS D	5.2	36.5	0.84	0.76	0.84	32.6
2	T1	37	0	39	0.0	*0.501	64.1	LOS E	3.0	20.7	1.00	0.74	1.00	34.2
3	R2	9	0	9	0.0	0.501	68.7	LOS E	3.0	20.7	1.00	0.74	1.00	44.3
Approach		151	1	159	0.7	0.501	49.9	LOS D	5.2	36.5	0.89	0.75	0.89	35.4
East: Spa Road (east)														
4	L2	59	0	62	0.0	1.118	180.4	LOS F	81.5	585.3	1.00	1.74	2.10	37.1
5	T1	592	20	623	3.4	*1.118	174.2	LOS F	81.5	585.3	1.00	1.74	2.10	36.9
6	R2	24	1	25	4.2	0.093	52.4	LOS D	1.3	9.3	0.89	0.71	0.89	45.7
Approach		675	21	711	3.1	1.118	170.4	LOS F	81.5	585.3	1.00	1.70	2.06	37.2
North: Ōpepe Street														
7	L2	53	1	56	1.9	*0.228	35.5	LOS D	2.2	15.4	0.93	0.74	0.93	47.0
8	T1	87	0	92	0.0	0.228	42.6	LOS D	4.5	31.7	0.87	0.69	0.87	38.4
9	R2	1	0	1	0.0	0.228	47.2	LOS D	4.5	31.7	0.87	0.69	0.87	37.6
Approach		141	1	148	0.7	0.228	40.0	LOS D	4.5	31.7	0.89	0.71	0.89	44.1
West: Spa Road (west)														
10	L2	13	0	14	0.0	0.865	49.5	LOS D	34.8	251.1	0.96	0.96	1.08	37.7
11	T1	550	21	579	3.8	0.865	43.1	LOS D	34.8	251.1	0.96	0.96	1.08	46.1
12	R2	48	0	51	0.0	0.181	53.2	LOS D	2.6	18.4	0.91	0.74	0.91	30.1
Approach		611	21	643	3.4	0.865	44.1	LOS D	34.8	251.1	0.96	0.94	1.07	45.7
All Vehicles		1578	44	1661	2.8	1.118	98.3	LOS F	81.5	585.3	0.96	1.23	1.46	40.6

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.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Tītīraupenga Street												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	230.3	228.8	0.99
East: Spa Road (east)												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.0	216.8	0.98
North: Ōpepe Street												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	218.8	213.9	0.98
All Pedestrians		150	158	54.3	LOS E	0.2	0.2	0.95	0.95	223.4	219.8	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 PM Base (current 2023 phasing) (Site Folder: 2033 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

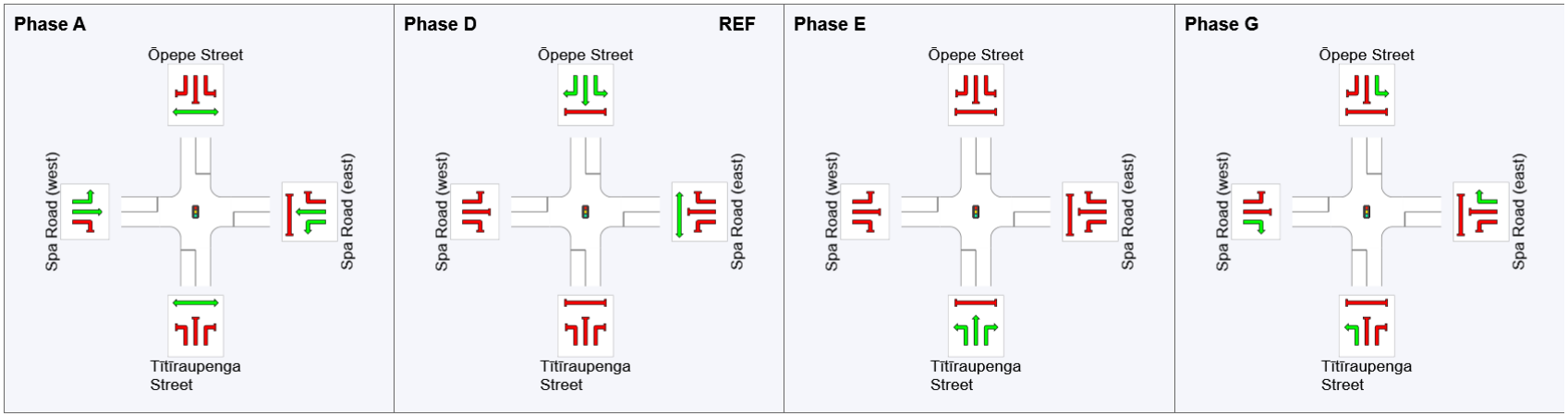
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase D
Input Phase Sequence: A, D, E, G, G1*, G2*
Output Phase Sequence: A, D, E, G
(* Variable Phase)

Phase Timing Summary

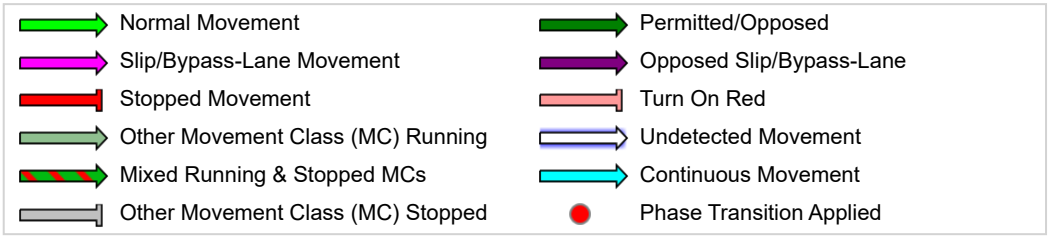
Phase	A	D	E	G
Phase Change Time (sec)	67	0	31	43
Green Time (sec)	47	25	6	18
Phase Time (sec)	53	31	12	24
Phase Split	44%	26%	10%	20%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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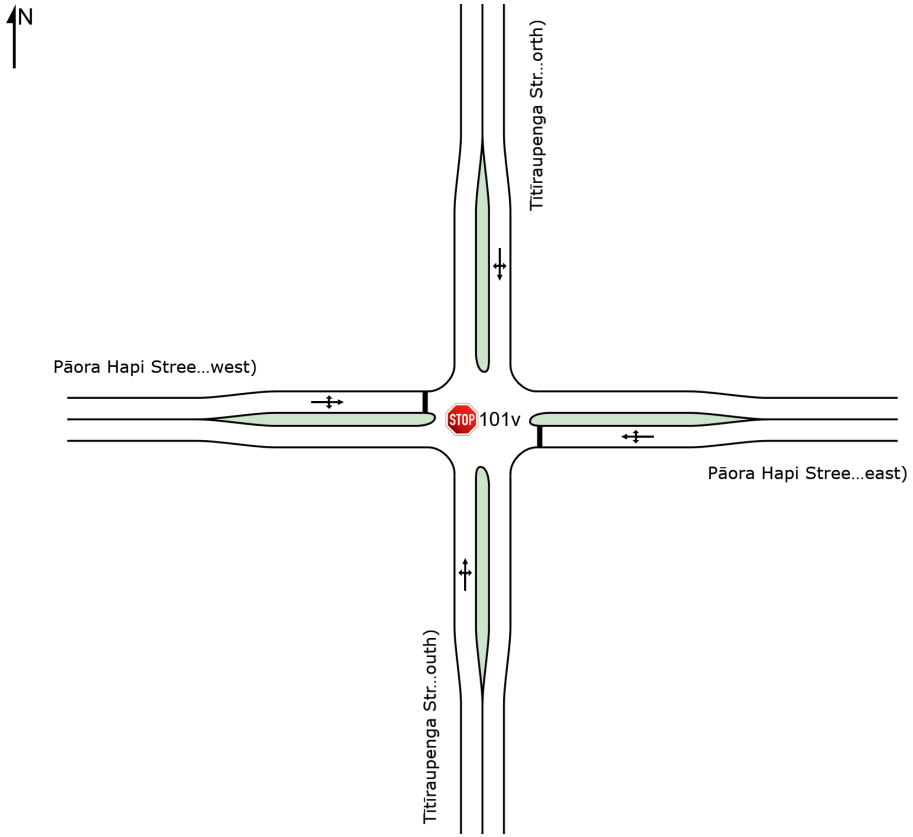
SITE LAYOUT

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2033 AM Base (Site Folder: 2033 Base Year)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2033 AM Base (Site Folder: 2033 Base Year)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street (south)														
1	L2	80	1	84	1.3	0.265	4.7	LOS A	0.1	0.9	0.03	0.10	0.03	40.4
2	T1	392	2	413	0.5	0.265	0.0	LOS A	0.1	0.9	0.03	0.10	0.03	48.9
3	R2	9	0	9	0.0	0.265	5.9	LOS A	0.1	0.9	0.03	0.10	0.03	47.3
Approach		481	3	506	0.6	0.265	0.9	NA	0.1	0.9	0.03	0.10	0.03	47.3
East: Pāora Hapi Street (east)														
4	L2	16	0	17	0.0	0.074	8.6	LOS A	0.3	1.8	0.51	0.96	0.51	39.4
5	T1	19	0	20	0.0	0.074	14.0	LOS B	0.3	1.8	0.51	0.96	0.51	30.7
6	R2	4	0	4	0.0	0.074	14.3	LOS B	0.3	1.8	0.51	0.96	0.51	36.9
Approach		39	0	41	0.0	0.074	11.8	LOS B	0.3	1.8	0.51	0.96	0.51	34.9
North: Tītīraupenga Street (north)														
7	L2	3	0	3	0.0	0.170	6.8	LOS A	0.3	1.8	0.11	0.05	0.11	47.8
8	T1	271	3	285	1.1	0.170	0.3	LOS A	0.3	1.8	0.11	0.05	0.11	49.1
9	R2	21	0	22	0.0	0.170	6.9	LOS A	0.3	1.8	0.11	0.05	0.11	38.0
Approach		295	3	311	1.0	0.170	0.8	NA	0.3	1.8	0.11	0.05	0.11	48.3
West: Pāora Hapi Street (west)														
10	L2	20	0	21	0.0	0.716	15.0	LOS C	4.7	33.1	0.85	1.47	1.80	25.5
11	T1	19	0	20	0.0	0.716	20.8	LOS C	4.7	33.1	0.85	1.47	1.80	24.7
12	R2	216	2	227	0.9	0.716	23.5	LOS C	4.7	33.1	0.85	1.47	1.80	27.8
Approach		255	2	268	0.8	0.716	22.6	LOS C	4.7	33.1	0.85	1.47	1.80	27.5
All Vehicles		1070	8	1126	0.7	0.716	6.5	NA	4.7	33.1	0.26	0.44	0.49	40.4

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.

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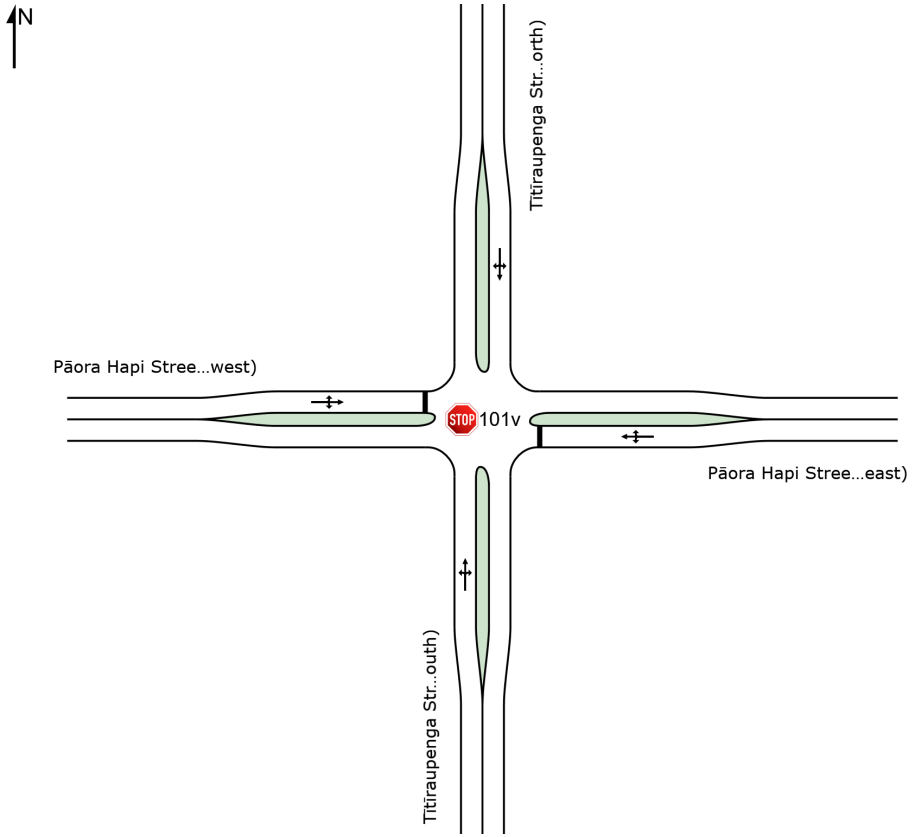
SITE LAYOUT

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2033 PM Base (Site Folder: 2033 Base Year)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2033 PM Base (Site Folder: 2033 Base Year)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street (south)														
1	L2	88	1	93	1.1	0.143	4.7	LOS A	0.1	0.7	0.04	0.20	0.04	39.7
2	T1	160	1	168	0.6	0.143	0.1	LOS A	0.1	0.7	0.04	0.20	0.04	48.0
3	R2	8	0	8	0.0	0.143	5.5	LOS A	0.1	0.7	0.04	0.20	0.04	46.4
Approach		256	2	269	0.8	0.143	1.8	NA	0.1	0.7	0.04	0.20	0.04	44.8
East: Pāora Hapi Street (east)														
4	L2	9	0	9	0.0	0.055	8.4	LOS A	0.2	1.4	0.45	0.94	0.45	40.6
5	T1	22	0	23	0.0	0.055	10.5	LOS B	0.2	1.4	0.45	0.94	0.45	31.7
6	R2	6	0	6	0.0	0.055	10.6	LOS B	0.2	1.4	0.45	0.94	0.45	38.3
Approach		37	0	39	0.0	0.055	10.0	LOS B	0.2	1.4	0.45	0.94	0.45	34.9
North: Tītīraupenga Street (north)														
7	L2	6	0	6	0.0	0.150	5.4	LOS A	0.2	1.6	0.09	0.07	0.09	47.7
8	T1	235	1	247	0.4	0.150	0.1	LOS A	0.2	1.6	0.09	0.07	0.09	49.0
9	R2	25	0	26	0.0	0.150	5.5	LOS A	0.2	1.6	0.09	0.07	0.09	38.0
Approach		266	1	280	0.4	0.150	0.8	NA	0.2	1.6	0.09	0.07	0.09	47.9
West: Pāora Hapi Street (west)														
10	L2	23	0	24	0.0	0.566	8.8	LOS A	3.7	25.9	0.64	1.23	1.06	29.5
11	T1	19	0	20	0.0	0.566	12.4	LOS B	3.7	25.9	0.64	1.23	1.06	28.7
12	R2	266	1	280	0.4	0.566	13.6	LOS B	3.7	25.9	0.64	1.23	1.06	31.6
Approach		308	1	324	0.3	0.566	13.2	LOS B	3.7	25.9	0.64	1.23	1.06	31.3
All Vehicles		867	4	913	0.5	0.566	5.9	NA	3.7	25.9	0.29	0.55	0.44	39.3

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.

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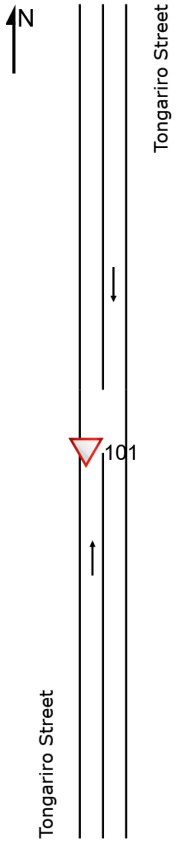
SITE LAYOUT

Site: 101 [TCG Bridge 2033 AM (Site Folder: 2033 Base Year)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [TCG Bridge 2033 AM (Site Folder: 2033 Base Year)]

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: Tongariro Street														
2	T1	733	5.0	772	5.0	0.409	4.3	LOS A	0.0	0.0	0.00	0.53	0.00	54.5
Approach		733	5.0	772	5.0	0.409	4.3	NA	0.0	0.0	0.00	0.53	0.00	54.5
North: Tongariro Street														
8	T1	1962	5.0	2065	5.0	1.094	45.3	LOS E	0.0	0.0	0.00	0.00	0.00	24.2
Approach		1962	5.0	2065	5.0	1.094	45.3	NA	0.0	0.0	0.00	0.00	0.00	24.2
All Vehicles		2695	5.0	2837	5.0	1.094	34.1	NA	0.0	0.0	0.00	0.14	0.00	28.5

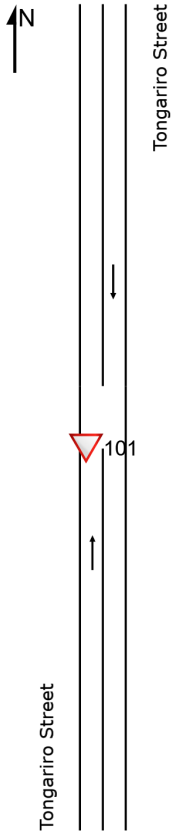
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and 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.

SITE LAYOUT

Site: 101 [TCG Bridge 2033 PM (Site Folder: 2033 Base Year)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [TCG Bridge 2033 PM (Site Folder: 2033 Base Year)]

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: Tongariro Street														
2	T1	1754	5.0	1846	5.0	0.978	9.1	LOS A	0.0	0.0	0.00	0.47	0.00	47.7
Approach		1754	5.0	1846	5.0	0.978	9.1	NA	0.0	0.0	0.00	0.47	0.00	47.7
North: Tongariro Street														
8	T1	1021	5.0	1075	5.0	0.569	4.4	LOS A	0.0	0.0	0.00	0.53	0.00	54.3
Approach		1021	5.0	1075	5.0	0.569	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.3
All Vehicles		2775	5.0	2921	5.0	0.978	7.4	NA	0.0	0.0	0.00	0.49	0.00	49.9

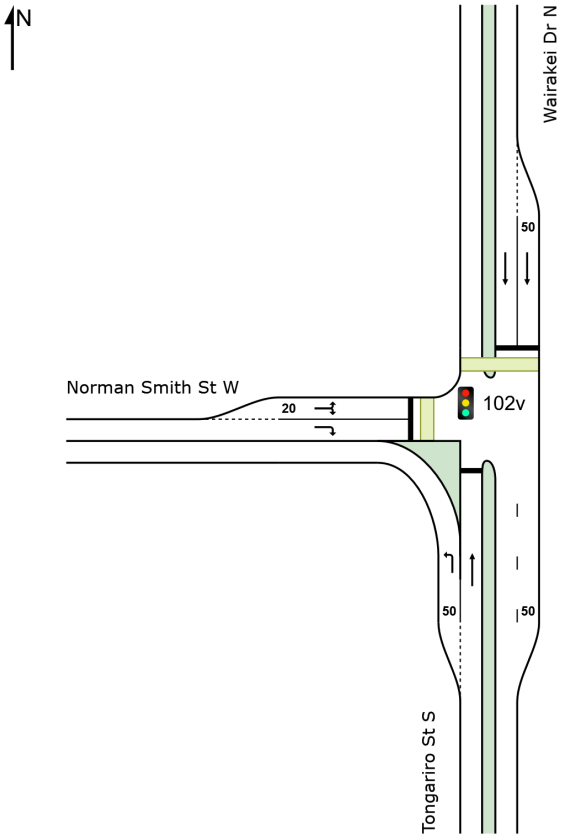
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and 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.

SITE LAYOUT

Site: 102v [Norman / Wairakei 2053 AM Base (Site Folder: 2053 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 102v [Norman / Wairakei 2053 AM Base (Site Folder: 2053 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tongariro St S														
1	L2	391	30	412	7.7	0.234	4.5	LOS A	0.0	0.0	0.00	0.46	0.00	48.1
2	T1	300	25	316	8.3	0.520	20.9	LOS C	8.9	66.8	0.86	0.73	0.86	48.1
Approach		691	55	727	8.0	0.520	11.6	LOS B	8.9	66.8	0.37	0.58	0.37	48.1
North: Wairakei Dr N														
8	T1	1112	26	1171	2.3	* 1.544	394.8	LOS F	160.9	1148.9	0.96	3.43	4.46	28.8
Approach		1112	26	1171	2.3	1.544	394.8	LOS F	160.9	1148.9	0.96	3.43	4.46	28.8
West: Norman Smith St W														
10	L2	31	1	33	3.2	0.535	19.5	LOS B	7.1	50.4	0.73	0.77	0.73	48.2
12	R2	1576	30	1659	1.9	* 1.710	573.5	LOS F	296.5	2109.4	0.96	2.96	5.57	6.7
Approach		1607	31	1692	1.9	1.710	562.8	LOS F	296.5	2109.4	0.95	2.92	5.48	7.4
All Vehicles		3410	112	3589	3.3	1.710	396.4	LOS F	296.5	2109.4	0.84	2.61	4.11	20.7

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.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [Ped	Dist]	Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed

		ped/h	ped/h	sec		ped	m			sec	m	m/sec
North: Wairakei Dr N												
P3	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	55.4	33.9	0.61
West: Norman Smith St W												
P4	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	53.9	31.9	0.59
All Pedestrians		0	105	29.3	LOS C	0.1	0.1	0.92	0.92	54.6	32.9	0.60

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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PHASING SUMMARY

Site: 102v [Norman / Wairakei 2053 AM Base (Site Folder: 2053 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site Practical Cycle Time)

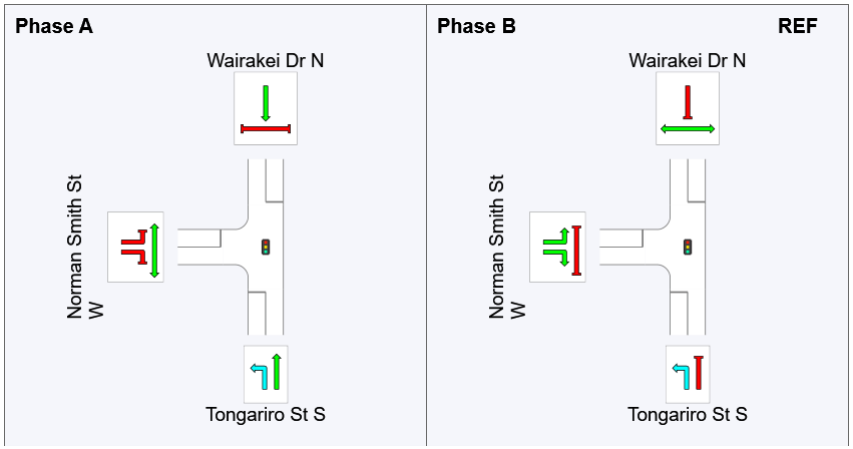
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase B
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Summary

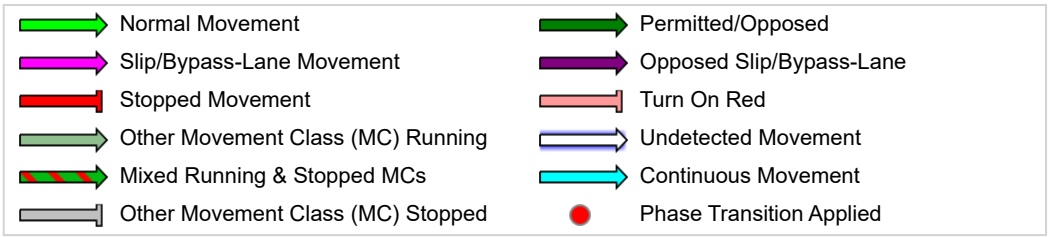
Phase	A	B
Phase Change Time (sec)	41	0
Green Time (sec)	23	35
Phase Time (sec)	29	41
Phase Split	41%	59%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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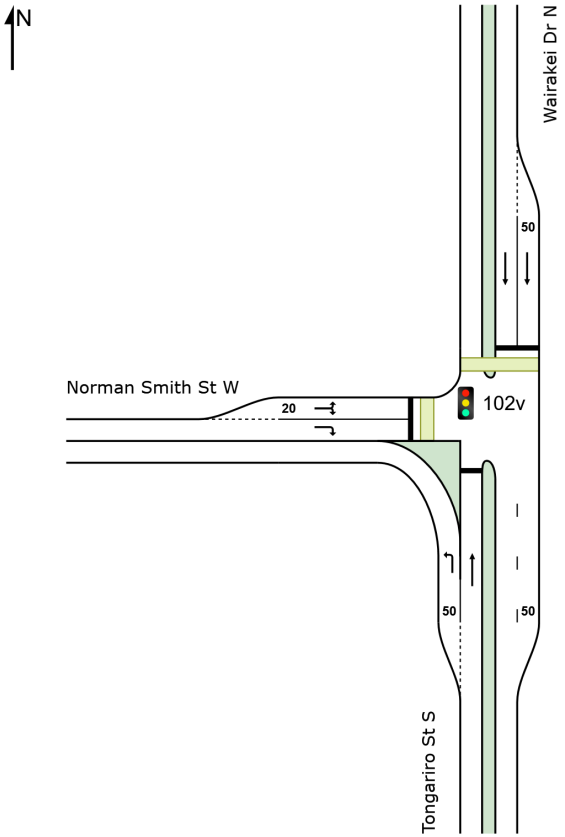
SITE LAYOUT

Site: 102v [Norman / Wairakei 2053 PM Base (Site Folder: 2053 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 102v [Norman / Wairakei 2053 PM Base (Site Folder: 2053 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tongariro St S														
1	L2	1652	26	1739	1.6	0.947	7.9	LOS A	0.0	0.0	0.00	0.43	0.00	44.3
2	T1	1008	16	1061	1.6	* 1.518	493.3	LOS F	181.8	1289.9	1.00	5.37	7.38	26.1
Approach		2660	42	2800	1.6	1.518	191.9	LOS F	181.8	1289.9	0.38	2.30	2.80	28.6
North: Wairakei Dr N														
8	T1	445	15	468	3.4	0.425	10.5	LOS B	6.1	44.1	0.71	0.60	0.71	49.1
Approach		445	15	468	3.4	0.425	10.5	LOS B	6.1	44.1	0.71	0.60	0.71	49.1
West: Norman Smith St W														
10	L2	9	0	9	0.0	0.469	20.6	LOS C	5.0	36.1	0.86	0.79	0.86	48.2
12	R2	908	28	956	3.1	* 1.500	369.7	LOS F	120.9	868.6	0.97	2.98	5.72	9.7
Approach		917	28	965	3.1	1.500	366.2	LOS F	120.9	868.6	0.97	2.96	5.67	10.2
All Vehicles		4022	85	4234	2.1	1.518	211.5	LOS F	181.8	1289.9	0.55	2.26	3.22	27.1

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.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [Ped	Dist]	Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed

		ped/h	ped/h	sec		ped	m			sec	m	m/sec
North: Wairakei Dr N												
P3	Full	50	53	19.4	LOS B	0.1	0.1	0.88	0.88	45.5	33.9	0.75
West: Norman Smith St W												
P4	Full	50	53	19.4	LOS B	0.1	0.1	0.88	0.88	43.9	31.9	0.73
All Pedestrians		0	105	19.4	LOS B	0.1	0.1	0.88	0.88	44.7	32.9	0.74

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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PHASING SUMMARY

Site: 102v [Norman / Wairakei 2053 PM Base (Site Folder: 2053 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site Practical Cycle Time)

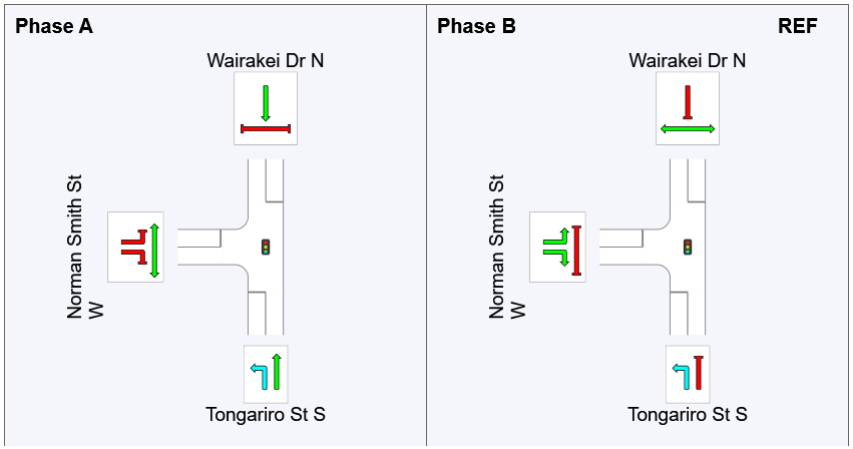
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase B
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Summary

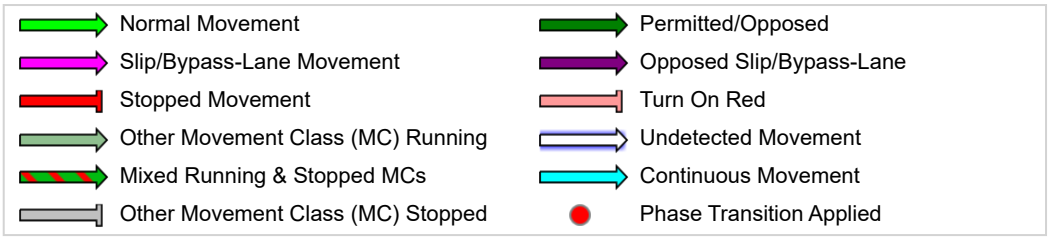
Phase	A	B
Phase Change Time (sec)	22	0
Green Time (sec)	22	16
Phase Time (sec)	28	22
Phase Split	56%	44%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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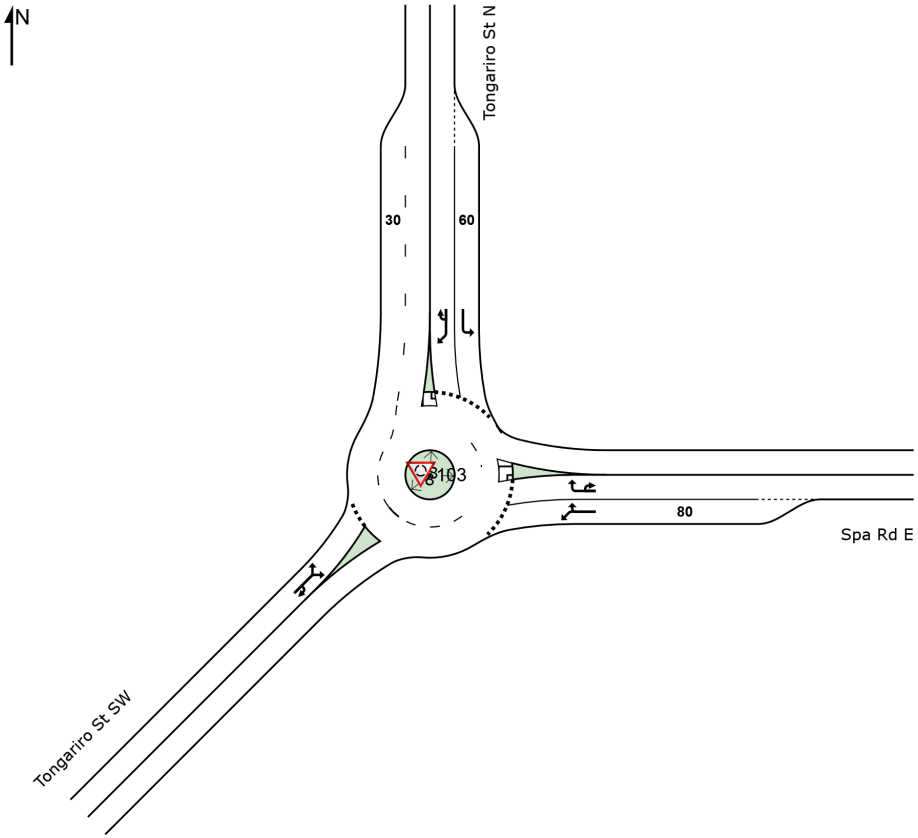
SITE LAYOUT

Site: 103 [Spa / Tongariro 2053 AM Base (Site Folder: 2053 Base Year)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 103 [Spa / Tongariro 2053 AM Base (Site Folder: 2053 Base Year)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
East: Spa Rd E														
4a	L1	29	0	31	0.0	0.271	14.4	LOS B	1.8	12.8	0.93	0.97	0.93	39.9
6	R2	491	36	517	7.3	0.887	48.9	LOS D	18.3	136.4	0.99	1.62	2.40	30.9
6u	U	1	1	1	100.0	0.887	61.1	LOS E	18.3	136.4	1.00	1.70	2.60	29.1
Approach		521	37	548	7.1	0.887	47.0	LOS D	18.3	136.4	0.99	1.58	2.32	31.2
North: Tongariro St N														
7	L2	1616	36	1701	2.2	1.069	71.6	LOS F	148.5	1059.6	1.00	0.86	1.95	25.6
9a	R1	930	19	979	2.0	0.793	7.2	LOS A	13.8	97.9	0.66	0.53	0.66	44.3
9u	U	60	0	63	0.0	0.793	9.5	LOS A	13.8	97.9	0.66	0.53	0.66	45.7
Approach		2606	55	2743	2.1	1.069	47.2	LOS D	148.5	1059.6	0.87	0.73	1.46	30.2
SouthWest: Tongariro St SW														
30a	L1	309	19	325	6.1	0.574	6.2	LOS A	4.2	30.6	0.79	0.94	0.95	28.9
32a	R1	59	0	62	0.0	0.574	8.5	LOS A	4.2	30.6	0.79	0.94	0.95	28.9
32u	U	1	0	1	0.0	0.574	9.8	LOS A	4.2	30.6	0.79	0.94	0.95	29.4
Approach		369	19	388	5.1	0.574	6.5	LOS A	4.2	30.6	0.79	0.94	0.95	28.9
All Vehicles		3496	111	3680	3.2	1.069	42.8	LOS D	148.5	1059.6	0.88	0.88	1.54	30.2

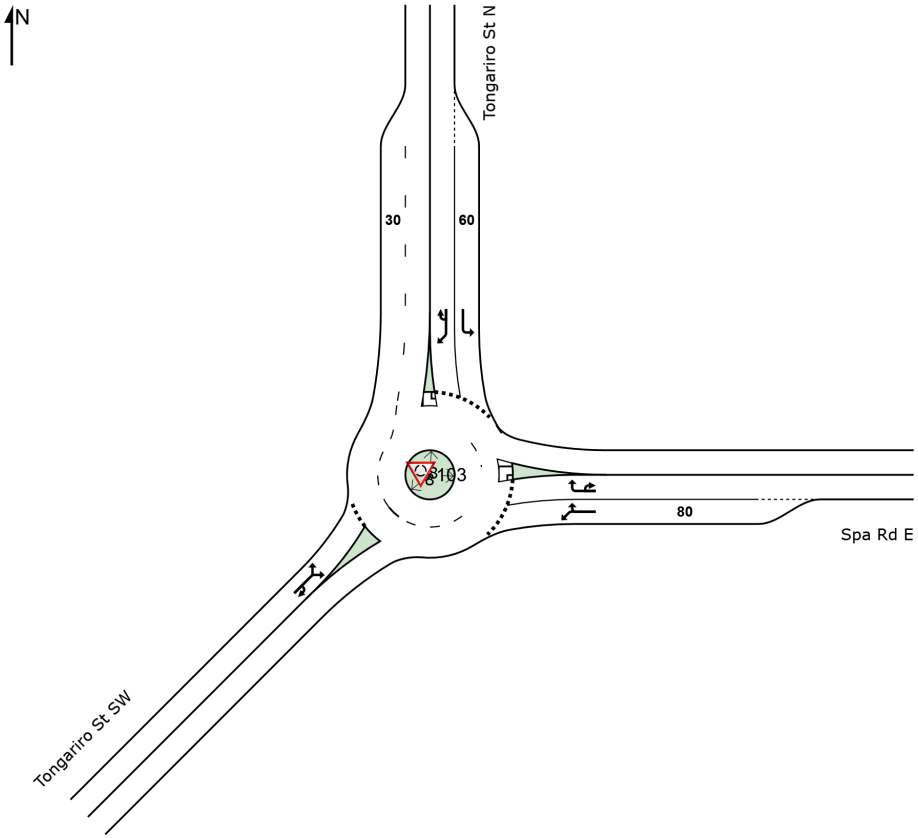
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 103 [Spa / Tongariro 2053 PM Base (Site Folder: 2053 Base Year)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 103 [Spa / Tongariro 2053 PM Base (Site Folder: 2053 Base Year)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
East: Spa Rd E														
4a	L1	5	0	5	0.0	0.428	10.8	LOS B	2.8	20.2	0.79	0.96	0.88	41.2
6	R2	1531	28	1612	1.8	1.402	324.3	LOS F	265.9	1891.8	0.97	7.23	15.21	9.7
6u	U	1	1	1	100.0	1.402	387.7	LOS F	265.9	1891.8	1.00	8.40	17.87	8.2
Approach		1537	29	1618	1.9	1.402	323.3	LOS F	265.9	1891.8	0.97	7.21	15.16	9.8
North: Tongariro St N														
7	L2	796	30	838	3.8	0.488	4.5	LOS A	5.1	37.1	0.13	0.50	0.13	46.2
9a	R1	492	12	518	2.4	0.453	6.2	LOS A	4.4	31.4	0.13	0.58	0.13	45.2
9u	U	147	0	155	0.0	0.453	9.0	LOS A	4.4	31.4	0.13	0.58	0.13	46.5
Approach		1435	42	1511	2.9	0.488	5.5	LOS A	5.1	37.1	0.13	0.54	0.13	45.9
SouthWest: Tongariro St SW														
30a	L1	552	9	581	1.6	1.755	696.4	LOS F	173.3	1229.5	1.00	10.49	17.76	4.3
32a	R1	15	0	16	0.0	1.755	696.9	LOS F	173.3	1229.5	1.00	10.49	17.76	4.1
32u	U	1	0	1	0.0	1.755	698.3	LOS F	173.3	1229.5	1.00	10.49	17.76	3.7
Approach		568	9	598	1.6	1.755	696.4	LOS F	173.3	1229.5	1.00	10.49	17.76	4.3
All Vehicles		3540	80	3726	2.3	1.755	254.3	LOS F	265.9	1891.8	0.63	5.03	9.48	11.2

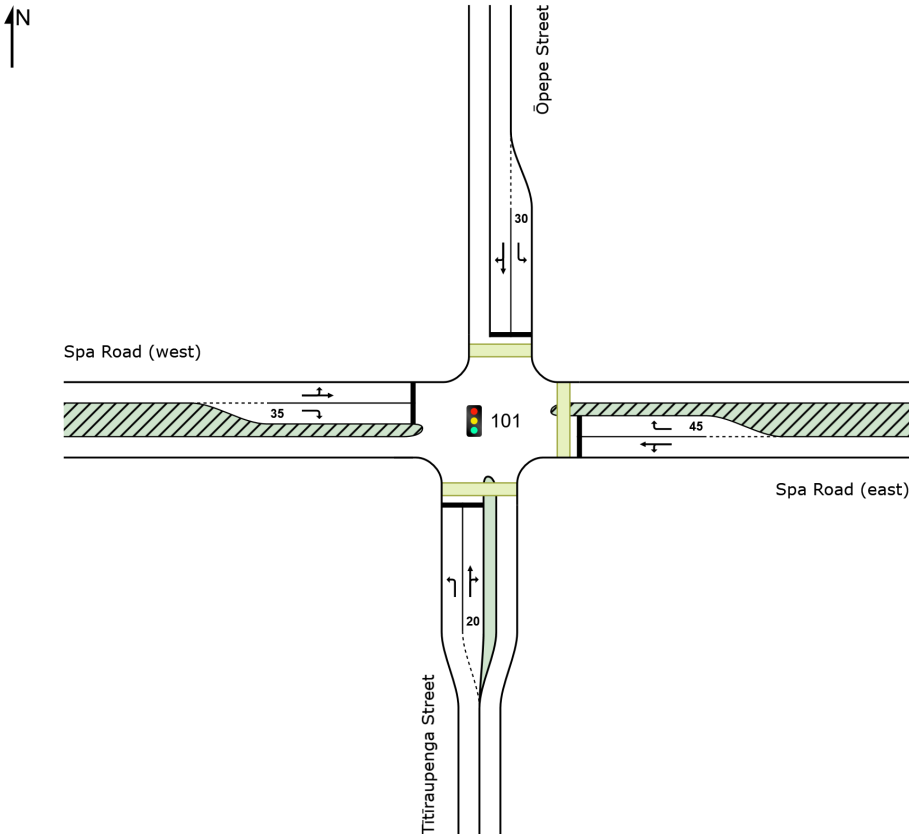
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 AM Base (current 2023 phasing) (Site Folder: 2053 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 AM Base (current 2023 phasing) (Site Folder: 2053 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street														
1	L2	243	2	256	0.8	0.741	49.3	LOS D	13.6	96.1	0.92	0.85	1.00	31.1
2	T1	105	1	111	1.0	*1.354	375.6	LOS F	20.8	146.5	1.00	1.75	3.31	13.2
3	R2	9	0	9	0.0	1.354	380.1	LOS F	20.8	146.5	1.00	1.75	3.31	28.3
Approach		357	3	376	0.8	1.354	153.6	LOS F	20.8	146.5	0.95	1.14	1.73	20.5
East: Spa Road (east)														
4	L2	54	2	57	3.7	1.313	345.9	LOS F	116.1	853.2	1.00	2.43	3.00	29.7
5	T1	599	36	631	6.0	*1.313	339.6	LOS F	116.1	853.2	1.00	2.43	3.00	29.5
6	R2	201	2	212	1.0	1.001	109.0	LOS F	18.1	127.4	1.00	1.16	1.77	41.8
Approach		854	40	899	4.7	1.313	285.7	LOS F	116.1	853.2	1.00	2.13	2.71	31.9
North: Ōpepe Street														
7	L2	53	2	56	3.8	*0.231	35.6	LOS D	2.2	15.7	0.93	0.74	0.93	47.0
8	T1	72	1	76	1.4	0.194	42.3	LOS D	3.8	26.7	0.86	0.68	0.86	38.4
9	R2	2	0	2	0.0	0.194	46.9	LOS D	3.8	26.7	0.86	0.68	0.86	37.7
Approach		127	3	134	2.4	0.231	39.6	LOS D	3.8	26.7	0.89	0.70	0.89	44.4
West: Spa Road (west)														
10	L2	3	0	3	0.0	1.303	336.6	LOS F	130.7	949.5	1.00	2.45	2.95	14.0
11	T1	738	33	777	4.5	1.303	330.2	LOS F	130.7	949.5	1.00	2.45	2.95	29.9
12	R2	225	2	237	0.9	*1.322	355.0	LOS F	39.7	279.7	1.00	1.78	3.14	9.1
Approach		966	35	1017	3.6	1.322	336.0	LOS F	130.7	949.5	1.00	2.29	3.00	27.0
All Vehicles		2304	81	2425	3.5	1.354	272.8	LOS F	130.7	949.5	0.99	1.97	2.58	29.3

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.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Tītīraupenga Street												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	230.3	228.8	0.99
East: Spa Road (east)												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.0	216.8	0.98
North: Ōpepe Street												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	218.8	213.9	0.98
All Pedestrians		150	158	54.3	LOS E	0.2	0.2	0.95	0.95	223.4	219.8	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 AM Base (current 2023 phasing) (Site Folder: 2053 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

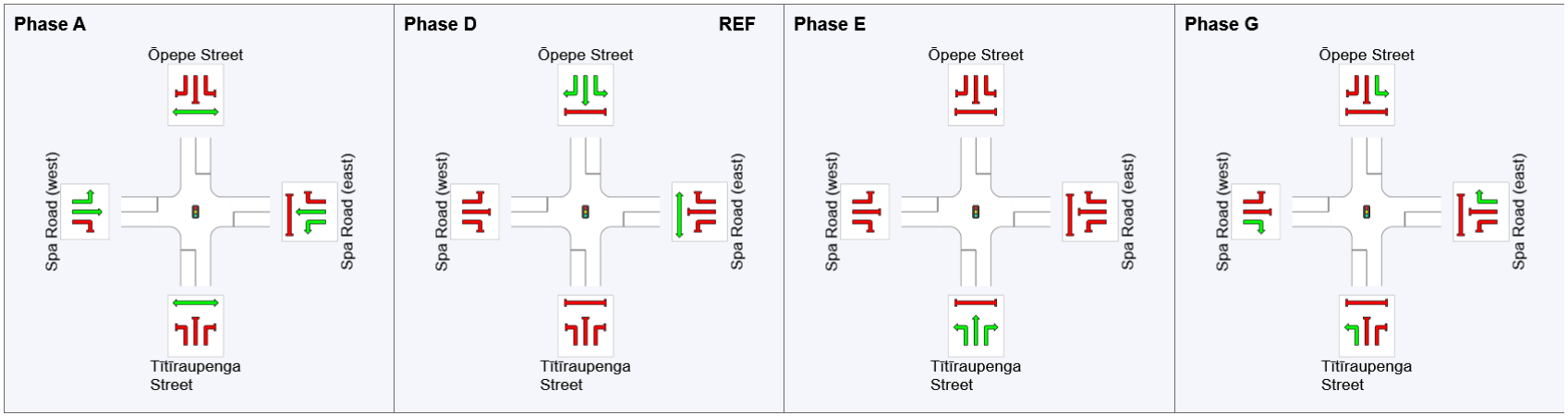
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase D
Input Phase Sequence: A, D, E, G, G1*, G2*
Output Phase Sequence: A, D, E, G
(* Variable Phase)

Phase Timing Summary

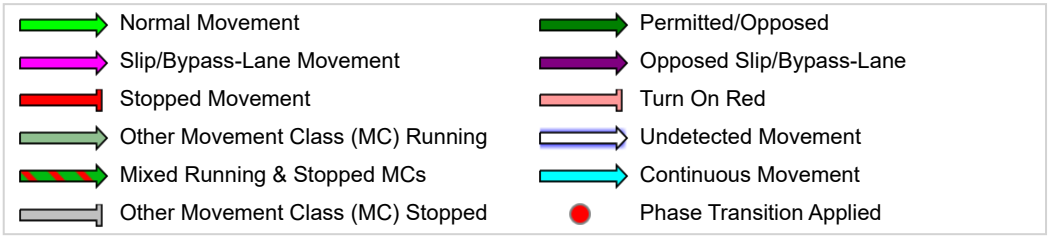
Phase	A	D	E	G
Phase Change Time (sec)	67	0	31	43
Green Time (sec)	47	25	6	18
Phase Time (sec)	53	31	12	24
Phase Split	44%	26%	10%	20%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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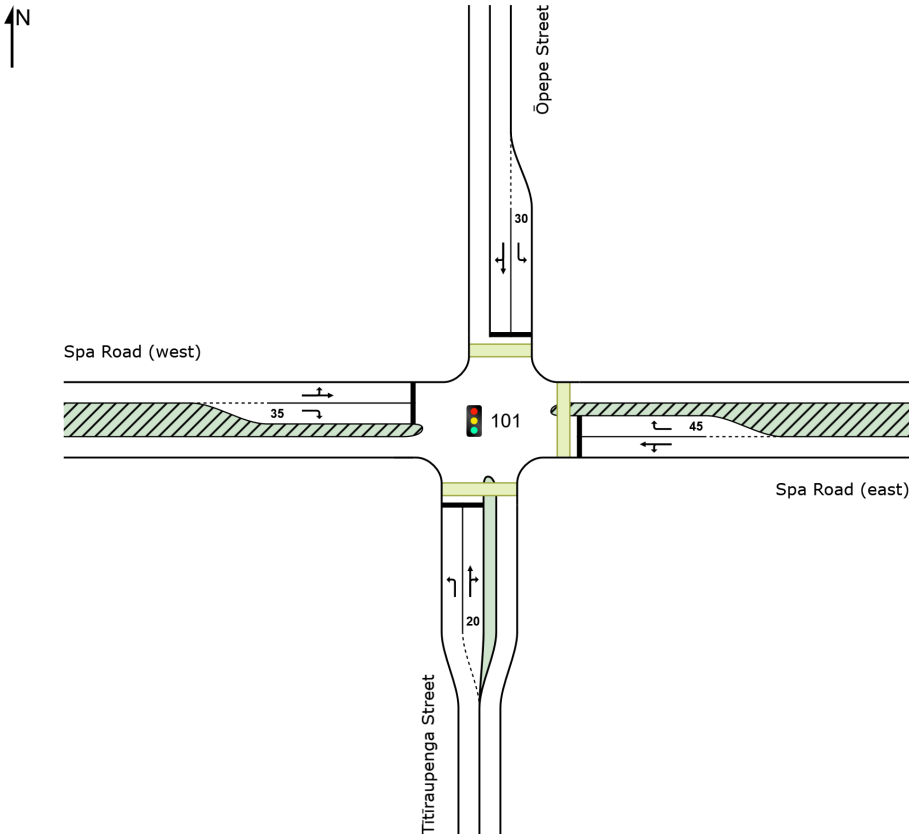
SITE LAYOUT

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 PM Base (current 2023 phasing) (Site Folder: 2053 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 PM Base (current 2023 phasing) (Site Folder: 2053 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street														
1	L2	140	1	147	0.7	0.383	44.1	LOS D	7.1	49.7	0.86	0.77	0.86	32.4
2	T1	48	1	51	2.1	*0.650	65.5	LOS E	3.9	27.6	1.00	0.80	1.12	34.0
3	R2	11	0	12	0.0	0.650	70.1	LOS E	3.9	27.6	1.00	0.80	1.12	44.2
Approach		199	2	209	1.0	0.650	50.7	LOS D	7.1	49.7	0.90	0.78	0.94	35.1
East: Spa Road (east)														
4	L2	76	1	80	1.3	1.476	486.5	LOS F	182.7	1315.6	1.00	2.88	3.57	25.5
5	T1	788	28	829	3.6	*1.476	480.3	LOS F	182.7	1315.6	1.00	2.88	3.57	25.3
6	R2	29	1	31	3.4	0.112	52.6	LOS D	1.6	11.3	0.90	0.72	0.90	45.6
Approach		893	30	940	3.4	1.476	466.9	LOS F	182.7	1315.6	1.00	2.81	3.49	25.7
North: Ōpepe Street														
7	L2	54	1	57	1.9	*0.233	35.6	LOS D	2.2	15.7	0.93	0.74	0.93	47.0
8	T1	112	1	118	0.9	0.300	43.4	LOS D	6.0	42.5	0.89	0.71	0.89	38.2
9	R2	3	0	3	0.0	0.300	48.0	LOS D	6.0	42.5	0.89	0.71	0.89	37.4
Approach		169	2	178	1.2	0.300	41.0	LOS D	6.0	42.5	0.90	0.72	0.90	43.5
West: Spa Road (west)														
10	L2	11	0	12	0.0	1.053	130.8	LOS F	72.9	529.3	1.00	1.51	1.77	25.5
11	T1	667	29	702	4.3	1.053	124.4	LOS F	72.9	529.3	1.00	1.51	1.77	40.0
12	R2	70	0	74	0.0	0.265	54.0	LOS D	3.9	27.2	0.93	0.76	0.93	30.0
Approach		748	29	787	3.9	1.053	117.9	LOS F	72.9	529.3	0.99	1.44	1.69	39.7
All Vehicles		2009	63	2115	3.1	1.476	259.9	LOS F	182.7	1315.6	0.98	1.92	2.35	30.9

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.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Tītīraupenga Street												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	230.3	228.8	0.99
East: Spa Road (east)												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.0	216.8	0.98
North: Ōpepe Street												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	218.8	213.9	0.98
All Pedestrians		150	158	54.3	LOS E	0.2	0.2	0.95	0.95	223.4	219.8	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 PM Base (current 2023 phasing) (Site Folder: 2053 Base Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

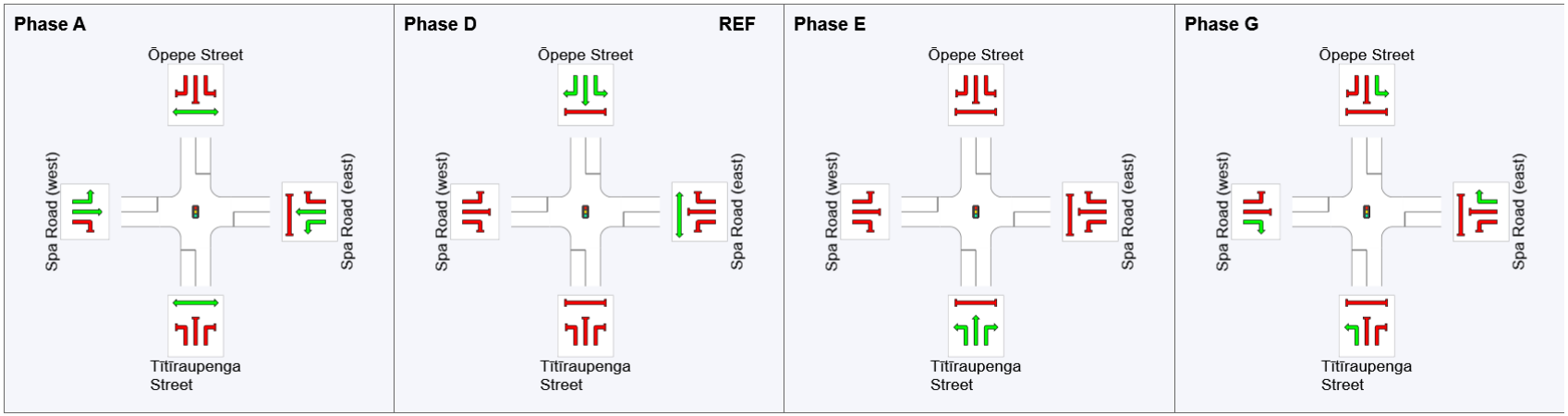
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase D
Input Phase Sequence: A, D, E, G, G1*, G2*
Output Phase Sequence: A, D, E, G
(* Variable Phase)

Phase Timing Summary

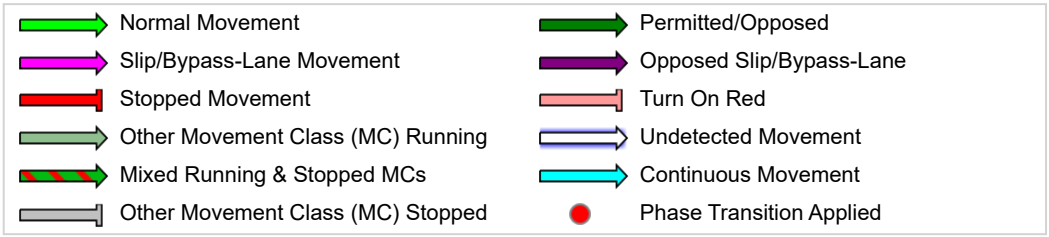
Phase	A	D	E	G
Phase Change Time (sec)	67	0	31	43
Green Time (sec)	47	25	6	18
Phase Time (sec)	53	31	12	24
Phase Split	44%	26%	10%	20%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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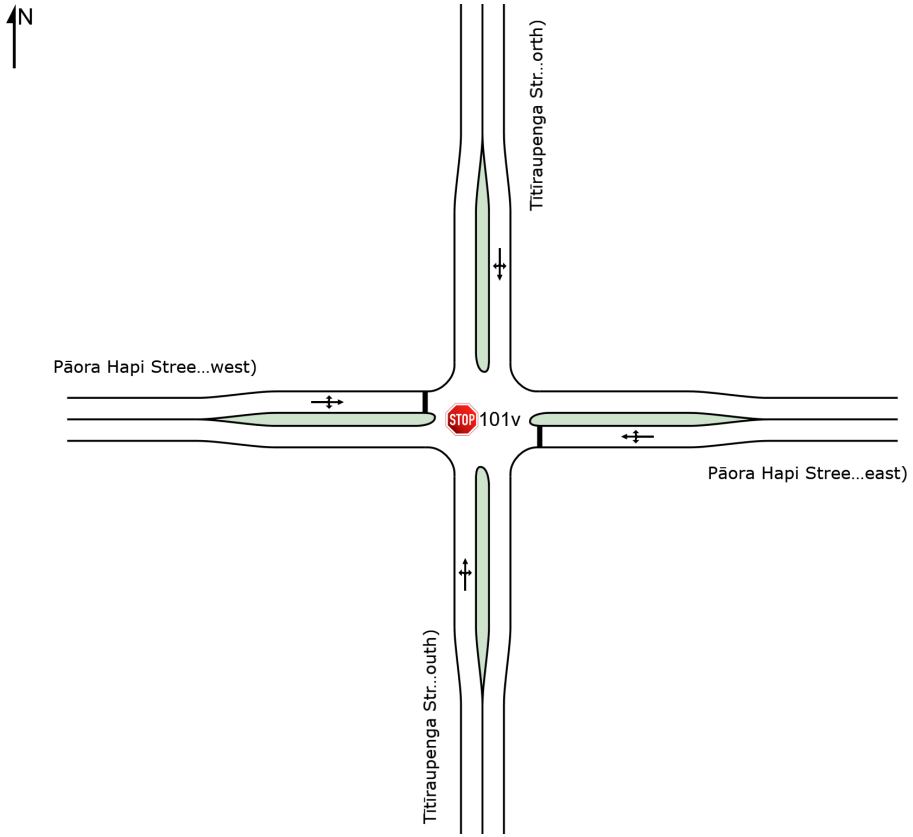
SITE LAYOUT

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2053 AM Base (Site Folder: 2053 Base Year)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2053 AM Base (Site Folder: 2053 Base Year)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street (south)														
1	L2	141	2	148	1.4	0.336	4.8	LOS A	0.2	1.3	0.04	0.13	0.04	40.2
2	T1	455	2	479	0.4	0.336	0.1	LOS A	0.2	1.3	0.04	0.13	0.04	48.6
3	R2	10	0	11	0.0	0.336	6.8	LOS A	0.2	1.3	0.04	0.13	0.04	47.0
Approach		606	4	638	0.7	0.336	1.3	NA	0.2	1.3	0.04	0.13	0.04	46.4
East: Pāora Hapi Street (east)														
4	L2	23	0	24	0.0	0.146	9.3	LOS A	0.5	3.4	0.64	0.97	0.64	37.4
5	T1	27	0	28	0.0	0.146	19.2	LOS C	0.5	3.4	0.64	0.97	0.64	29.1
6	R2	5	0	5	0.0	0.146	18.3	LOS C	0.5	3.4	0.64	0.97	0.64	34.8
Approach		55	0	58	0.0	0.146	15.0	LOS C	0.5	3.4	0.64	0.97	0.64	33.1
North: Tītīraupenga Street (north)														
7	L2	4	0	4	0.0	0.235	8.0	LOS A	0.4	2.9	0.12	0.04	0.12	47.6
8	T1	374	5	394	1.3	0.235	0.4	LOS A	0.4	2.9	0.12	0.04	0.12	48.9
9	R2	25	0	26	0.0	0.235	8.2	LOS A	0.4	2.9	0.12	0.04	0.12	37.9
Approach		403	5	424	1.2	0.235	1.0	NA	0.4	2.9	0.12	0.04	0.12	48.2
West: Pāora Hapi Street (west)														
10	L2	23	0	24	0.0	1.052	97.5	LOS F	19.8	140.2	1.00	3.51	6.36	11.0
11	T1	21	0	22	0.0	1.052	107.3	LOS F	19.8	140.2	1.00	3.51	6.36	10.5
12	R2	213	4	224	1.9	1.052	112.2	LOS F	19.8	140.2	1.00	3.51	6.36	12.8
Approach		257	4	271	1.6	1.052	110.5	LOS F	19.8	140.2	1.00	3.51	6.36	12.5
All Vehicles		1321	13	1391	1.0	1.052	23.0	NA	19.8	140.2	0.27	0.80	1.32	30.8

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.

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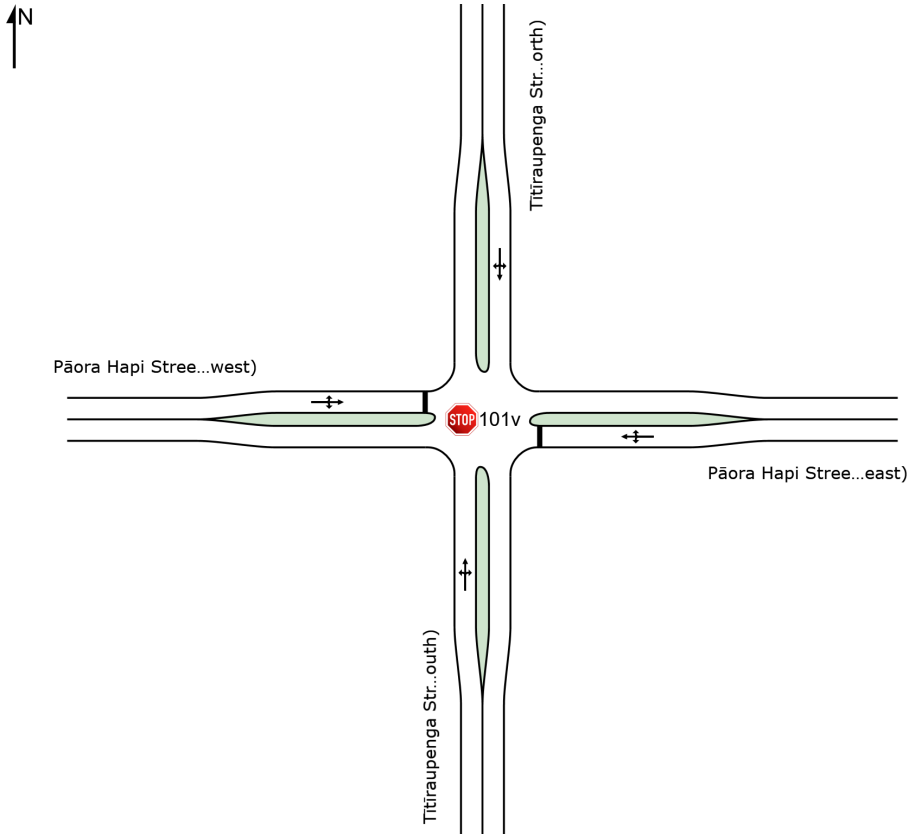
SITE LAYOUT

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2053 PM Base (Site Folder: 2053 Base Year)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2053 PM Base (Site Folder: 2053 Base Year)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street (south)														
1	L2	112	1	118	0.9	0.184	4.7	LOS A	0.1	1.0	0.05	0.19	0.05	39.7
2	T1	206	1	217	0.5	0.184	0.1	LOS A	0.1	1.0	0.05	0.19	0.05	47.9
3	R2	10	0	11	0.0	0.184	6.0	LOS A	0.1	1.0	0.05	0.19	0.05	46.3
Approach		328	2	345	0.6	0.184	1.9	NA	0.1	1.0	0.05	0.19	0.05	44.8
East: Pāora Hapi Street (east)														
4	L2	12	0	13	0.0	0.084	8.9	LOS A	0.3	2.0	0.53	0.98	0.53	39.6
5	T1	26	0	27	0.0	0.084	12.4	LOS B	0.3	2.0	0.53	0.98	0.53	30.9
6	R2	8	0	8	0.0	0.084	12.4	LOS B	0.3	2.0	0.53	0.98	0.53	37.2
Approach		46	0	48	0.0	0.084	11.5	LOS B	0.3	2.0	0.53	0.98	0.53	34.3
North: Tītīraupenga Street (north)														
7	L2	7	0	7	0.0	0.199	5.8	LOS A	0.3	2.1	0.10	0.06	0.10	47.8
8	T1	317	1	334	0.3	0.199	0.2	LOS A	0.3	2.1	0.10	0.06	0.10	49.0
9	R2	28	0	29	0.0	0.199	6.0	LOS A	0.3	2.1	0.10	0.06	0.10	38.0
Approach		352	1	371	0.3	0.199	0.8	NA	0.3	2.1	0.10	0.06	0.10	48.1
West: Pāora Hapi Street (west)														
10	L2	26	0	27	0.0	0.769	14.1	LOS B	6.5	45.5	0.81	1.59	1.95	26.1
11	T1	22	0	23	0.0	0.769	19.9	LOS C	6.5	45.5	0.81	1.59	1.95	25.2
12	R2	286	2	301	0.7	0.769	22.0	LOS C	6.5	45.5	0.81	1.59	1.95	28.3
Approach		334	2	352	0.6	0.769	21.2	LOS C	6.5	45.5	0.81	1.59	1.95	28.0
All Vehicles		1060	5	1116	0.5	0.769	8.0	NA	6.5	45.5	0.33	0.62	0.68	38.2

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.

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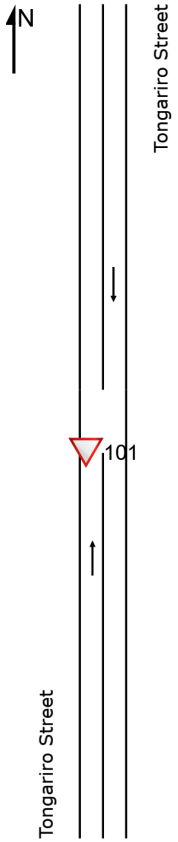
SITE LAYOUT

Site: 101 [TCG Bridge 2053 AM (Site Folder: 2053 Base Year)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [TCG Bridge 2053 AM (Site Folder: 2053 Base Year)]

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: Tongariro Street														
2	T1	691	5.0	727	5.0	0.385	4.3	LOS A	0.0	0.0	0.00	0.53	0.00	54.5
Approach		691	5.0	727	5.0	0.385	4.3	NA	0.0	0.0	0.00	0.53	0.00	54.5
North: Tongariro Street														
8	T1	2687	5.0	2828	5.0	1.498	229.0	LOS F	0.0	0.0	0.00	0.00	0.00	7.1
Approach		2687	5.0	2828	5.0	1.498	229.0	NA	0.0	0.0	0.00	0.00	0.00	7.1
All Vehicles		3378	5.0	3556	5.0	1.498	183.1	NA	0.0	0.0	0.00	0.11	0.00	8.6

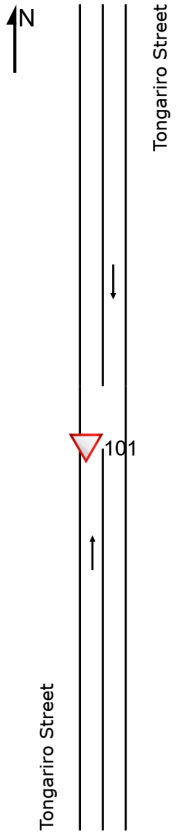
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and 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.

SITE LAYOUT

Site: 101 [TCG Bridge 2053 PM (Site Folder: 2053 Base Year)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [TCG Bridge 2053 PM (Site Folder: 2053 Base Year)]

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: Tongariro Street														
2	T1	2660	5.0	2800	5.0	1.483	222.1	LOS F	0.0	0.0	0.00	0.00	0.00	7.3
Approach		2660	5.0	2800	5.0	1.483	222.1	NA	0.0	0.0	0.00	0.00	0.00	7.3
North: Tongariro Street														
8	T1	1354	5.0	1425	5.0	0.755	4.7	LOS A	0.0	0.0	0.00	0.52	0.00	53.9
Approach		1354	5.0	1425	5.0	0.755	4.7	NA	0.0	0.0	0.00	0.52	0.00	53.9
All Vehicles		4014	5.0	4225	5.0	1.483	148.8	NA	0.0	0.0	0.00	0.18	0.00	10.3

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.

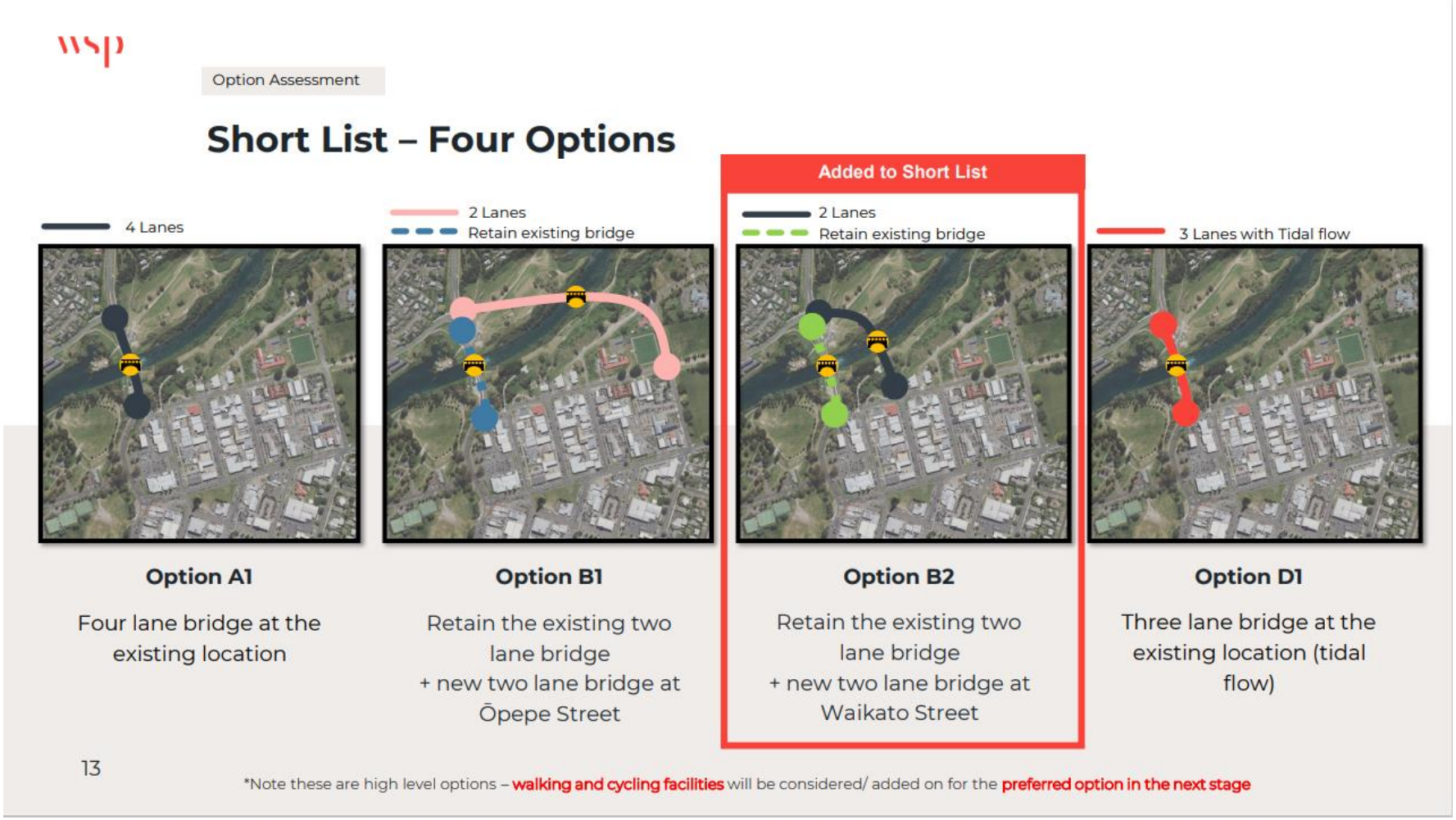
APPENDIX C

TAUPŌ TRANSPORT MODEL: OPTIONS A1 TO D1 RESULTS

Note: Where it says 2053, this references 2053+ (Full Development Scenario).

1. Option Descriptions

This set of model outputs gives results for option A1, B1, B2, D1 as described below



2. Volume Plots

Figure 2.1 2033 Base Morning Peak Hour Volume Plot

Figure 2.2 2033 Base Evening Peak Hour Volume Plot

Figure 2.3 2033 Option A1 Morning Peak Hour Plot

Figure 2.4 2033 Option A1 Evening Peak Hour Volume Plot

Figure 2.5 2033 Option B1 Morning Peak Hour Volume Plot

Figure 2.6 2033 Option B1 Evening Peak Hour Volume Plot

Figure 2.7 2033 Option B2 Morning Peak Hour Volume Plot

Figure 2.8 2033 Option B2 Evening Peak Hour Volume Plot

Figure 2.9 2033 Option D1 Morning Peak Hour Volume Plot

Figure 2.10 2033 Option D1 Evening Peak Hour Volume Plot

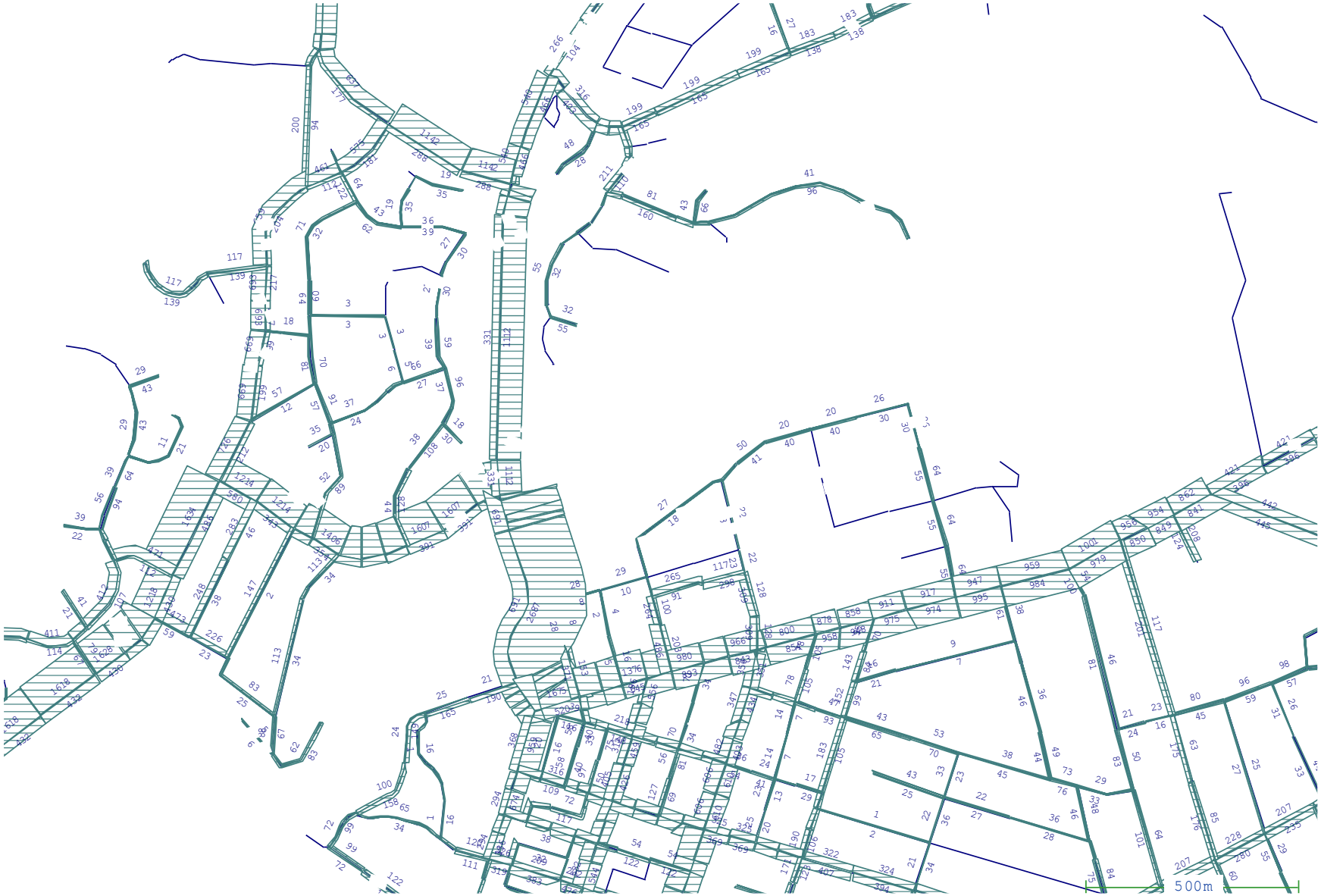


Figure 2.11 2053 Base Morning Peak Hour Volume Plot

Figure 2.12 2053 Base Evening Peak Hour Volume Plot

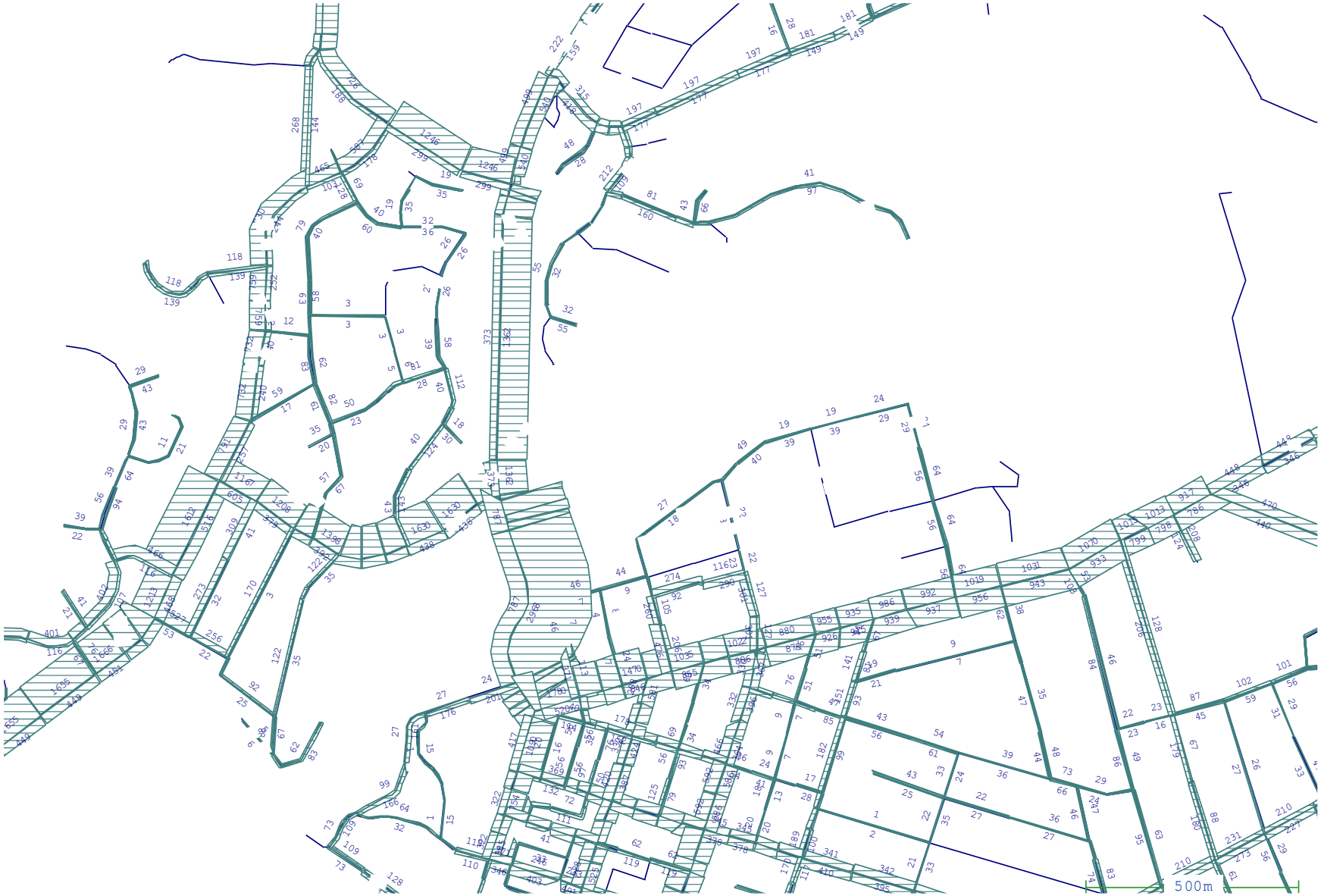


Figure 2.13 2053 Option A1 Morning Peak Hour Volume Plot

Figure 2.14 Option A1 Evening Peak Hour Volume Plot

Figure 2.15 2053 Option B1 Morning Peak Hour Volume Plot

Figure 2.16 2053 Option B1 Evening Peak Hour Volume Plot

Figure 2.17 2053 Option B2 Morning Peak Hour Volume Plot

Figure 2.18 2053 Option B2 Evening Peak Hour Volume Plot

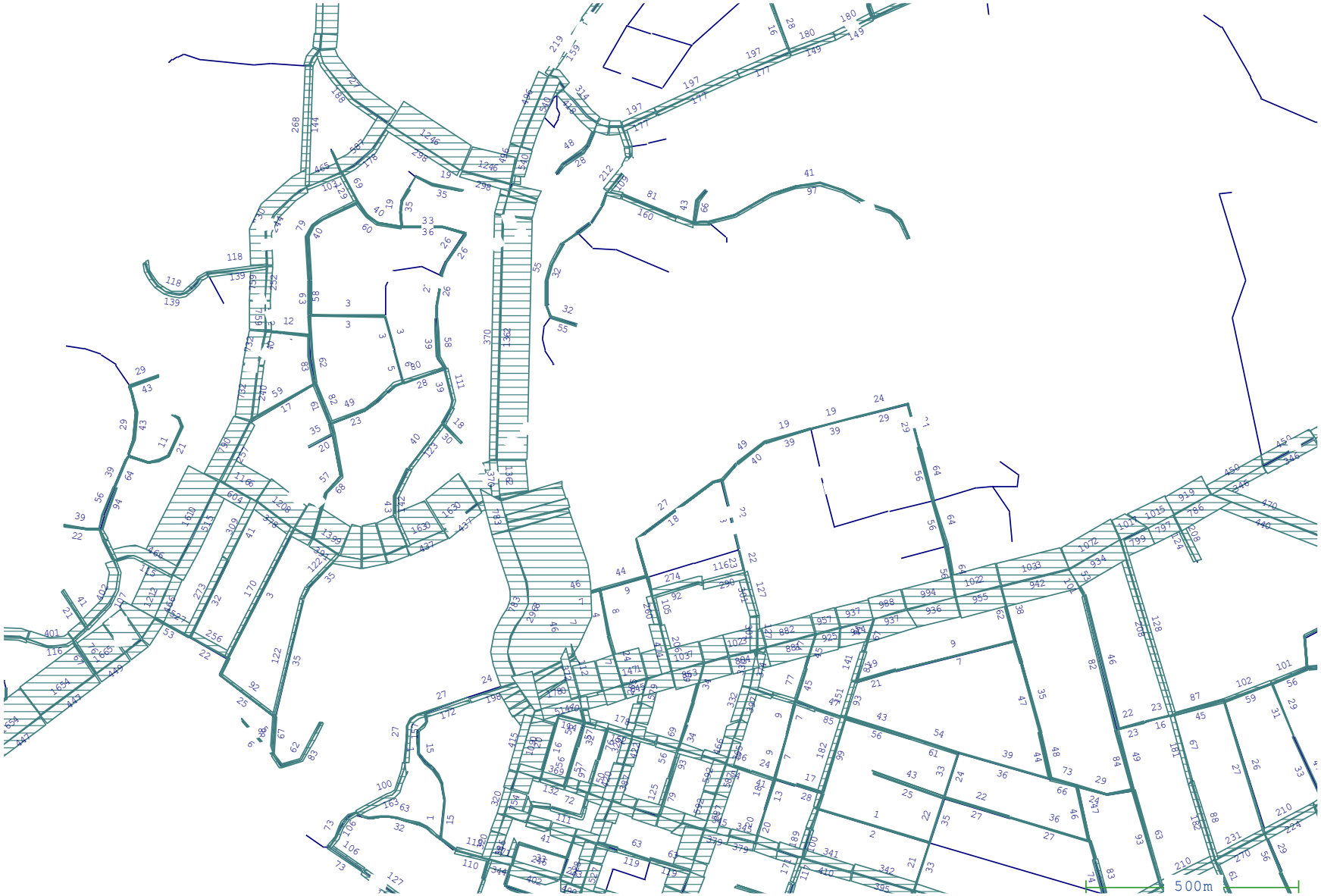


Figure 2.19 Option D1 Morning Peak Hour Volume Plot

Figure 2.20 Option D1 Evening Peak Hour Volume Plot

3. Volume Change to Baseline Plots

Figure 3.1 2033 Option A1 Morning Peak Hour Volume Change Plot

Figure 3.2 2033 Option A1 Evening Peak Hour Volume Change Plot

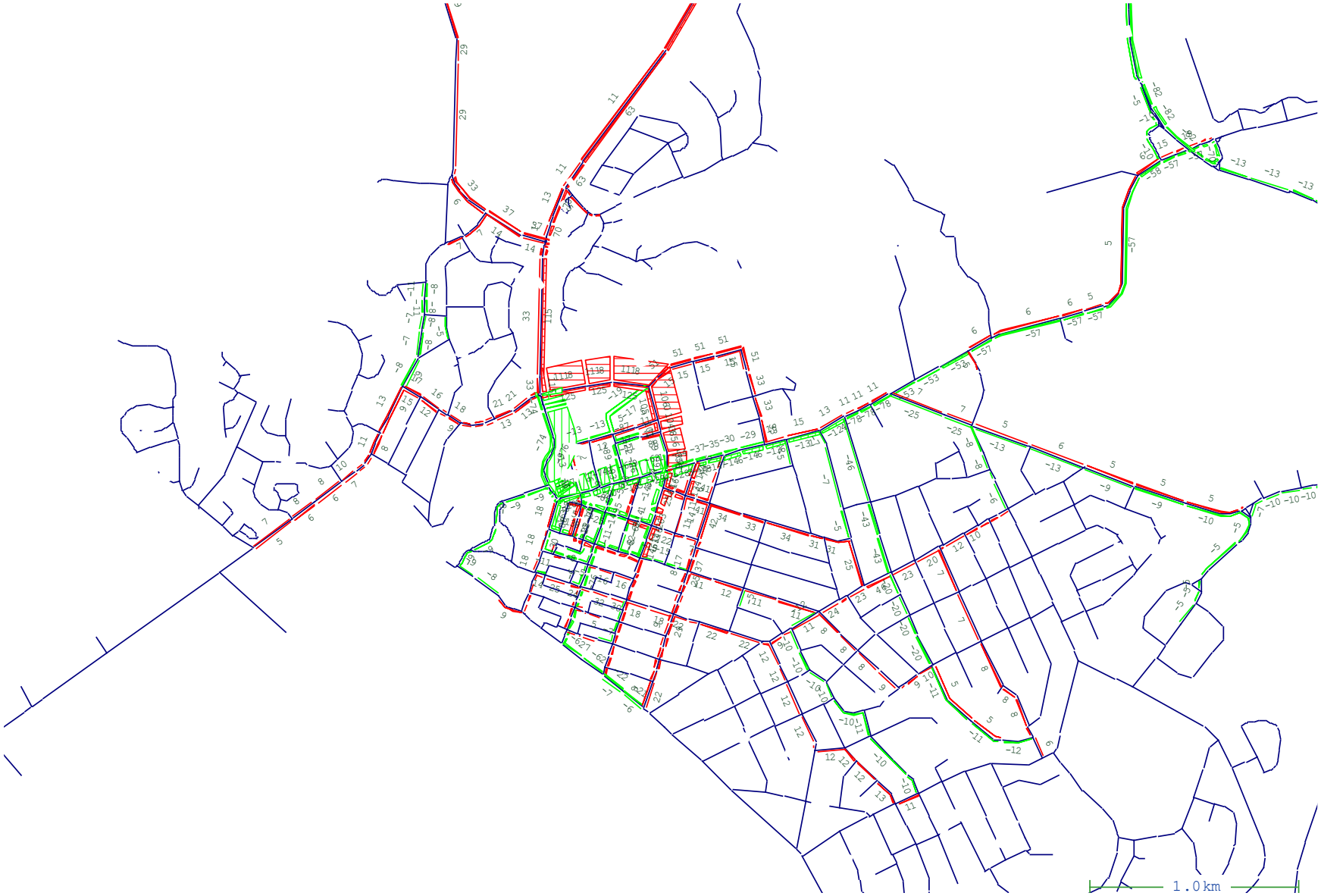


Figure 3.3 2033 Option B1 Morning Peak Hour Volume Change Plot

Figure 3.4 2033 Option B1 Evening Peak Hour Volume Change Plot

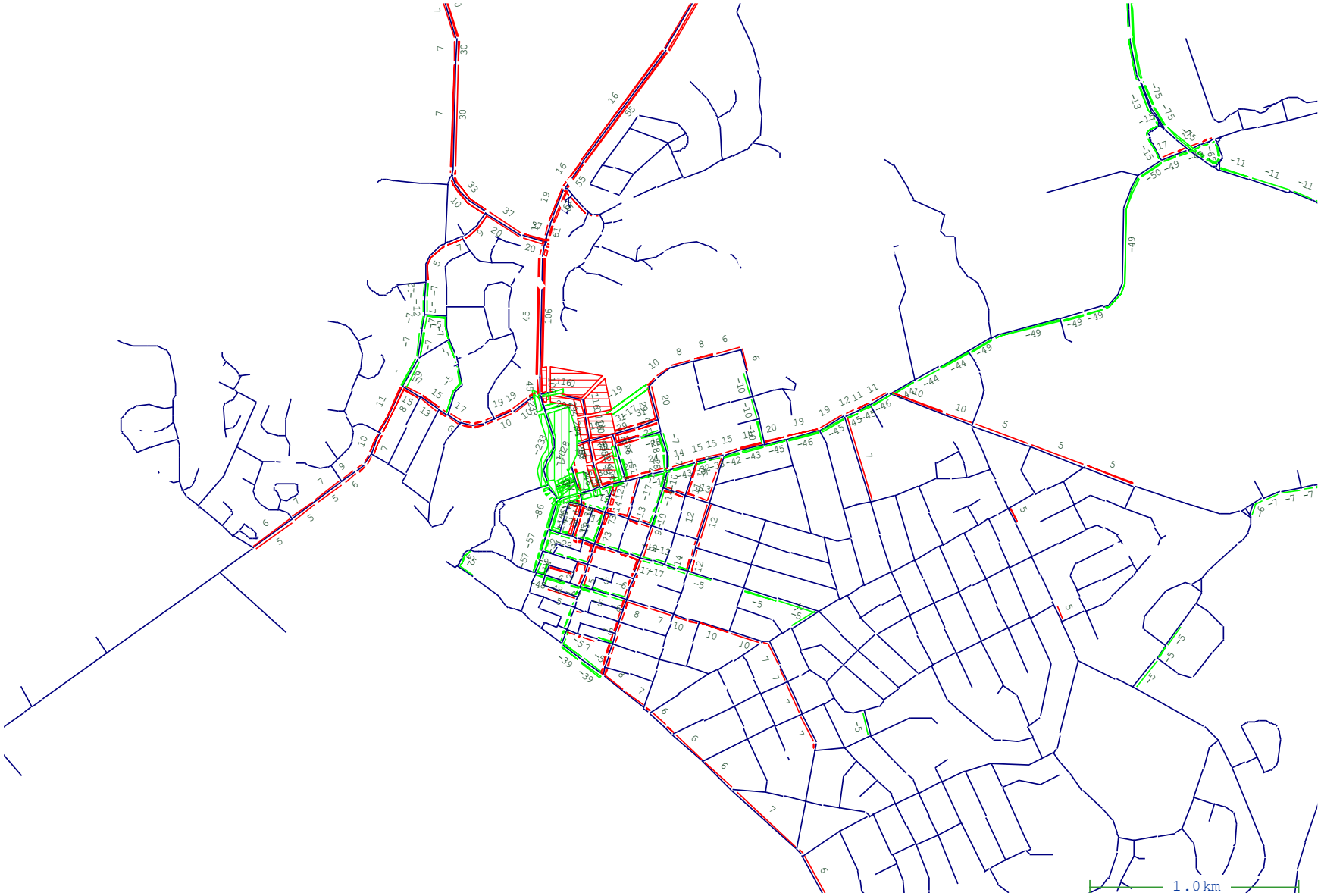


Figure 3.5 2033 Option B2 Morning Peak Hour Volume Change Plot

Figure 3.6 2033 Option B2 Evening Peak Hour Volume Change Plot

Figure 3.7 2033 Option D1 Morning Peak Hour Volume Change Plot

Figure 3.8 Option D1 Evening Peak Hour Volume Change Plot

Figure 3.9 2053 Option A1 Morning Peak Hour Volume Change Plot

Figure 3.10 2053 Option A1 Evening Peak Hour Volume Change Plot

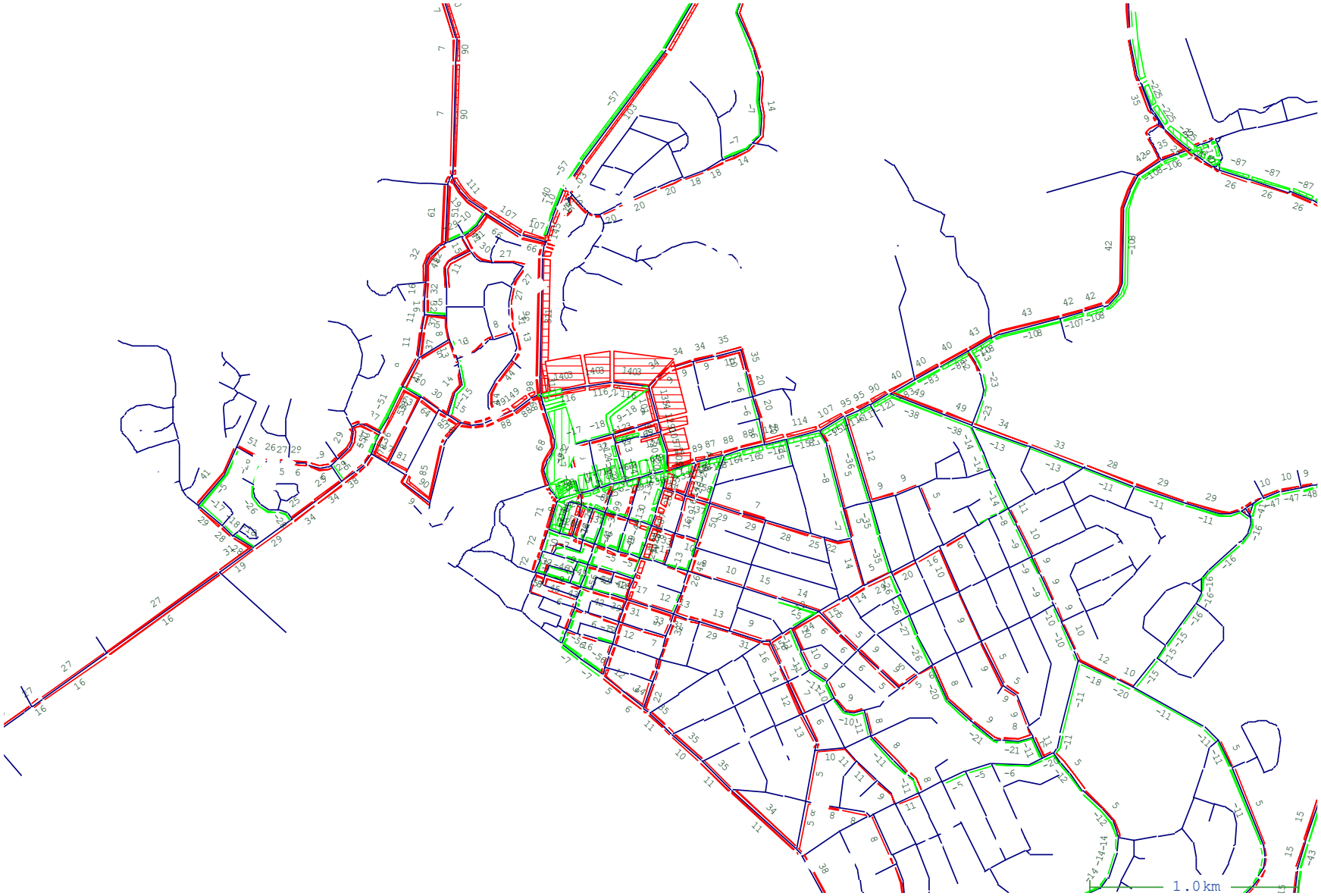


Figure 3.11 2053 Option B1 Morning Peak Hour Volume Change Plot

Figure 3.12 2053 Option B1 Evening Peak Hour Volume Change Plot

Figure 3.13 2053 Option B2 Morning Peak Hour Volume Change Plot

Figure 3.14 2053 Option B2 Evening Peak Hour Volume Change Plot

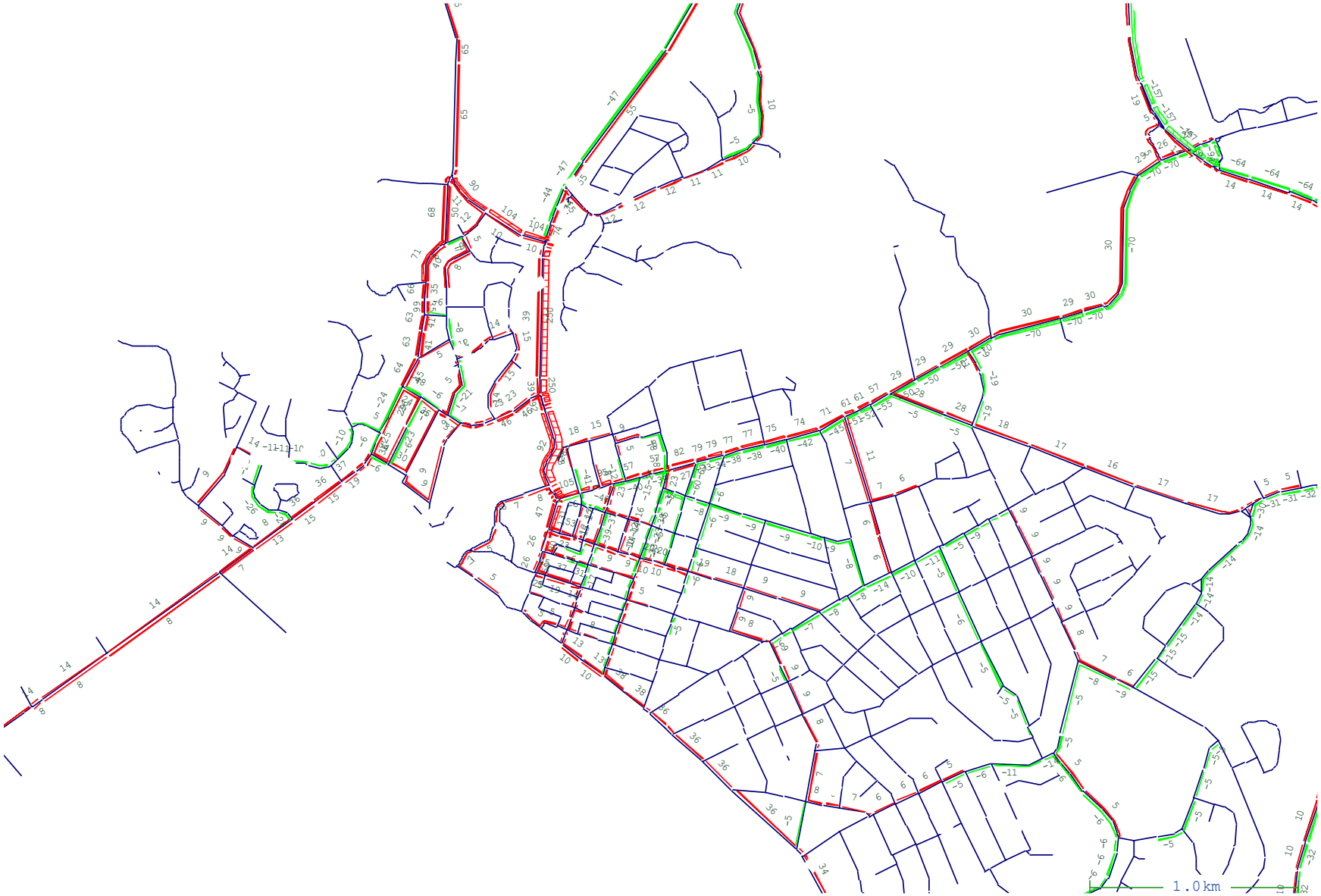


Figure 3.15 2053 Option D1 Morning Peak Hour Volume Change Plot

Figure 3.16 2053 Option D1 Evening Peak Hour Volume Change Plot

4. Level of Service Plots

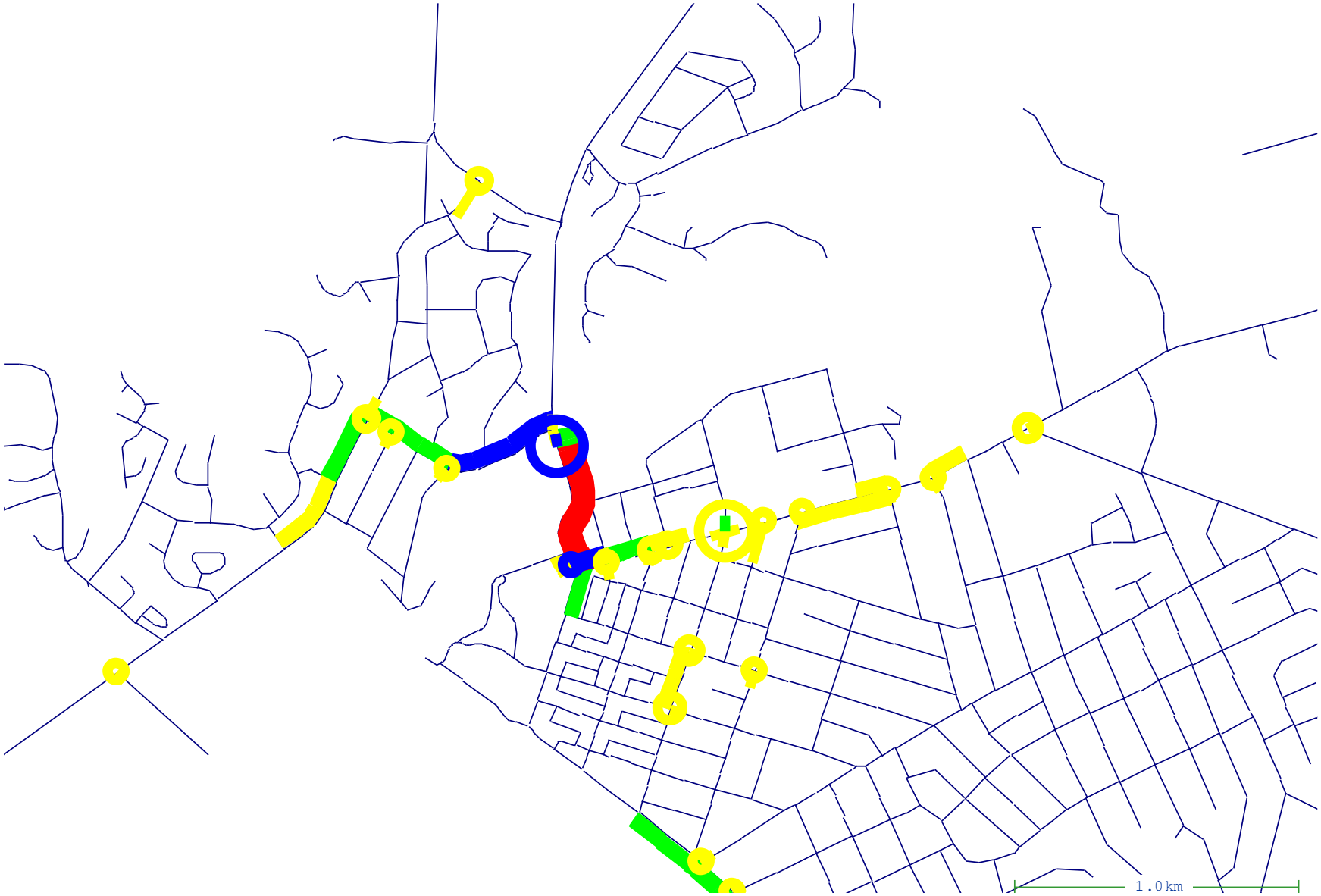


Figure 4.1 2033 Base Morning Peak Hour Level of Service Plot

Figure 4.2 2033 Base Evening Peak Hour Level of Service Plot

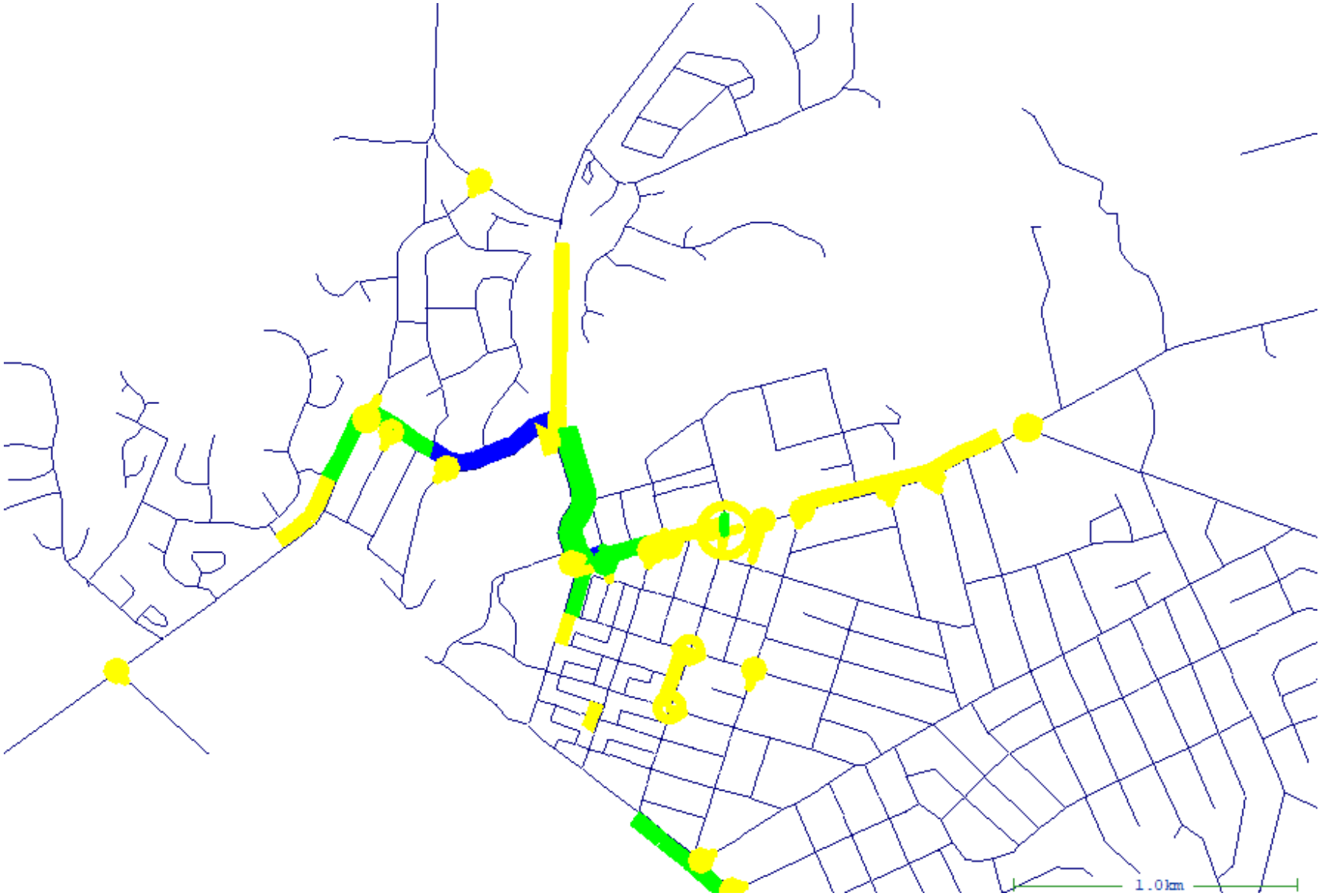


Figure 4.3 2033 Option A1 Morning Peak Hour Level of Service Plot

Figure 4.4 2033 Option A1 Evening Peak Hour Level of Service Plot

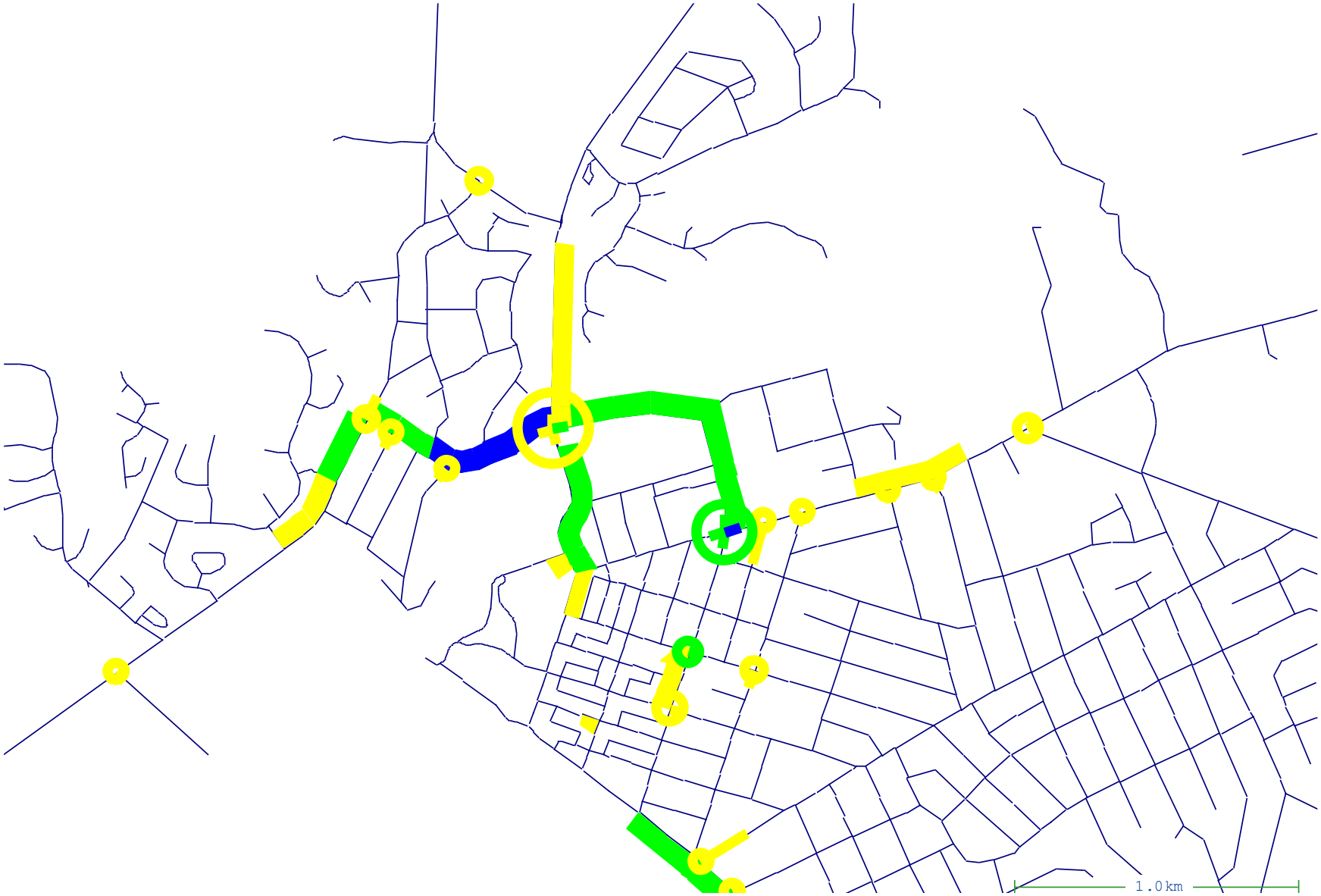


Figure 4.5 2033 Option B1 Morning Peak Hour Level of Service Plot

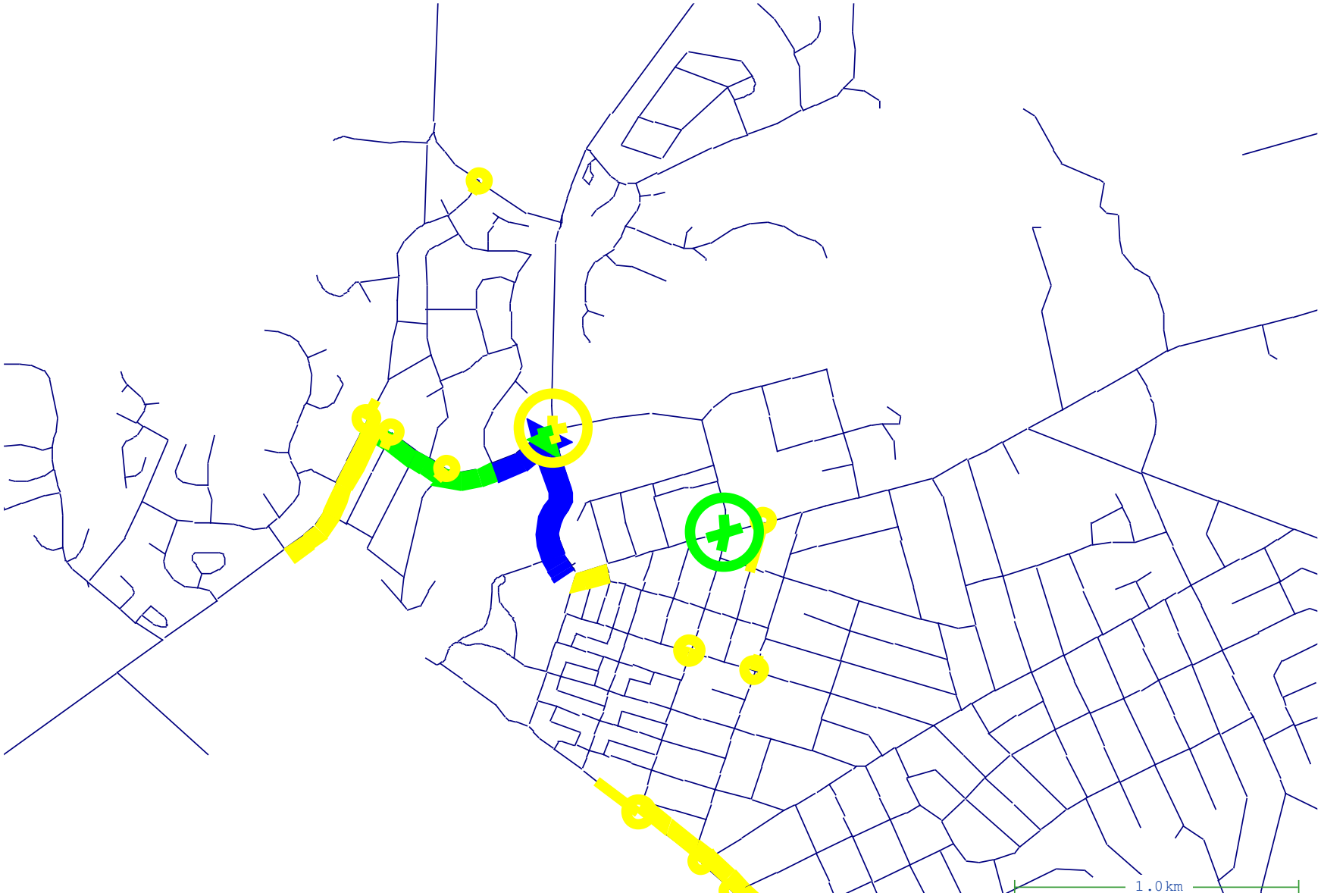


Figure 4.6 2033 Option B1 Evening Peak Hour Level of Service Plot

Figure 4.7 2033 Option B2 Morning Peak Hour Level of Service Plot

Figure 4.8 2033 Option B2 Evening Peak Hour Level of Service Plot

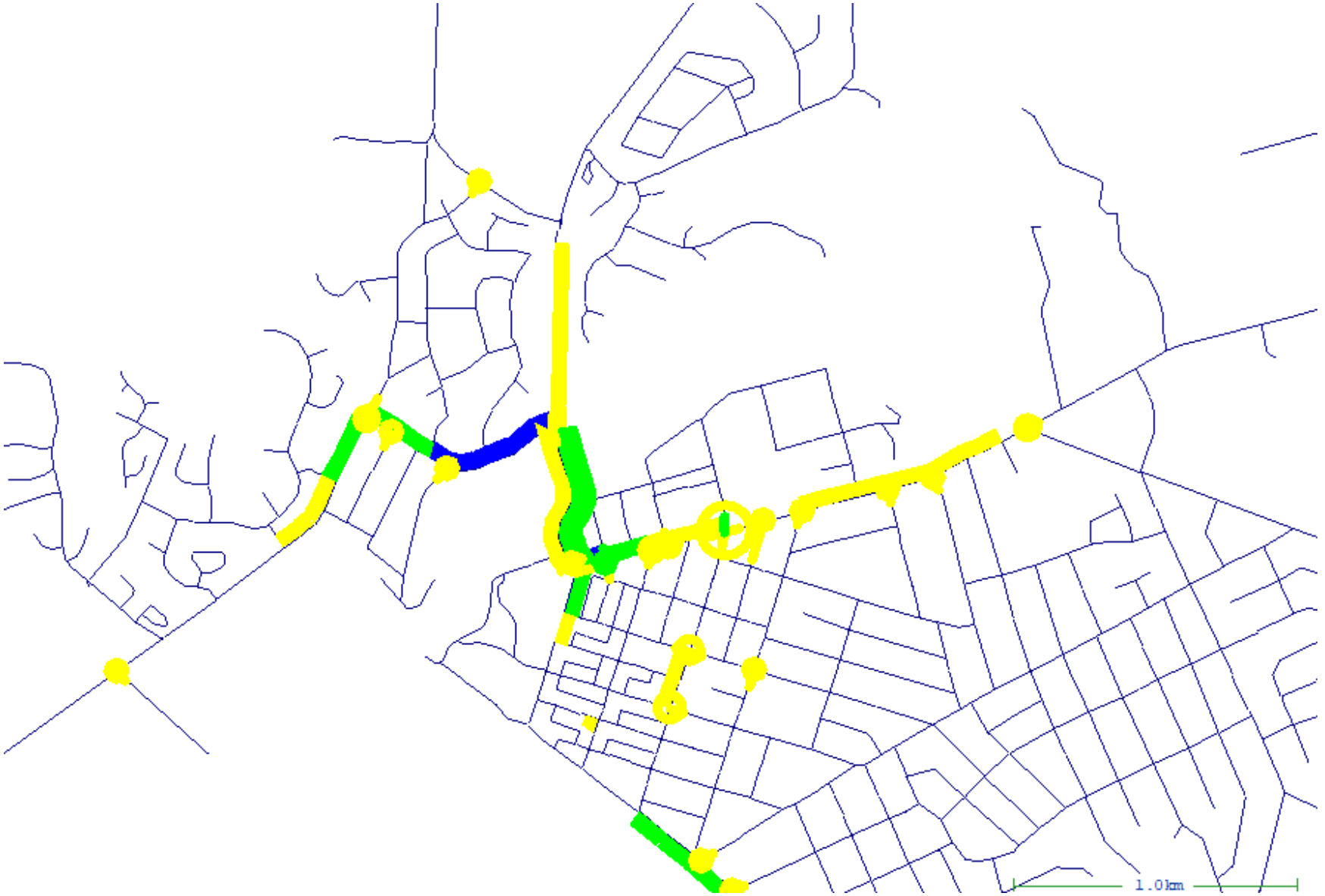


Figure 4.9 2033 Option D1 Morning Peak Hour Level of Service Plot

Figure 4.10 2033 Option D1 Evening Peak Hour Level of Service Plot

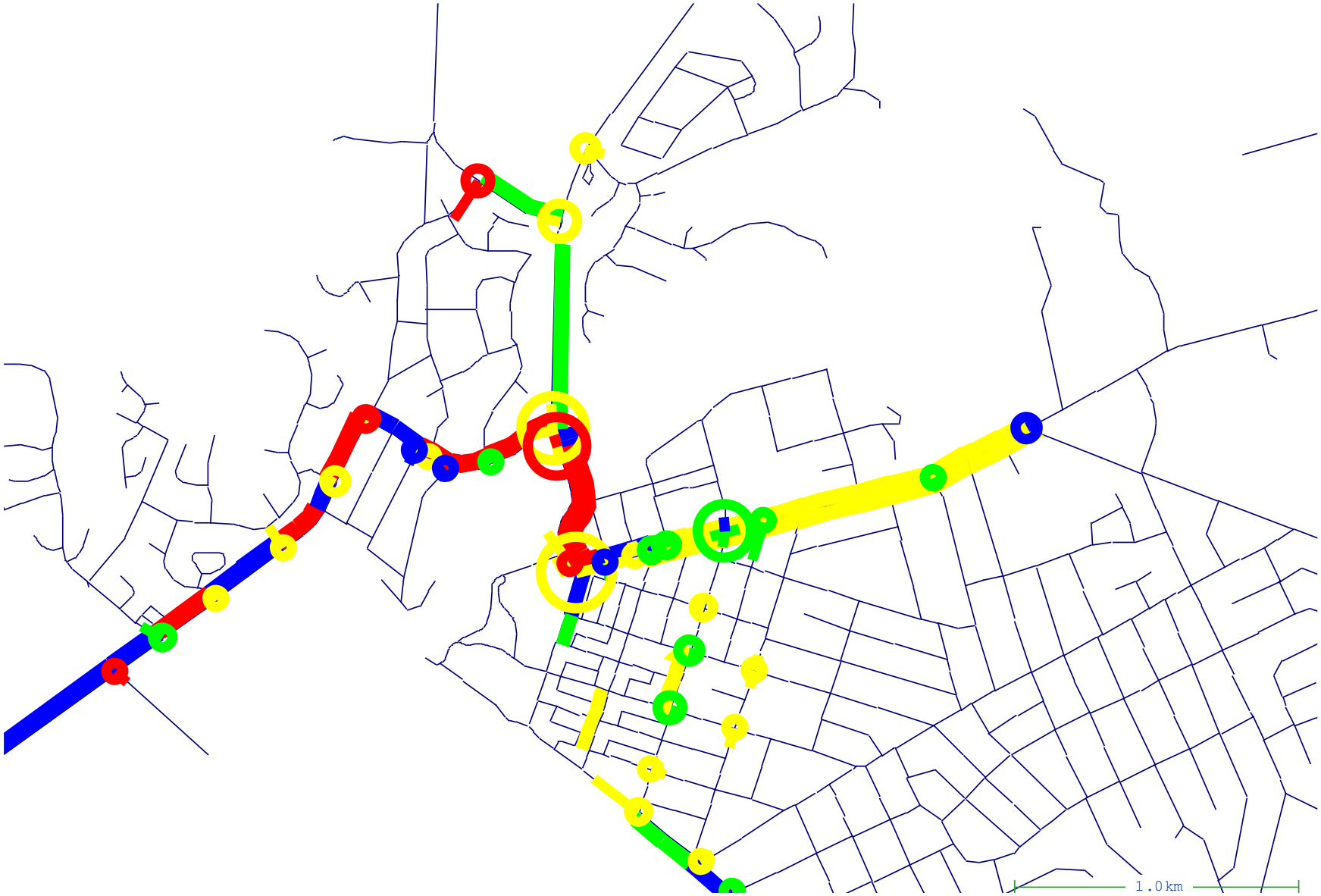


Figure 4.11 2053 Base Morning Peak Hour Level of Service Plot

Figure 4.12 2053 Base Evening Peak Hour Level of Service Plot

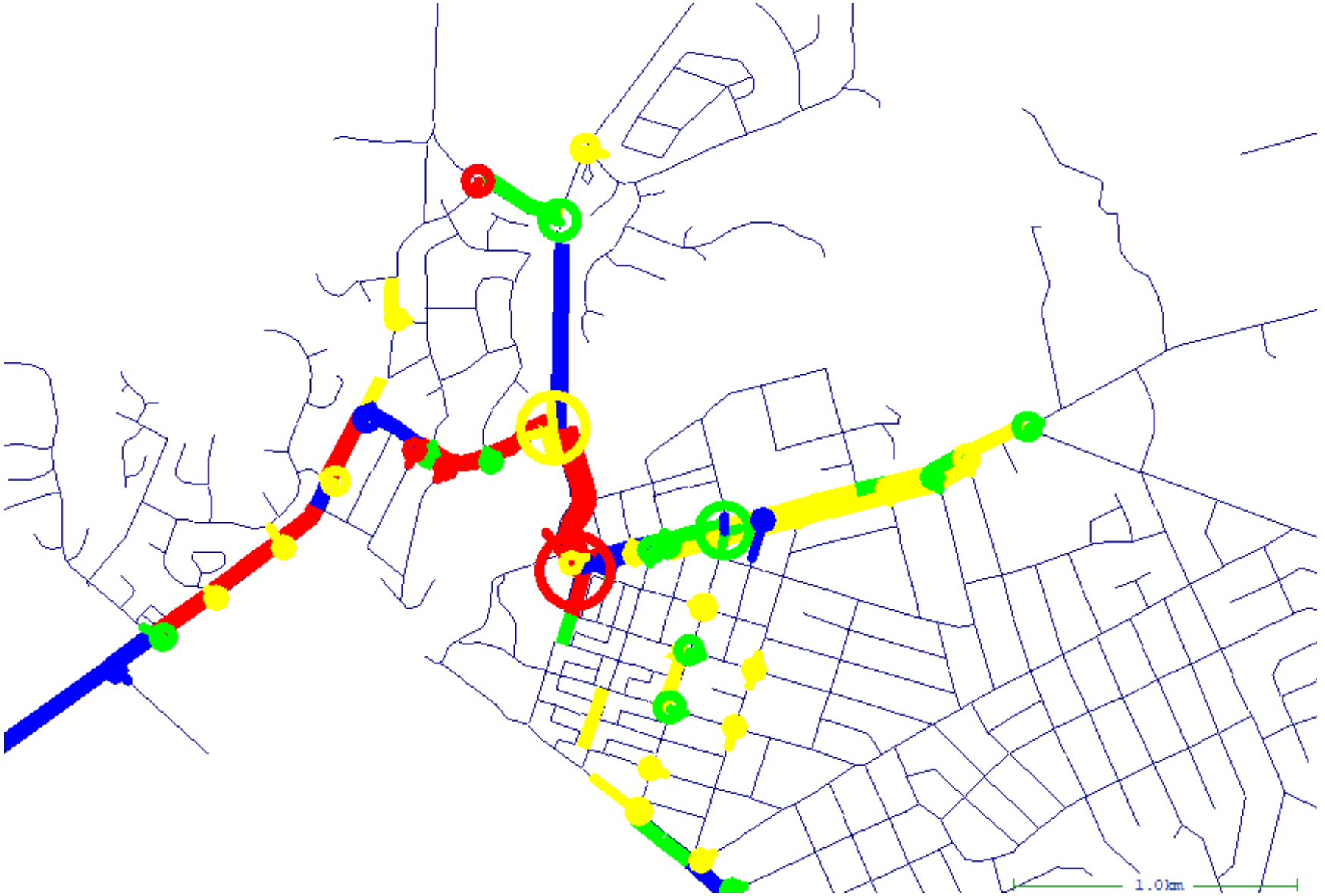


Figure 4.13 2053 Option A1 Morning Peak Hour Level of Service Plot

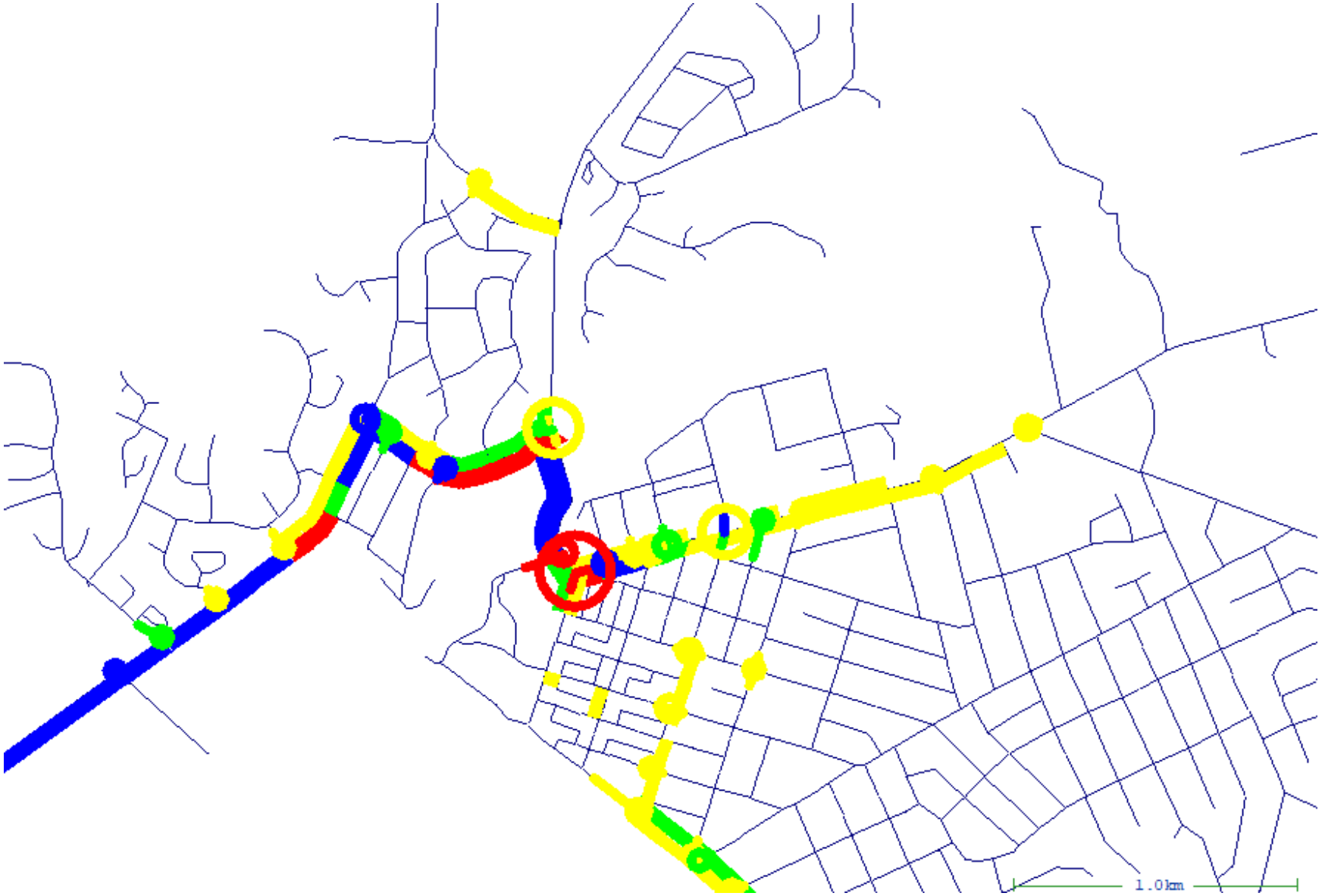


Figure 4.14 2053 Option A1 Evening Peak Hour Level of Service Plot

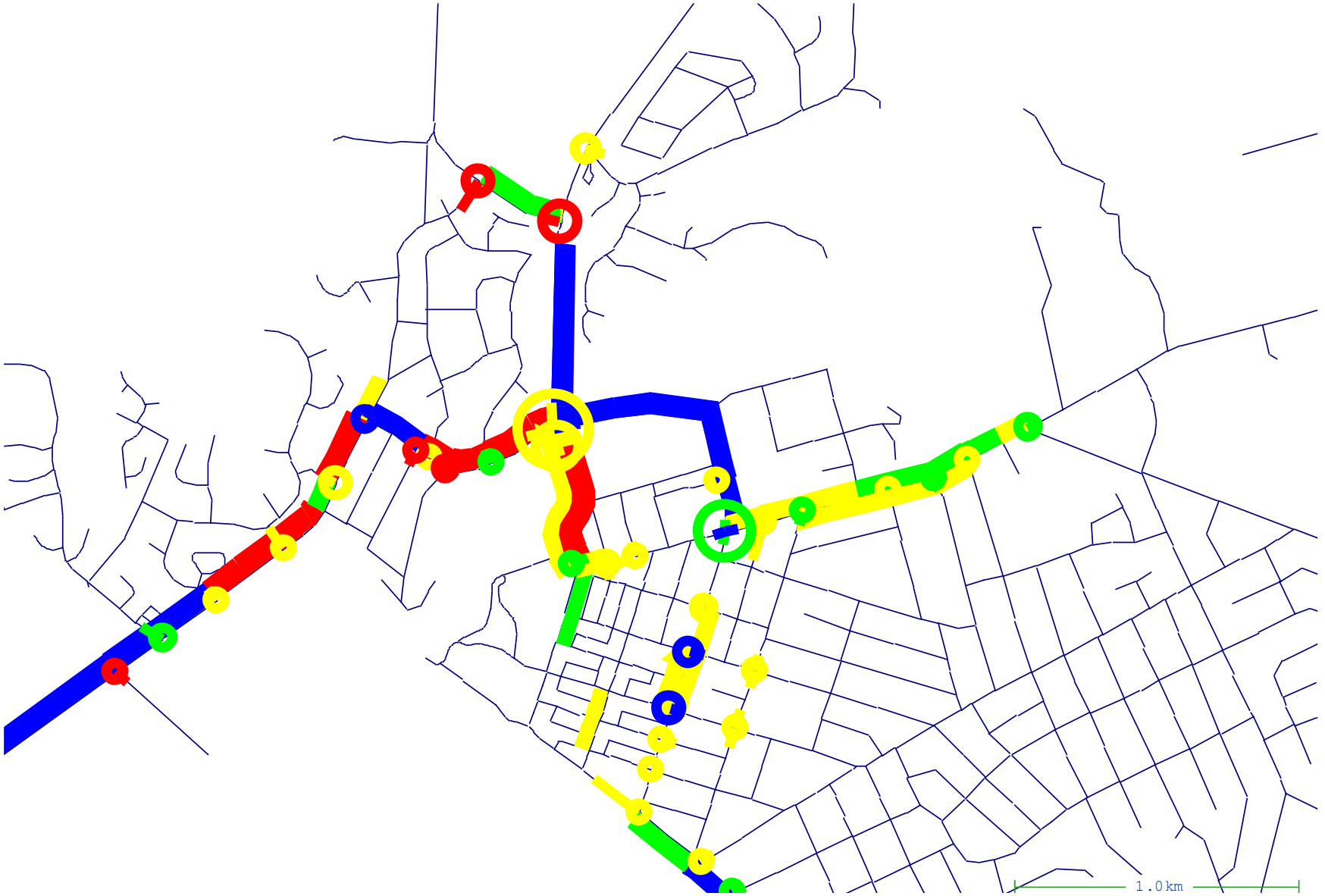


Figure 4.15 2053 Option B1 Morning Peak Hour Level of Service Plot

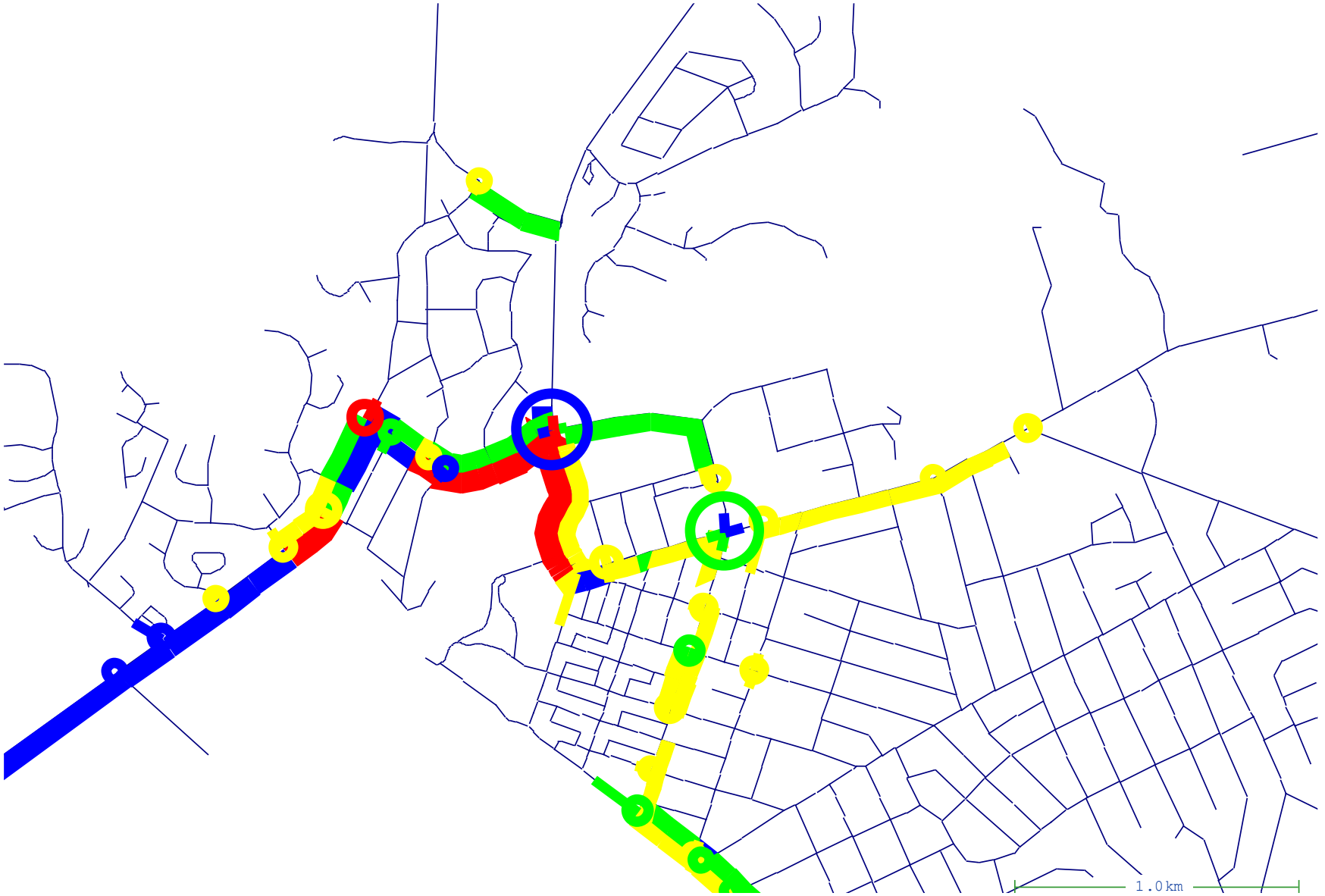


Figure 4.16 2053 Option B1 Evening Peak Hour Level of Service Plot

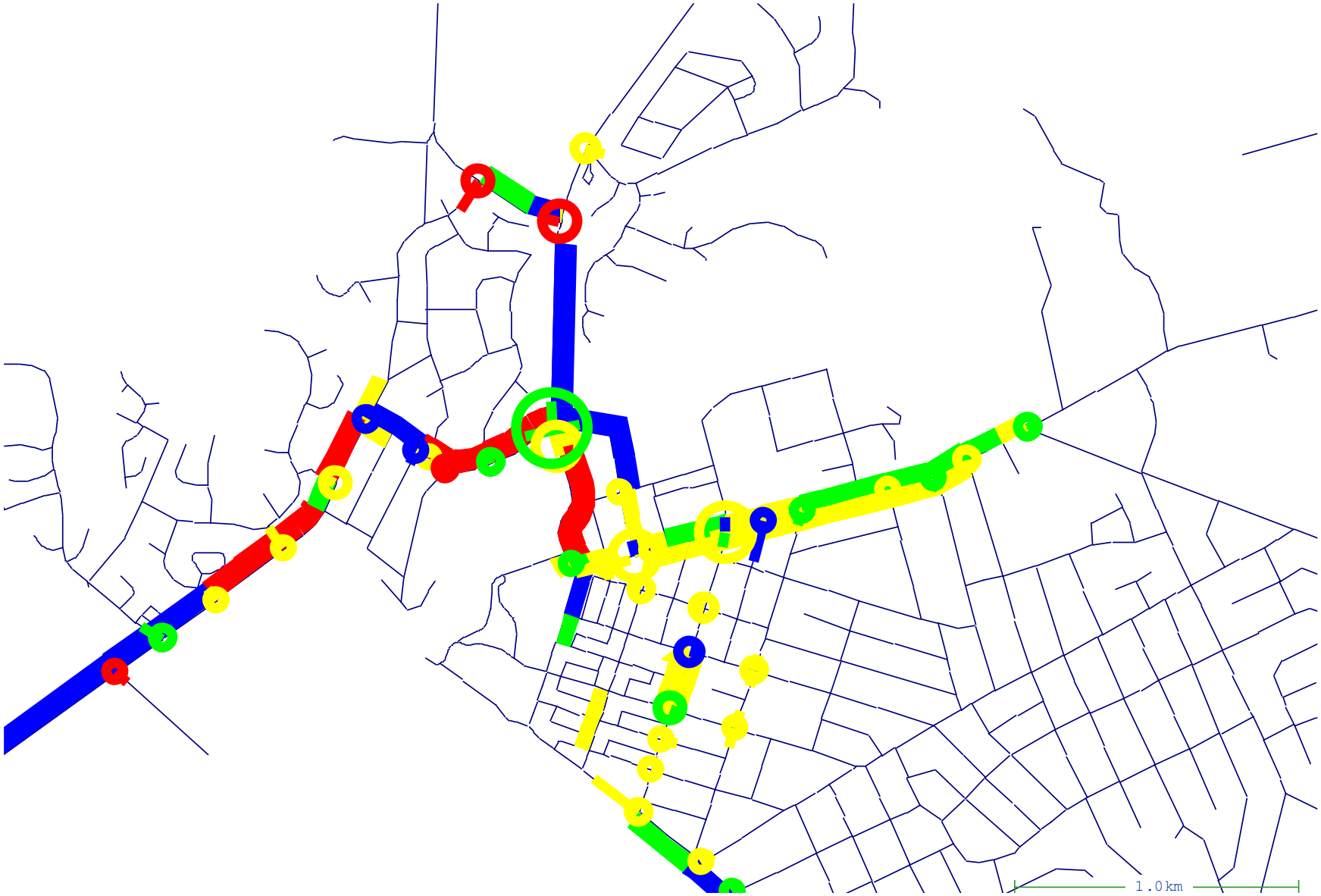


Figure 4.17 2053 Option B2 Morning Peak Hour Level of Service Plot

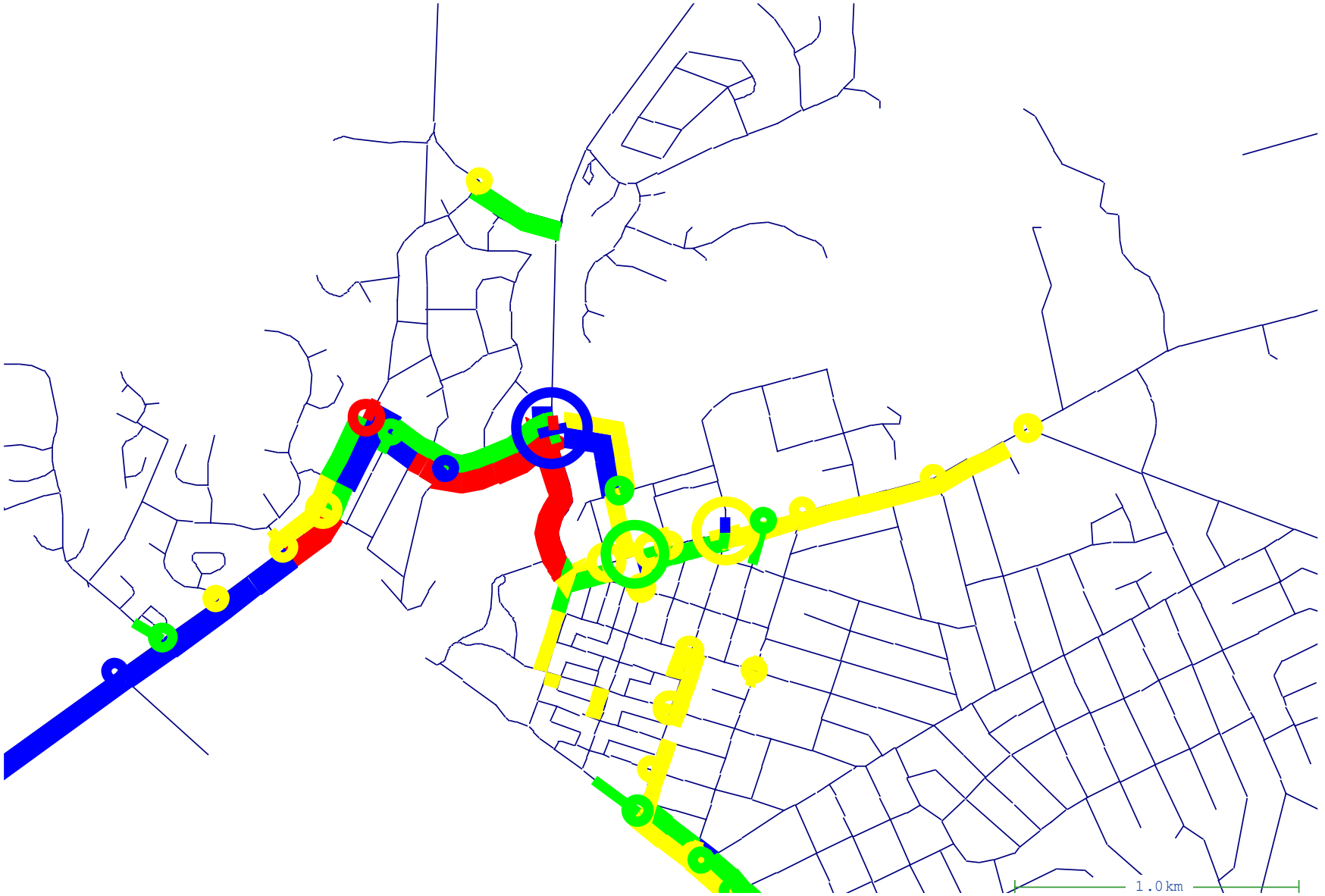


Figure 4.18 2053 Option B2 Evening Peak Hour Level of Service Plot

Figure 4.19 2053 Option D1 Morning Peak Hour Level of Service Plot

Figure 4.20 2053 Option D1 Evening Peak Hour Level of Service Plot

5. Level of Service Summary

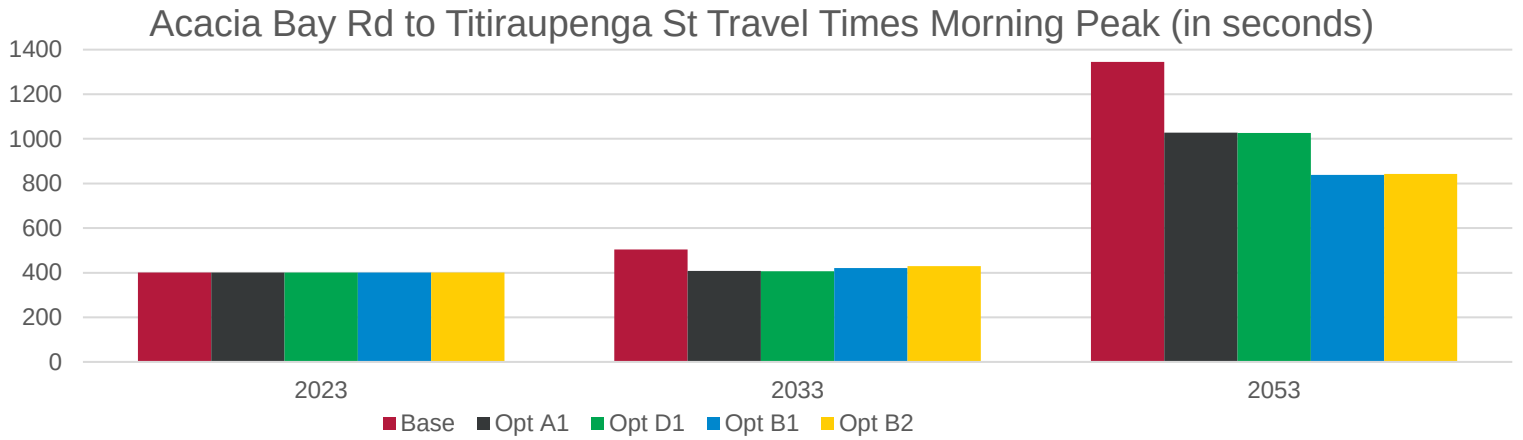
Table 5.1 Number of Intersections at given LoS

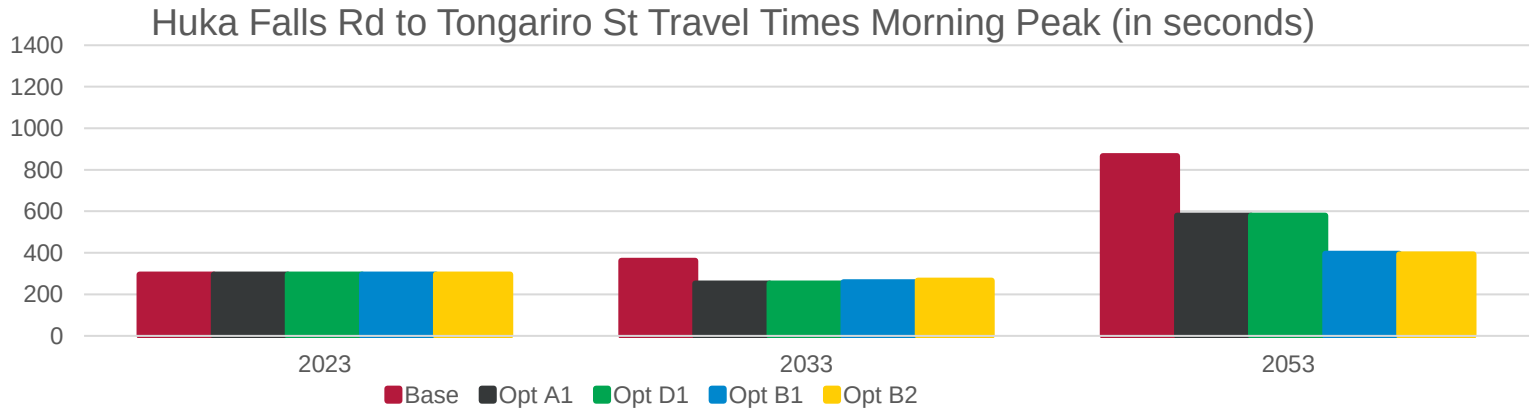
		23 Base	33 Base	33 Opt A1	33 Opt B1	33 Opt B2	33 Opt D1	53 Base	53 Opt A1	53 Opt B1	53 Opt B2	53 Opt D1
AM	LoS C	40	47	47	43	46	47	45	45	47	48	45
	LoS D	1	0	1	2	1	1	14	16	13	14	16
	LoS E	1	4	2	2	2	2	6	6	4	5	5
	LoS F	1	2	2	2	2	2	7	6	8	6	7
PM	LoS C	28	41	39	36	38	40	49	47	43	45	45
	LoS D	1	1	1	2	2	1	10	10	11	13	12
	LoS E	0	1	1	1	1	1	6	5	5	3	4
	LoS F	0	1	1	1	1	1	2	3	2	3	4

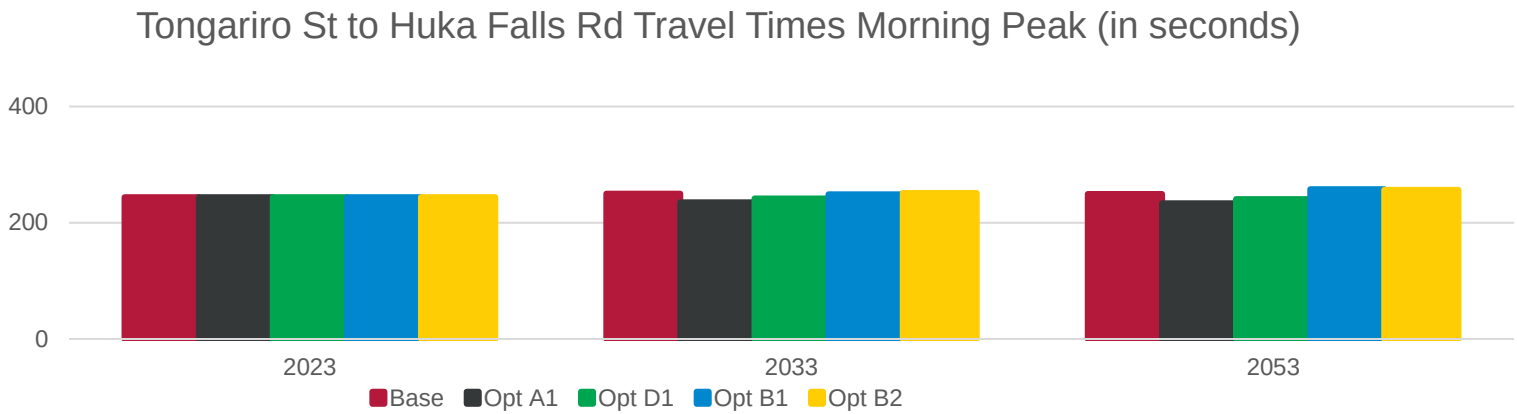
Table 5.2 Lane Kilometres at given LoS

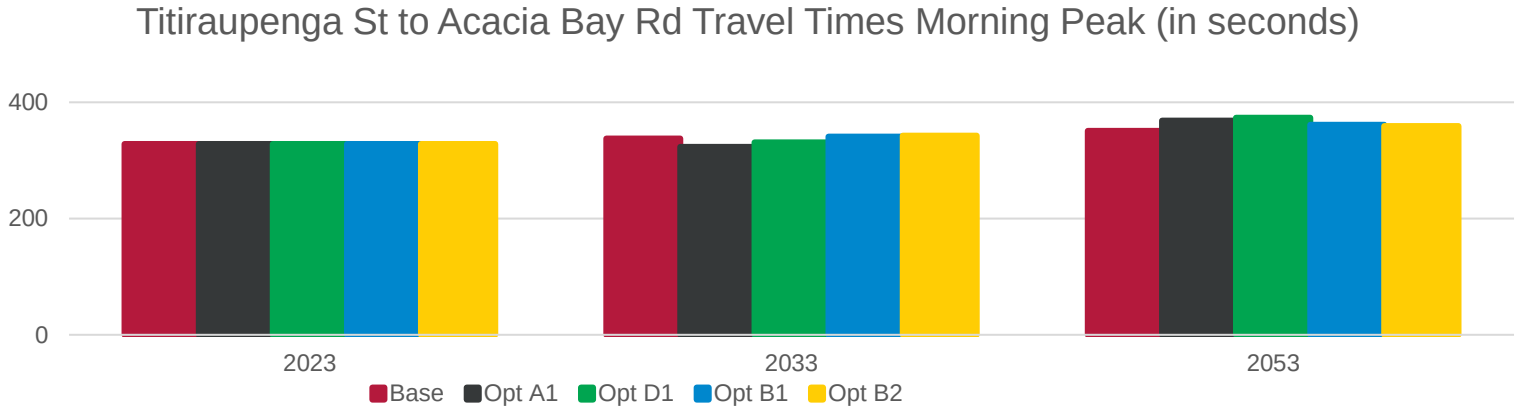
		23 Base	33 Base	33 Opt A1	33 Opt B1	33 Opt B2	33 Opt D1	53 Base	53 Opt A1	53 Opt B1	53 Opt B2	53 Opt D1
AM	LoS C	3.5	2	3.2	2.6	3.4	3.6	4.8	5.1	5.2	5.3	5.4
	LoS D	0.5	3.2	4.1	4.1	3.3	4.1	3.2	3	3.3	3.5	3.1
	LoS E	0.5	0.5	0.6	0.5	0.5	0.6	4.2	4.3	5.1	4.9	4.3
	LoS F	0	0.5	0	0	0	0	1.8	2.8	1.7	1.7	2.8
PM	LoS C	2.2	2.8	3.5	2.8	3.4	3.9	6	6.3	5.7	6	5.6
	LoS D	0.4	2	1.7	1.3	2	2.2	3	3.3	4	3.9	3.3
	LoS E	0.4	0.4	0.4	0.7	0.2	0.4	4.6	4.9	4.4	4.7	5.7
	LoS F	0.1	0.5	0.1	0	0	0	1.4	0.9	1.2	1.2	0.9

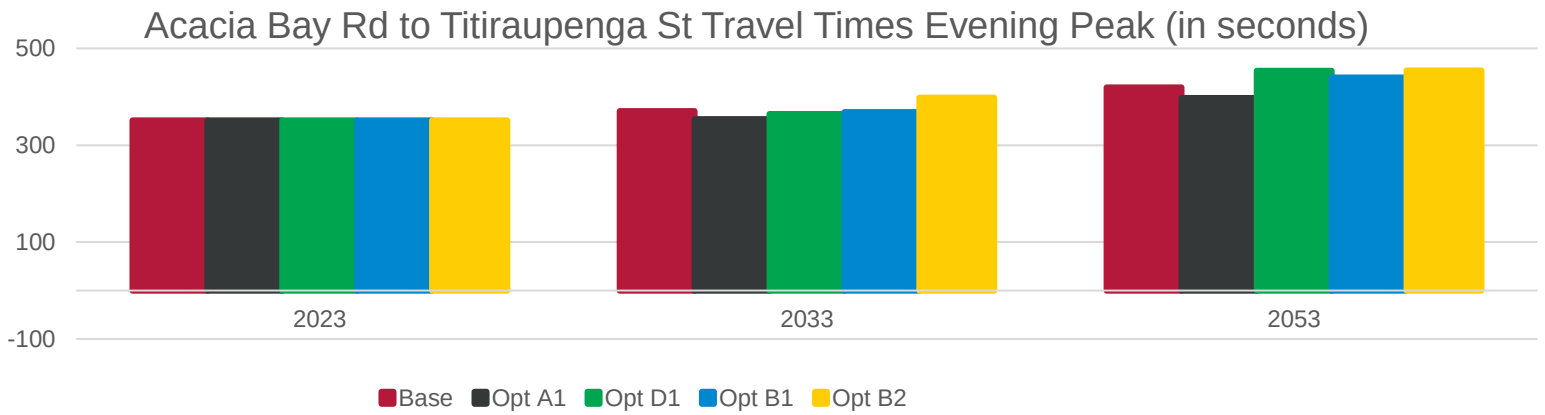
6. Travel Times

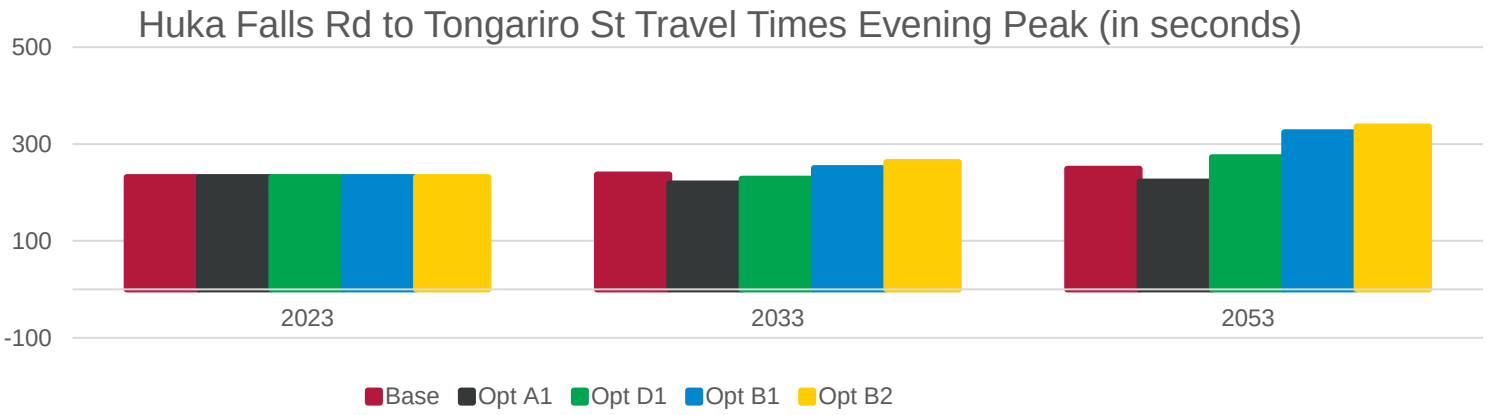


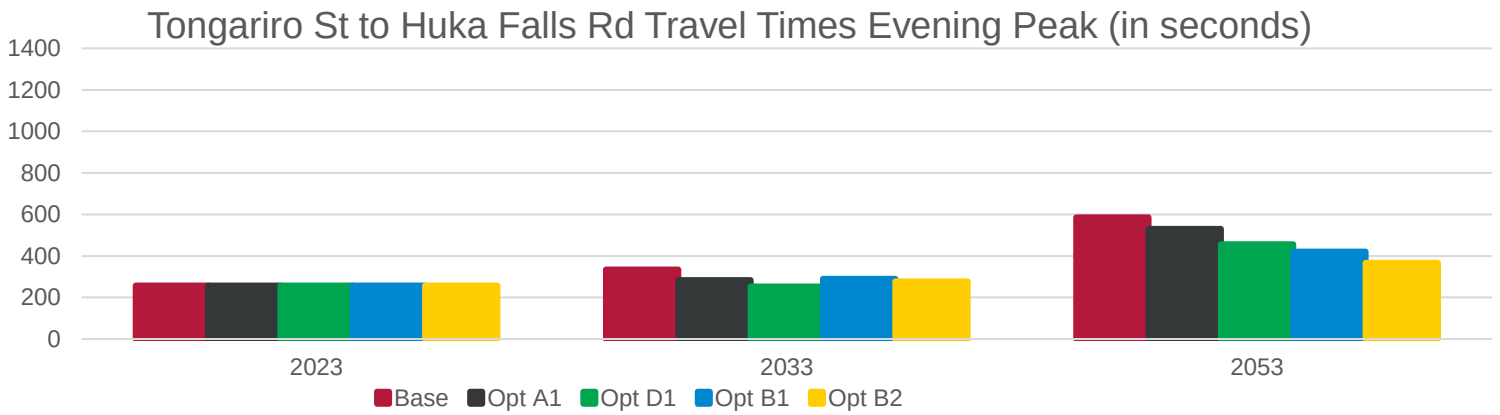


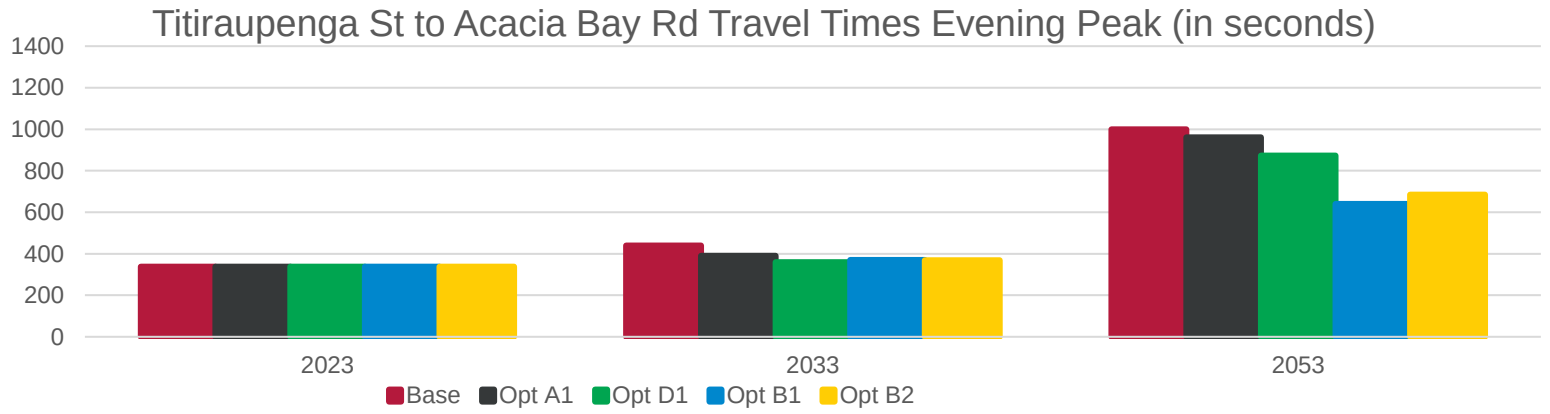

Tongariro St to Huka Falls Rd Travel Times Morning Peak (in seconds)
400
200
0
2023
2033
2053
Base
Opt A1
Opt D1
Opt B1
Opt B2


Titiraupenga St to Acacia Bay Rd Travel Times Morning Peak (in seconds)
400
200
0
2023
2033
2053
Base
Opt A1
Opt D1
Opt B1
Opt B2


Acacia Bay Rd to Titiraupenga St Travel Times Evening Peak (in seconds)
500
300
100
-100
2023
2033
2053
Base
Opt A1
Opt D1
Opt B1
Opt B2


Huka Falls Rd to Tongariro St Travel Times Evening Peak (in seconds)
500
300
100
-100
2023
2033
2053
Base
Opt A1
Opt D1
Opt B1
Opt B2


Tongariro St to Huka Falls Rd Travel Times Evening Peak (in seconds)
1400
1200
1000
800
600
400
200
0
2023
2033
2053
Base
Opt A1
Opt D1
Opt B1
Opt B2


Titiraupenga St to Acacia Bay Rd Travel Times Evening Peak (in seconds)
1400
1200
1000
800
600
400
200
0
2023
2033
2053
Base
Opt A1
Opt D1
Opt B1
Opt B2

7. Travel Totals

		2023	2033	2033 Opt A1	2033 Opt D1	2033 Opt B1	2033 Opt B2	2053	2053 Opt A1	2053 Opt D1	2053 Opt B1	2053 Opt B2
Morning Peak Hour	Trips Total	12830	15011	15011	15011	15011	15011	20233	20233	20233	20233	20233
	Vehicle Minutes	88313	112193	109352	109380	109626	109731	198565	186474	186591	179569	179611
	Vehicle Kilometres	76344	94009	94483	94457	94267	94224	126541	127053	127039	127661	127423
	Ave Trip Length (min)	6.88	7.47	7.28	7.29	7.3	7.31	9.81	9.22	9.22	8.88	8.88
	Ave Trip Length (km)	5.95	6.26	6.29	6.29	6.28	6.28	6.25	6.28	6.28	6.31	6.3
Evening Peak Hour	Trips Total	12028	13784	13784	13784	13784	13784	18599	18599	18599	18599	18599
	Vehicle Minutes	69905	85843	84461	83800	84544	83779	151428	149134	147214	140533	139399
	Vehicle Kilometres	57142	68103	68363	68455	68264	68355	94964	95051	95133	95909	95738
	Ave Trip Length (min)	5.81	6.23	6.13	6.08	6.13	6.08	8.14	8.02	7.92	7.56	7.49
	Ave Trip Length (km)	4.75	4.94	4.96	4.97	4.95	4.96	5.11	5.11	5.11	5.16	5.15

Level of Service Methodology

Level of Service (LoS) gives an indicator for the degree of amenity to vehicle users on a network. In the context of this report, LoS is used as an indicator of network performance.

Figure 7.1 shows how Link LoS varies depending on link type. It shows that the higher the vehicle volume and the lower the free speed the worse the LoS becomes. Link types are defined as follows:

- Link type 1 equates to road speeds of 10km/hr
- Link type 2 and 12 equate to road speeds of 20km/hr and 25km/hr
- Link type 3 and 13 equate to road speeds of 30km/hr and 35km/hr
- Link type 4 and 14 equate to road speeds of 40km/hr and 45km/hr
- Link type 5 and 15 equate to road speeds of 50km/hr and 55km/hr
- Link type 6 and 16 equate to road speeds of 60km/hr and 65km/hr
- Link type 7 and 17 equate to road speeds of 70km/hr and 75km/hr
- Link type 8 and 18 equate to road speeds of 80km/hr and 85km/hr
- Link type 9 and 19 equate to road speeds of 90km/hr and 95km/hr
- Link type 10 and 11 equate to road speeds of 100km/hr and 110km/hr
- Link type 20 equates to road speeds of 105km/hr

Intersection LoS is based on the delay values as given in Table 7.1. The colour coding in the table and figure corresponds to the colours applied in the LoS plots in section 3.4 of this report.

Table 7.1 Level of Service definitions and criteria

Definitions Of LoS				
LoS	**Description**	**Taupō Transportation Model LoS criteria**		
		Link (vehicles per hour)	**Intersection (delay/veh)**	
			Priority	**Signal/Rotary**
LoS F	Forced flow. The amount of traffic approaching a point exceeds that which can pass it. Flow break-downs occur, and queuing and delays occur.	In excess of **900-1700** depending on link type	50 sec	80 sec
LoS E	Traffic volumes are at or close to *capacity and there is virtually no freedom* to select desired speed and to manoeuvre within the traffic stream. Flow is unstable and *minor disturbances within the traffic stream will cause break-downs in operation*.	Between **720-1360** depending on link type	35 sec	55 sec
LoS D	Approaching unstable flow where *all drivers are severely restricted* in their freedom to select desired speed and to manoeuvre within the traffic stream. The general level of *comfort and convenience is poor* and small increases in traffic flow will cause operational problems.	Between **585-1105** depending on link type	25 sec	35 sec
LoS C	Stable flow but most drivers *are restricted to some extent* in their freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of *comfort and convenience has declined noticeably*.	Between **450-850** depending on link type	15 sec	20 sec
LoS B	Stable flow where drivers still *have reasonable freedom* to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience is less than LoS A.	Not Applicable	Not Applicable	

Definitions Of LoS				
LoS	**Description**	**Taupō Transportation Model LoS criteria**		
		Link (vehicles per hour)	**Intersection (delay/veh)**	
			Priority	**Signal/Rotary**
LoS A	Free flow in which drivers are *virtually unaffected* by the presence of others in the traffic stream. Freedom to select desired speeds and to manoeuvre within the traffic stream is extremely high and the general level of *comfort and convenience is excellent*.			

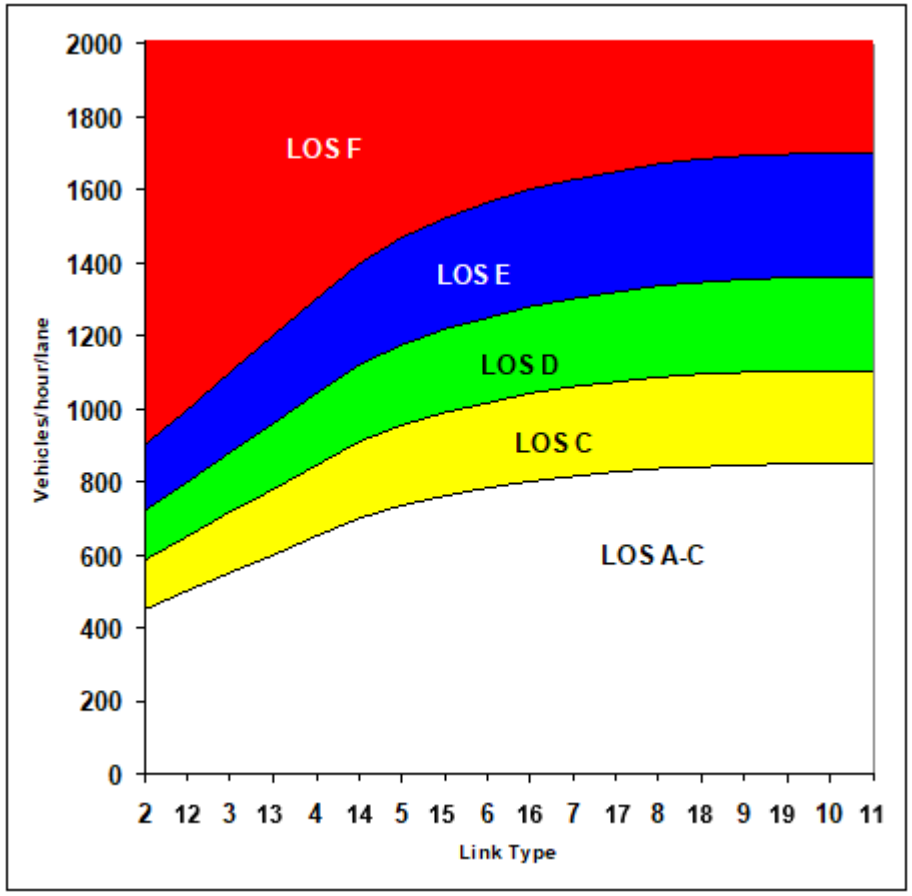


Figure 7.1 Taupō Transportation Model Link LoS Criteria (Vehicles per Lane per Hour)

APPENDIX D

SIDRA MODEL RESULTS: OPTION A1, OPTION B1 AND OPTION B2 (2033 AND 2053)

Note: Where it says 2053, this references 2053+ (Full Development Scenario).

SIDRA Modelling Results Comparison Tables

Norman Smith Street / Wairakei Drive Intersection

Norman Smith St / Wairakei Dr - 2033					
		Base Scenario	Option A1	Option B1	Option B2
AM	LoS	LOS F	LOS F	LOS F	LOS F
	Avg Delays	2 min delay	2.5 min delay	6.5 min delay	7 min delay
PM	LoS	LOS D	LOS B	LOS F	LOS F
	Avg Delays	49s delay	15s delay	2 min delay	2 min delay

Norman Smith St / Wairakei Dr - 2053					
		Base Scenario	Option A1	Option B1	Option B2
AM	LoS	LOS F	LOS F	LOS F	LOS F
	Avg Delays	6.5 min delay	8 min delay	16 min delay	15 min delay
PM	LoS	LOS F	LOS F	LOS F	LOS F
	Avg Delays	3.5 min delay	2 min delay	7 min delay	7.5 min delay

Spa Road / Tongariro Street Intersection

Spa / Tongariro - 2033					
		Base Scenario	Option A1	Option B1	Option B2
AM	LoS	LOS A	LOS A	LOS A	LOS A
	Avg Delays	7.6s delay	7.5s delay	7s delay	7s delay
PM	LoS	LOS F	LOS D	LOS B	LOS A
	Avg Delays	~2 min delay	48s delay	17s delay	9s delay

Spa / Tongariro - 2053					
		Base Scenario	Option A1	Option B1	Option B2
AM	LoS	LOS D	LOS F	LOS A	LOS A
	Avg Delays	43s delay	1 min delay	9s delay	7s delay
PM	LoS	LOS F	LOS F	LOS F	LOS A
	Avg Delays	4 min delay	4 min delay	2 min delay	9s delay

Spa Road / Ōpepe Street / Tītīraupenga Street Intersection

Spa / Ōpepe / Tītīraupenga - 2033					
		Base Scenario	Option A1	Option B1	Option B2
AM	LoS	LOS F	LOS F	LOS F	LOS F
	Avg Delays	3.5 min delay	3 min delay	6 min delay	3 min delay
PM	LoS	LOS F	LOS F	LOS F	LOS F
	Avg Delays	1.5 min delay	2 min delay	2.5 min delay	3 min delay

Spa / Ōpepe / Tītīraupenga - 2053					
		Base Scenario	Option A1	Option B1	Option B2
AM	LoS	LOS F	LOS F	LOS F	LOS F
	Avg Delays	5 min delay	4.5 min delay	9 min delay	7 min delay
PM	LoS	LOS F	LOS F	LOS F	LOS F
	Avg Delays	4.5 min delay	4.5 min delay	10 min delay	4.5 min delay

Pāora Hapi Street / Tītīraupenga Street Intersection

Pāora Hapi / Tītīraupenga - 2033					
		Base Scenario	Option A1	Option B1	Option B2
AM	LoS	LOS B (East) LOS C (West)	LOS B (East) LOS C (West)	LOS C (East) LOS C (West)	LOS B (East) LOS C (West)
	Avg Delays	6.5s delay	6s delay	4s delay	7s delay
PM	LoS	LOS B (East) LOS B (West)	LOS A (East) LOS B (West)	LOS B (East) LOS C (West)	LOS B (East) LOS B (West)
	Avg Delays	6s delay	6s delay	4s delay	6s delay

Note: Delay times present for the overall intersection. LOS is only applicable for the East / West approach.

Pāora Hapi / Tītīraupenga - 2053					
		Base Scenario	Option A1	Option B1	Option B2
AM	LoS	LOS C (East) LOS F (West)	LOS B (East) LOS F (West)	LOS D (East) LOS F (West)	LOS B (East) LOS F (West)
	Avg Delays	23s delay	20s delay	1 min delay	54s delay
PM	LoS	LOS B (East) LOS C (West)	LOS A (East) LOS B (West)	LOS D (East) LOS F (West)	LOS B (East) LOS D (West)
	Avg Delays	8s delay	8s delay	1 min delay	10s delay

Note: Delay times present for the overall intersection. LOS is only applicable for the East / West approach.

Taupō Control Gates Bridge

Taupō Control Gates - 2033					
		Base Scenario	Option A1	Option B1	Option B2
AM	LoS	LOS E (North) LOS A (South)	LOS A (North) LOS A (South)	LOS A (North) LOS A (South)	LOS A (North) LOS A (South)
	Avg Delays	35s delay	4s delay	4s delay	4s delay
PM	LoS	LOS A (North) LOS A (South)	LOS A (North) LOS A (South)	LOS A (North) LOS A (South)	LOS A (North) LOS A (South)
	Avg Delays	7s delay	4s delay	4s delay	4s delay

Note: Delay times present for the overall intersection. LOS is only applicable for the East / West approach.

Taupō Control Gates - 2053					
		Base Scenario	Option A1	Option B1	Option B2
AM	LoS	LOS F (North) LOS A (South)	LOS A (North) LOS A (South)	LOS A (North) LOS A (South)	LOS A (North) LOS A (South)
	Avg Delays	3 min delay	5s delay	8s delay	7s delay
PM	LoS	LOS A (North) LOS F (South)	LOS A (North) LOS A (South)	LOS A (North) LOS B (South)	LOS A (North) LOS A (South)
	Avg Delays	2.5 min delay	5s delay	9s delay	7s delay

Note: Delay times present for the overall intersection. LOS is only applicable for the East / West approach.

Second River Crossing (Option B2 only)

Second River Crossing - 2033		
		Option B2
AM	LoS	LOS A (North) LOS A (South)
	Avg Delays	4s delay
PM	LoS	LOS A (North) LOS A (South)
	Avg Delays	4s delay

Note: Second River Crossing has only been modelled for Option B2.
Note: Delay times present for the overall intersection. LOS is only applicable for the East / West approach.

Second River Crossing - 2053		
		Option B2
AM	LoS	LOS A (North) LOS A (South)
	Avg Delays	5s delay
PM	LoS	LOS A (North) LOS A (South)
	Avg Delays	4.5s delay

Note: Second River Crossing has only been modelled for Option B2.

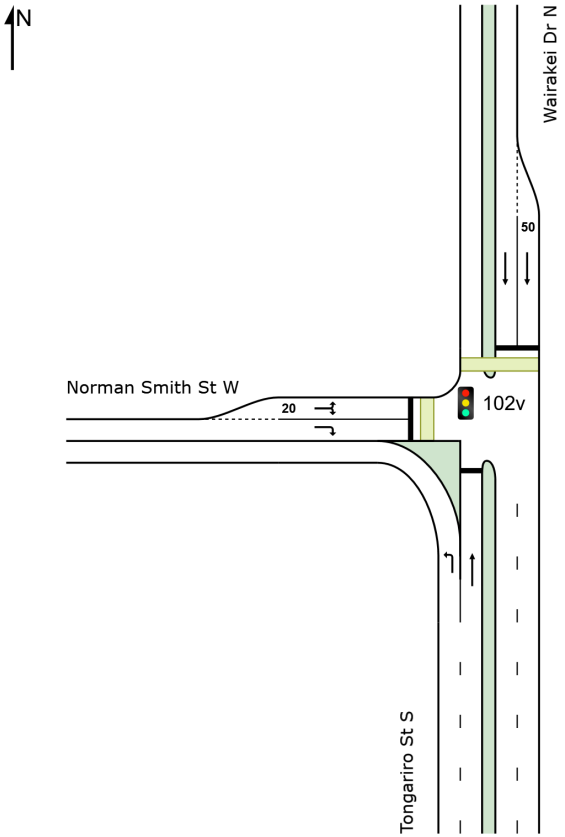
Note: Delay times present for the overall intersection. LOS is only applicable for the East / West approach.

SITE LAYOUT

Site: 102v [Norman / Wairakei 2033 AM Base Option A1 (Site Folder: 2033 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 102v [Norman / Wairakei 2033 AM Base Option A1 (Site Folder: 2033 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tongariro St S														
1	L2	436	22	459	5.0	0.256	4.5	LOS A	0.0	0.0	0.00	0.46	0.00	48.1
2	T1	363	21	382	5.8	0.642	37.9	LOS D	19.2	141.0	0.92	0.80	0.92	46.7
Approach		799	43	841	5.4	0.642	19.7	LOS B	19.2	141.0	0.42	0.61	0.42	47.0
North: Wairakei Dr N														
8	T1	881	28	927	3.2	* 1.140	197.4	LOS F	58.7	421.8	1.00	1.89	2.28	36.4
Approach		881	28	927	3.2	1.140	197.4	LOS F	58.7	421.8	1.00	1.89	2.28	36.4
West: Norman Smith St W														
10	L2	12	0	13	0.0	1.135	196.7	LOS F	82.8	589.1	1.00	1.45	2.23	36.8
12	R2	1222	23	1286	1.9	* 1.135	195.9	LOS F	88.7	630.7	1.00	1.44	2.23	15.5
Approach		1234	23	1299	1.9	1.135	195.9	LOS F	88.7	630.7	1.00	1.44	2.23	16.1
All Vehicles		2914	94	3067	3.2	1.140	148.0	LOS F	88.7	630.7	0.84	1.35	1.75	32.7

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.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [Ped	Dist]	Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed

		ped/h	ped/h	sec		ped	m			sec	m	m/sec
North: Wairakei Dr N												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	80.3	33.9	0.42
West: Norman Smith St W												
P4	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	78.8	31.9	0.40
All Pedestrians		0	105	54.3	LOS E	0.2	0.2	0.95	0.95	79.6	32.9	0.41

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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PHASING SUMMARY

Site: 102v [Norman / Wairakei 2033 AM Base Option A1 (Site Folder: 2033 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

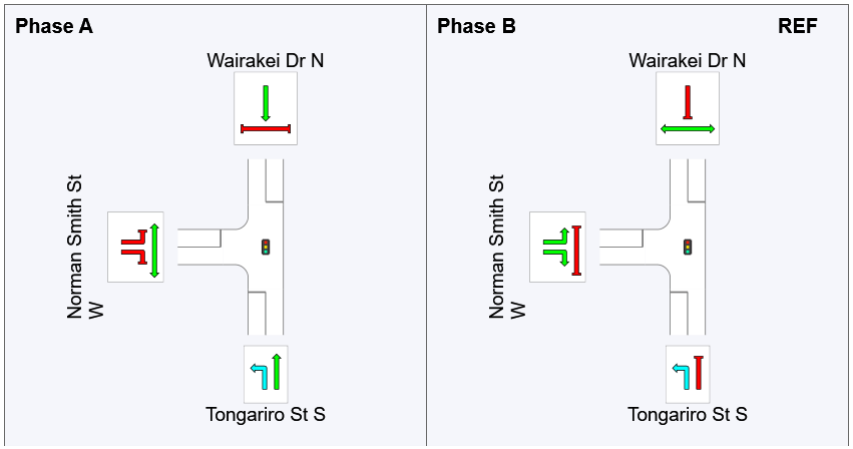
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase B
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Summary

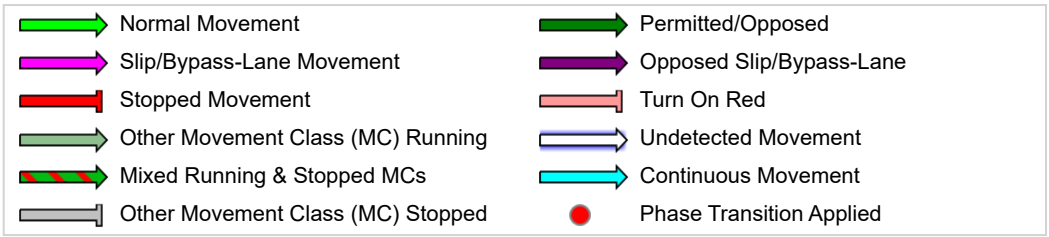
Phase	A	B
Phase Change Time (sec)	76	0
Green Time (sec)	38	70
Phase Time (sec)	44	76
Phase Split	37%	63%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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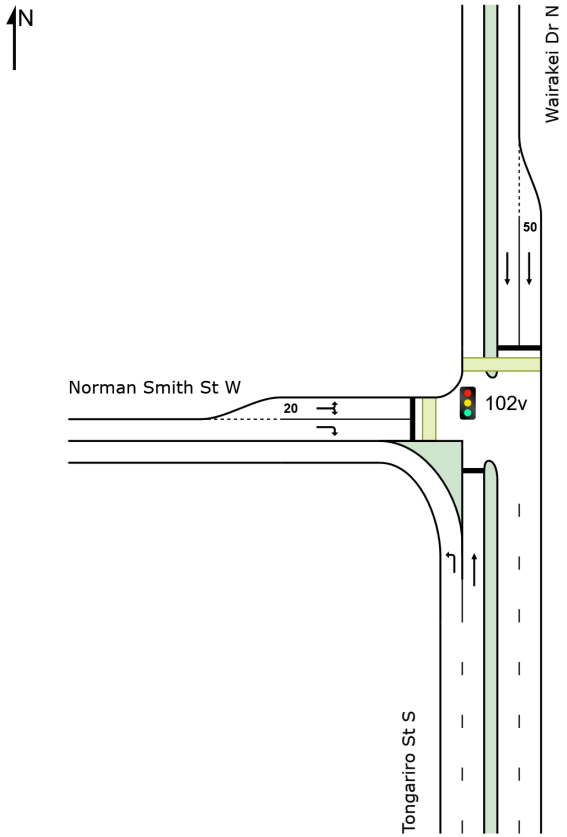
SITE LAYOUT

Site: 102v [Norman / Wairakei 2033 PM Base Option A1 (Site Folder: 2033 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 102v [Norman / Wairakei 2033 PM Base Option A1 (Site Folder: 2033 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tongariro St S														
1	L2	1129	19	1188	1.7	0.648	4.8	LOS A	0.0	0.0	0.00	0.46	0.00	47.7
2	T1	680	11	716	1.6	* 0.856	24.2	LOS C	23.3	165.5	0.97	1.05	1.20	47.9
Approach		1809	30	1904	1.7	0.856	12.1	LOS B	23.3	165.5	0.36	0.68	0.45	47.8
North: Wairakei Dr N														
8	T1	415	12	437	2.9	0.263	11.8	LOS B	4.1	29.6	0.68	0.56	0.68	48.9
Approach		415	12	437	2.9	0.263	11.8	LOS B	4.1	29.6	0.68	0.56	0.68	48.9
West: Norman Smith St W														
10	L2	9	0	9	0.0	* 0.767	25.8	LOS C	8.9	63.8	0.85	0.89	1.05	47.7
12	R2	639	19	673	3.0	0.767	25.4	LOS C	9.5	67.9	0.84	0.88	1.03	38.7
Approach		648	19	682	2.9	0.767	25.4	LOS C	9.5	67.9	0.84	0.88	1.03	39.3
All Vehicles		2872	61	3023	2.1	0.856	15.1	LOS B	23.3	165.5	0.52	0.71	0.61	47.3

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.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [Ped	Dist]	Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed

		ped/h	ped/h	sec		ped	m			sec	m	m/sec
North: Wairakei Dr N												
P3	Full	50	53	24.4	LOS C	0.1	0.1	0.90	0.90	50.4	33.9	0.67
West: Norman Smith St W												
P4	Full	50	53	24.4	LOS C	0.1	0.1	0.90	0.90	48.9	31.9	0.65
All Pedestrians		0	105	24.4	LOS C	0.1	0.1	0.90	0.90	49.7	32.9	0.66

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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PHASING SUMMARY

Site: 102v [Norman / Wairakei 2033 PM Base Option A1 (Site Folder: 2033 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Practical Cycle Time)

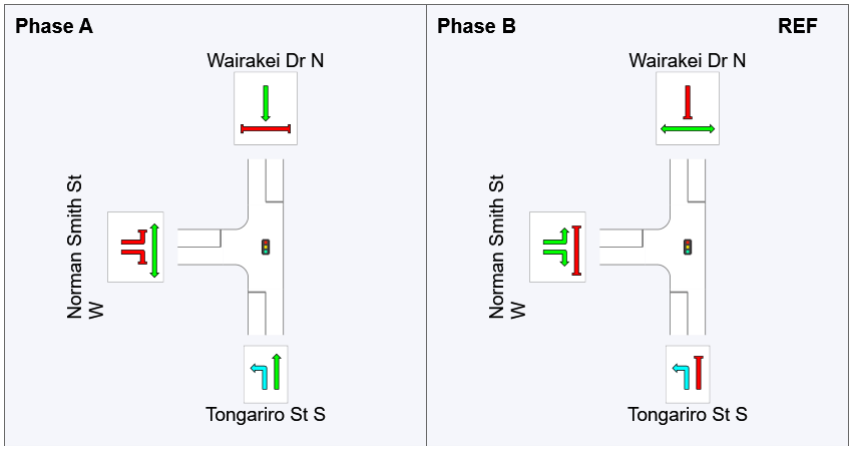
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase B
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Summary

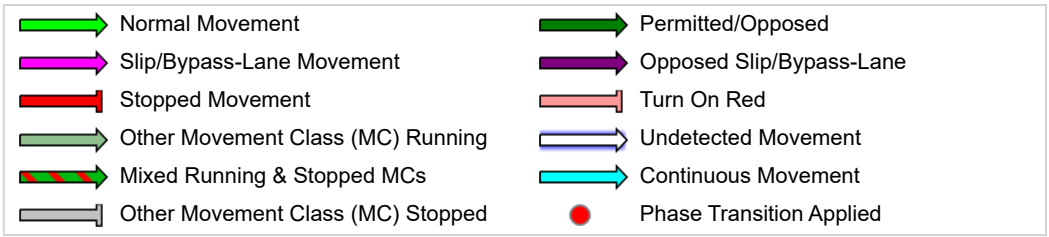
Phase	A	B
Phase Change Time (sec)	28	0
Green Time (sec)	26	22
Phase Time (sec)	32	28
Phase Split	53%	47%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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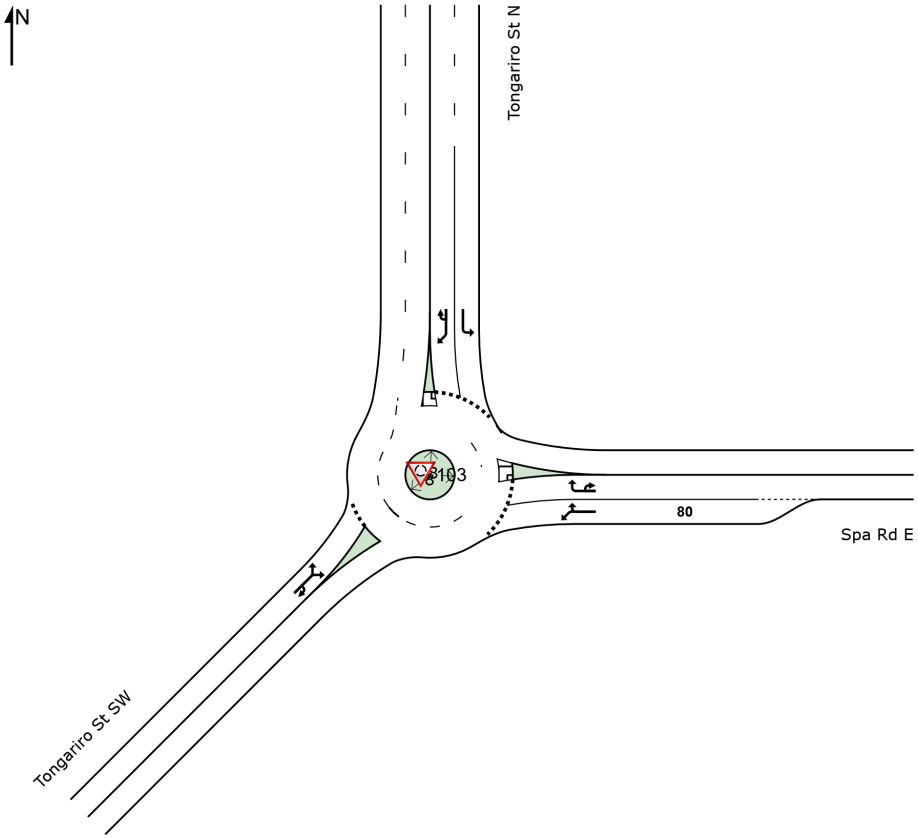
SITE LAYOUT

Site: 103 [Spa / Tongariro 2033 AM Base Option A1 (Site Folder: 2033 Option A1)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 103 [Spa / Tongariro 2033 AM Base Option A1 (Site Folder: 2033 Option A1)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
East: Spa Rd E														
4a	L1	33	0	35	0.0	0.411	8.5	LOS A	3.2	23.0	0.88	0.89	0.89	42.6
6	R2	515	27	542	5.2	0.411	13.1	LOS B	3.2	23.0	0.87	0.92	0.90	43.0
6u	U	1	1	1	100.0	0.411	21.4	LOS C	3.0	21.9	0.87	0.95	0.92	41.5
Approach		549	28	578	5.1	0.411	12.8	LOS B	3.2	23.0	0.87	0.92	0.90	43.0
North: Tongariro St N														
7	L2	1331	30	1401	2.3	0.894	5.7	LOS A	24.7	176.5	0.84	0.48	0.84	44.8
9a	R1	679	20	715	2.9	0.620	6.9	LOS A	7.0	50.5	0.46	0.56	0.46	44.6
9u	U	69	0	73	0.0	0.620	9.1	LOS A	7.0	50.5	0.46	0.56	0.46	46.0
Approach		2079	50	2188	2.4	0.894	6.2	LOS A	24.7	176.5	0.71	0.51	0.71	44.8
SouthWest: Tongariro St SW														
30a	L1	368	15	387	4.1	0.650	6.2	LOS A	4.8	34.4	0.80	0.97	1.02	28.8
32a	R1	64	0	67	0.0	0.650	8.7	LOS A	4.8	34.4	0.80	0.97	1.02	28.9
32u	U	1	0	1	0.0	0.650	10.1	LOS B	4.8	34.4	0.80	0.97	1.02	29.4
Approach		433	15	456	3.5	0.650	6.6	LOS A	4.8	34.4	0.80	0.97	1.02	28.9
All Vehicles		3061	93	3222	3.0	0.894	7.5	LOS A	24.7	176.5	0.75	0.65	0.79	41.5

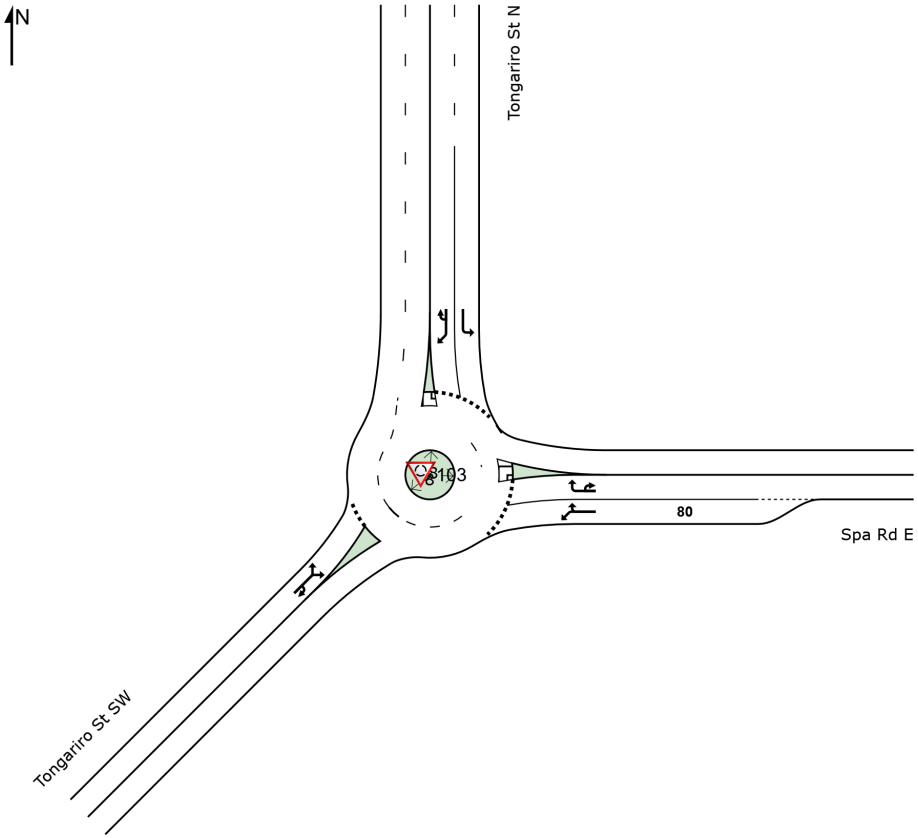
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 103 [Spa / Tongariro 2033 PM Base Option A1 (Site Folder: 2033 Option A1)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 103 [Spa / Tongariro 2033 PM Base Option A1 (Site Folder: 2033 Option A1)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
East: Spa Rd E														
4a	L1	31	0	33	0.0	0.667	8.8	LOS A	7.4	52.8	0.82	0.91	1.02	42.4
6	R2	1254	22	1320	1.8	0.667	13.0	LOS B	7.4	52.8	0.83	0.93	1.04	43.0
6u	U	1	1	1	100.0	0.667	20.4	LOS C	7.2	51.3	0.84	0.96	1.07	41.6
Approach		1286	23	1354	1.8	0.667	12.9	LOS B	7.4	52.8	0.83	0.93	1.04	43.0
North: Tongariro St N														
7	L2	646	22	680	3.4	0.413	4.6	LOS A	3.9	27.8	0.19	0.50	0.19	46.1
9a	R1	364	9	383	2.5	0.340	6.2	LOS A	2.8	20.0	0.18	0.57	0.18	45.1
9u	U	91	0	96	0.0	0.340	8.5	LOS A	2.8	20.0	0.18	0.57	0.18	46.4
Approach		1101	31	1159	2.8	0.413	5.4	LOS A	3.9	27.8	0.18	0.53	0.18	45.8
SouthWest: Tongariro St SW														
30a	L1	466	8	491	1.7	1.239	231.9	LOS F	72.2	512.6	1.00	6.80	11.73	10.0
32a	R1	26	0	27	0.0	1.239	234.5	LOS F	72.2	512.6	1.00	6.80	11.73	9.8
32u	U	1	0	1	0.0	1.239	235.9	LOS F	72.2	512.6	1.00	6.80	11.73	9.0
Approach		493	8	519	1.6	1.239	232.1	LOS F	72.2	512.6	1.00	6.80	11.73	10.0
All Vehicles		2880	62	3032	2.2	1.239	47.6	LOS D	72.2	512.6	0.61	1.78	2.54	28.7

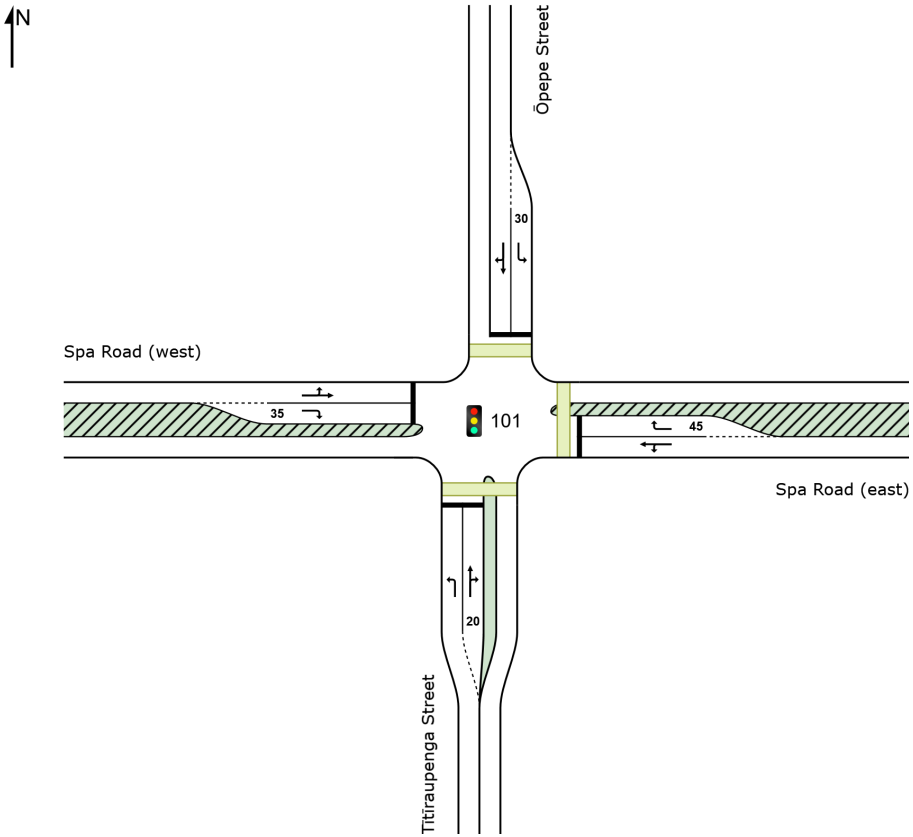
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 AM Base Option A1 (Site Folder: 2033 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 AM Base Option A1 (Site Folder: 2033 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street														
1	L2	189	1	199	0.5	0.596	44.5	LOS D	9.7	68.3	0.88	0.79	0.88	32.3
2	T1	119	1	125	0.8	*1.383	400.4	LOS F	23.8	167.4	1.00	1.83	3.40	12.6
3	R2	7	0	7	0.0	1.383	404.9	LOS F	23.8	167.4	1.00	1.83	3.40	27.6
Approach		315	2	332	0.6	1.383	187.0	LOS F	23.8	167.4	0.93	1.21	1.89	18.5
East: Spa Road (east)														
4	L2	103	1	108	1.0	1.334	364.3	LOS F	111.2	807.0	1.00	2.44	3.09	29.1
5	T1	510	25	537	4.9	*1.334	358.1	LOS F	111.2	807.0	1.00	2.44	3.09	28.9
6	R2	131	1	138	0.8	0.498	56.2	LOS E	7.6	53.5	0.97	0.80	0.97	45.4
Approach		744	27	783	3.6	1.334	305.8	LOS F	111.2	807.0	0.99	2.15	2.72	31.1
North: Ōpepe Street														
7	L2	46	1	48	2.2	*0.199	35.0	LOS C	1.8	13.2	0.93	0.73	0.93	47.0
8	T1	61	1	64	1.6	0.165	42.0	LOS D	3.2	22.6	0.86	0.67	0.86	38.5
9	R2	2	0	2	0.0	0.165	46.6	LOS D	3.2	22.6	0.86	0.67	0.86	37.7
Approach		109	2	115	1.8	0.199	39.1	LOS D	3.2	22.6	0.89	0.69	0.89	44.5
West: Spa Road (west)														
10	L2	3	0	3	0.0	1.085	155.4	LOS F	75.4	547.9	1.00	1.64	1.94	23.2
11	T1	639	28	673	4.4	1.085	149.0	LOS F	75.4	547.9	1.00	1.64	1.94	38.4
12	R2	133	2	140	1.5	0.508	56.3	LOS E	7.7	54.8	0.97	0.80	0.97	29.5
Approach		775	30	816	3.9	1.085	133.1	LOS F	75.4	547.9	0.99	1.50	1.77	38.0
All Vehicles		1943	61	2045	3.1	1.383	202.7	LOS F	111.2	807.0	0.98	1.66	2.10	33.0

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.

Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Tītīraupenga Street												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	230.3	228.8	0.99
East: Spa Road (east)												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.0	216.8	0.98
North: Ōpepe Street												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	218.8	213.9	0.98
All Pedestrians		150	158	54.3	LOS E	0.2	0.2	0.95	0.95	223.4	219.8	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 AM Base Option A1 (Site Folder: 2033 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

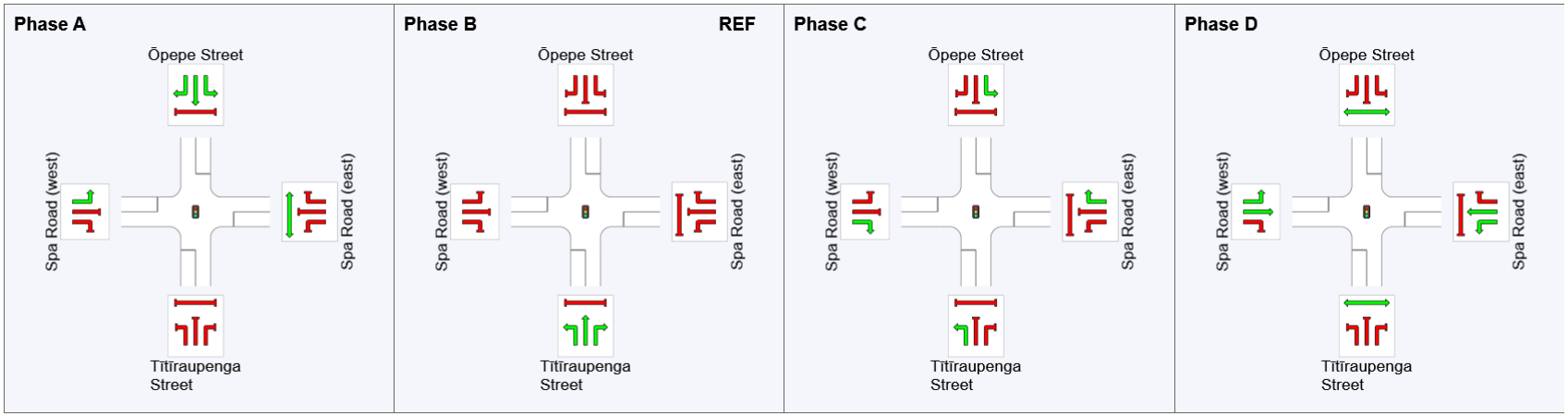
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase B
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Phase Timing Summary

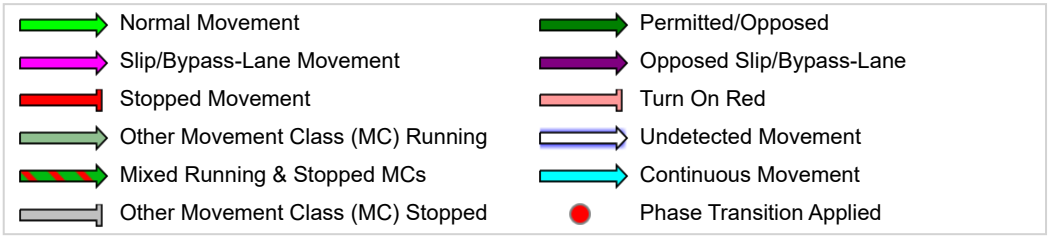
Phase	A	B	C	D
Phase Change Time (sec)	89	0	13	37
Green Time (sec)	25	7	18	46
Phase Time (sec)	31	13	24	52
Phase Split	26%	11%	20%	43%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

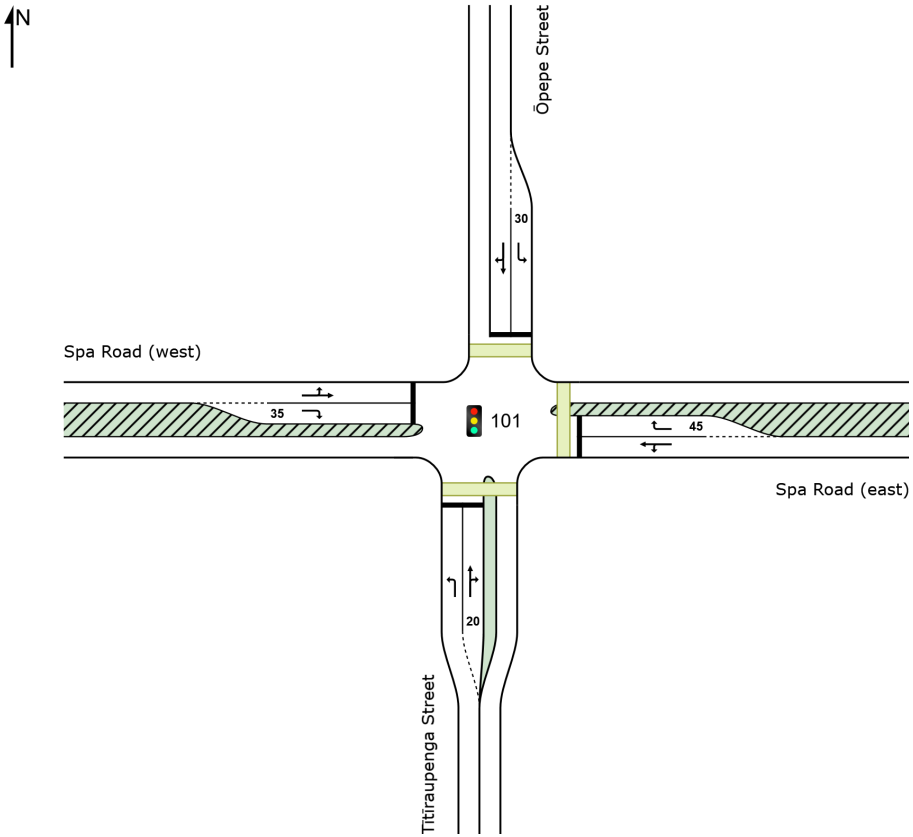


SITE LAYOUT

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 PM Base Option A1 (Site Folder: 2033 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 PM Base Option A1 (Site Folder: 2033 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street														
1	L2	107	1	113	0.9	0.269	43.3	LOS D	5.3	37.2	0.84	0.76	0.84	32.6
2	T1	38	1	40	2.6	*0.519	64.3	LOS E	3.0	21.6	1.00	0.74	1.01	34.2
3	R2	9	0	9	0.0	0.519	68.9	LOS E	3.0	21.6	1.00	0.74	1.01	44.3
Approach		154	2	162	1.3	0.519	50.0	LOS D	5.3	37.2	0.89	0.75	0.89	35.4
East: Spa Road (east)														
4	L2	57	0	60	0.0	1.127	188.0	LOS F	84.6	608.0	1.00	1.78	2.15	36.7
5	T1	604	21	636	3.5	*1.127	181.8	LOS F	84.6	608.0	1.00	1.78	2.15	36.5
6	R2	24	1	25	4.2	0.093	52.4	LOS D	1.3	9.3	0.89	0.71	0.89	45.7
Approach		685	22	721	3.2	1.127	177.8	LOS F	84.6	608.0	1.00	1.74	2.10	36.8
North: Ōpepe Street														
7	L2	53	1	56	1.9	*0.228	35.5	LOS D	2.2	15.4	0.93	0.74	0.93	47.0
8	T1	86	0	91	0.0	0.226	42.6	LOS D	4.5	31.3	0.87	0.69	0.87	38.4
9	R2	1	0	1	0.0	0.226	47.2	LOS D	4.5	31.3	0.87	0.69	0.87	37.6
Approach		140	1	147	0.7	0.228	40.0	LOS D	4.5	31.3	0.89	0.71	0.89	44.1
West: Spa Road (west)														
10	L2	13	0	14	0.0	0.852	47.3	LOS D	33.3	241.0	0.95	0.93	1.05	38.2
11	T1	542	21	571	3.9	0.852	40.9	LOS D	33.3	241.0	0.95	0.93	1.05	46.2
12	R2	48	0	51	0.0	0.181	53.2	LOS D	2.6	18.4	0.91	0.74	0.91	30.1
Approach		603	21	635	3.5	0.852	42.0	LOS D	33.3	241.0	0.95	0.92	1.04	45.8
All Vehicles		1582	46	1665	2.9	1.127	101.4	LOS F	84.6	608.0	0.96	1.24	1.47	40.4

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.

Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Tītīraupenga Street												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	230.3	228.8	0.99
East: Spa Road (east)												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.0	216.8	0.98
North: Ōpepe Street												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	218.8	213.9	0.98
All Pedestrians		150	158	54.3	LOS E	0.2	0.2	0.95	0.95	223.4	219.8	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 PM Base Option A1 (Site Folder: 2033 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

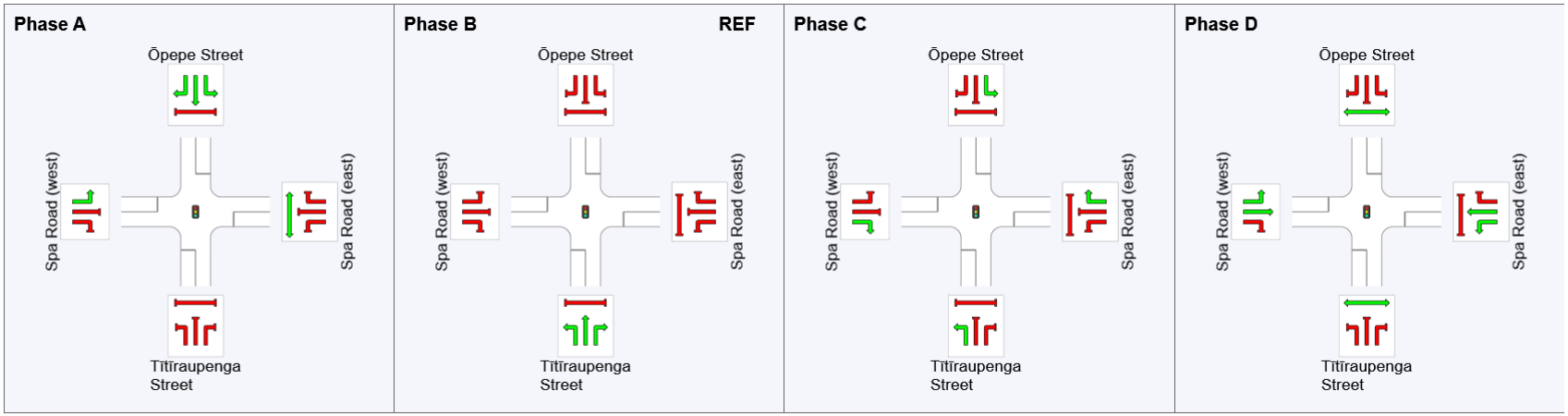
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase B
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Phase Timing Summary

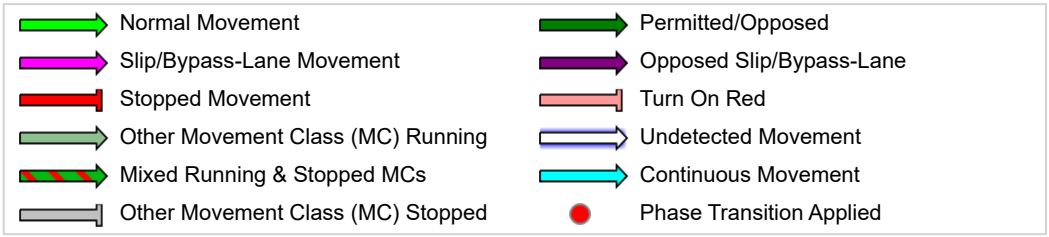
Phase	A	B	C	D
Phase Change Time (sec)	89	0	12	36
Green Time (sec)	25	6	18	47
Phase Time (sec)	31	12	24	53
Phase Split	26%	10%	20%	44%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

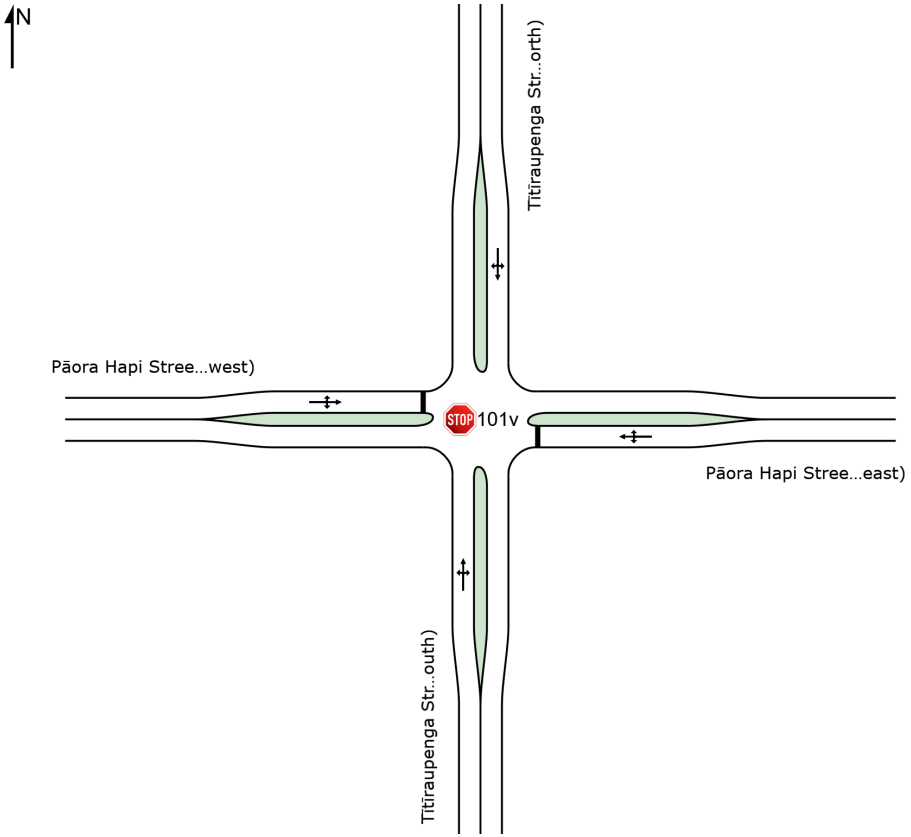


SITE LAYOUT

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2033 AM Base Option A1 (Site Folder: 2033 Option A1)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2033 AM Base Option A1 (Site Folder: 2033 Option A1)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street (south)														
1	L2	76	1	80	1.3	0.257	4.7	LOS A	0.1	0.9	0.03	0.10	0.03	40.4
2	T1	382	2	402	0.5	0.257	0.0	LOS A	0.1	0.9	0.03	0.10	0.03	49.0
3	R2	9	0	9	0.0	0.257	5.7	LOS A	0.1	0.9	0.03	0.10	0.03	47.3
Approach		467	3	492	0.6	0.257	0.9	NA	0.1	0.9	0.03	0.10	0.03	47.4
East: Pāora Hapi Street (east)														
4	L2	15	0	16	0.0	0.069	8.5	LOS A	0.2	1.7	0.49	0.96	0.49	39.6
5	T1	19	0	20	0.0	0.069	13.4	LOS B	0.2	1.7	0.49	0.96	0.49	30.9
6	R2	4	0	4	0.0	0.069	13.7	LOS B	0.2	1.7	0.49	0.96	0.49	37.2
Approach		38	0	40	0.0	0.069	11.5	LOS B	0.2	1.7	0.49	0.96	0.49	35.0
North: Tītīraupenga Street (north)														
7	L2	3	0	3	0.0	0.156	6.6	LOS A	0.3	1.8	0.11	0.05	0.11	47.7
8	T1	246	3	259	1.2	0.156	0.3	LOS A	0.3	1.8	0.11	0.05	0.11	49.0
9	R2	21	0	22	0.0	0.156	6.8	LOS A	0.3	1.8	0.11	0.05	0.11	38.0
Approach		270	3	284	1.1	0.156	0.9	NA	0.3	1.8	0.11	0.05	0.11	48.1
West: Pāora Hapi Street (west)														
10	L2	20	0	21	0.0	0.697	14.0	LOS B	4.6	32.0	0.83	1.44	1.70	26.2
11	T1	19	0	20	0.0	0.697	19.2	LOS C	4.6	32.0	0.83	1.44	1.70	25.4
12	R2	225	1	237	0.4	0.697	21.6	LOS C	4.6	32.0	0.83	1.44	1.70	28.5
Approach		264	1	278	0.4	0.697	20.9	LOS C	4.6	32.0	0.83	1.44	1.70	28.1
All Vehicles		1039	7	1094	0.7	0.697	6.4	NA	4.6	32.0	0.27	0.46	0.49	40.4

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.

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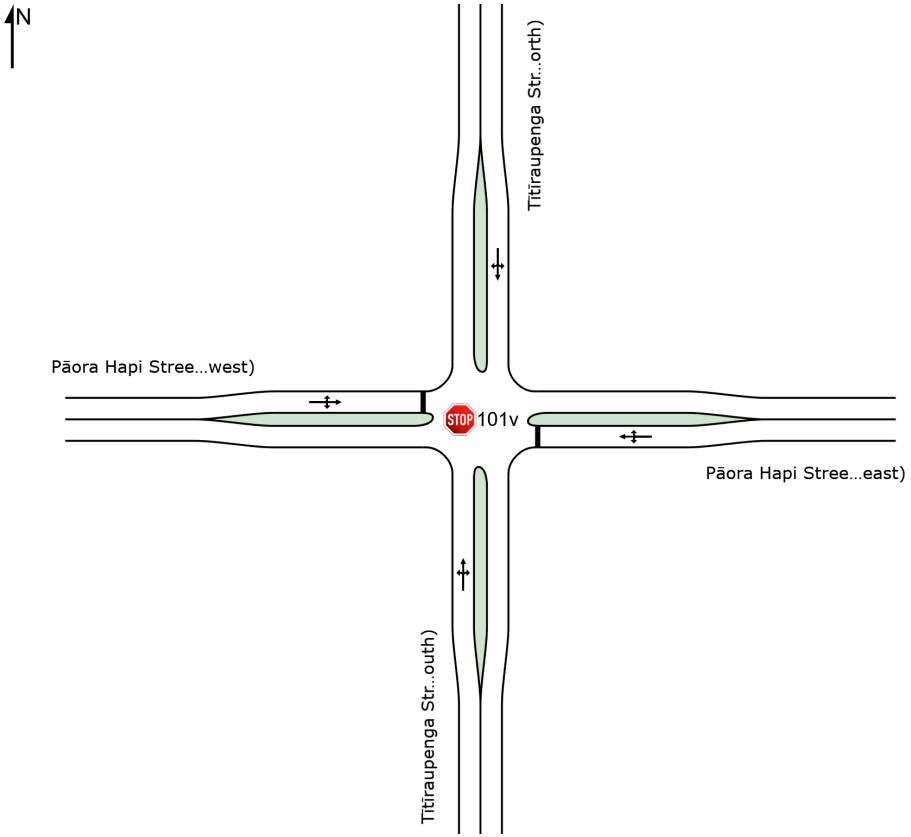
SITE LAYOUT

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2033 PM Base Option A1 (Site Folder: 2033 Option A1)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2033 PM Base Option A1 (Site Folder: 2033 Option A1)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street (south)														
1	L2	81	1	85	1.2	0.139	4.7	LOS A	0.1	0.7	0.04	0.19	0.04	39.8
2	T1	159	1	167	0.6	0.139	0.1	LOS A	0.1	0.7	0.04	0.19	0.04	48.0
3	R2	8	0	8	0.0	0.139	5.5	LOS A	0.1	0.7	0.04	0.19	0.04	46.4
Approach		248	2	261	0.8	0.139	1.7	NA	0.1	0.7	0.04	0.19	0.04	45.0
East: Pāora Hapi Street (east)														
4	L2	9	0	9	0.0	0.055	8.4	LOS A	0.2	1.3	0.45	0.94	0.45	40.7
5	T1	22	0	23	0.0	0.055	10.5	LOS B	0.2	1.3	0.45	0.94	0.45	31.7
6	R2	6	0	6	0.0	0.055	10.6	LOS B	0.2	1.3	0.45	0.94	0.45	38.3
Approach		37	0	39	0.0	0.055	10.0	LOS A	0.2	1.3	0.45	0.94	0.45	34.9
North: Tītīraupenga Street (north)														
7	L2	6	0	6	0.0	0.149	5.4	LOS A	0.2	1.6	0.09	0.07	0.09	47.7
8	T1	233	1	245	0.4	0.149	0.1	LOS A	0.2	1.6	0.09	0.07	0.09	49.0
9	R2	25	0	26	0.0	0.149	5.5	LOS A	0.2	1.6	0.09	0.07	0.09	38.0
Approach		264	1	278	0.4	0.149	0.8	NA	0.2	1.6	0.09	0.07	0.09	47.9
West: Pāora Hapi Street (west)														
10	L2	23	0	24	0.0	0.561	8.7	LOS A	3.6	25.6	0.64	1.22	1.04	29.6
11	T1	19	0	20	0.0	0.561	12.2	LOS B	3.6	25.6	0.64	1.22	1.04	28.7
12	R2	266	1	280	0.4	0.561	13.4	LOS B	3.6	25.6	0.64	1.22	1.04	31.7
Approach		308	1	324	0.3	0.561	13.0	LOS B	3.6	25.6	0.64	1.22	1.04	31.4
All Vehicles		857	4	902	0.5	0.561	5.8	NA	3.6	25.6	0.29	0.55	0.43	39.4

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.

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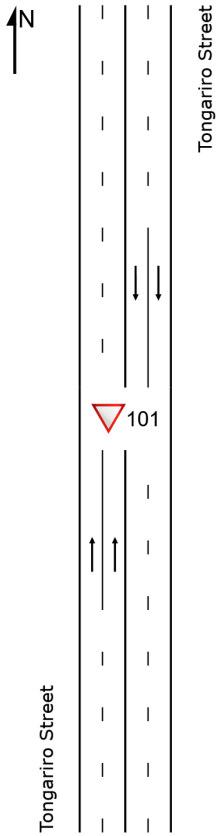
SITE LAYOUT

Site: 101 [TCG Bridge 2033 AM (Site Folder: 2033 Option A1)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [TCG Bridge 2033 AM (Site Folder: 2033 Option A1)]

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: Tongariro Street														
2	T1	799	5.0	841	5.0	0.223	4.2	LOS A	0.0	0.0	0.00	0.53	0.00	54.6
Approach		799	5.0	841	5.0	0.223	4.2	NA	0.0	0.0	0.00	0.53	0.00	54.6
North: Tongariro Street														
8	T1	2103	5.0	2214	5.0	0.586	4.4	LOS A	0.0	0.0	0.00	0.53	0.00	54.3
Approach		2103	5.0	2214	5.0	0.586	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.3
All Vehicles		2902	5.0	3055	5.0	0.586	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.4

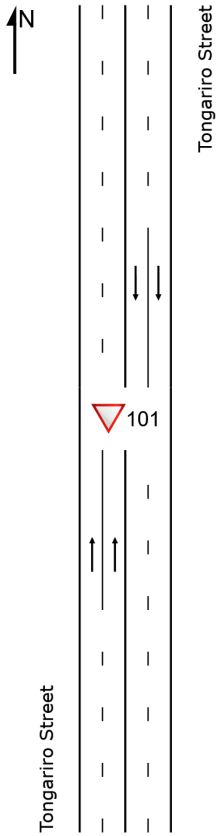
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and 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.

SITE LAYOUT

Site: 101 [TCG Bridge 2033 PM (Site Folder: 2033 Option A1)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [TCG Bridge 2033 PM (Site Folder: 2033 Option A1)]

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: Tongariro Street														
2	T1	1809	5.0	1904	5.0	0.504	4.4	LOS A	0.0	0.0	0.00	0.53	0.00	54.4
Approach		1809	5.0	1904	5.0	0.504	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.4
North: Tongariro Street														
8	T1	1054	5.0	1109	5.0	0.294	4.3	LOS A	0.0	0.0	0.00	0.53	0.00	54.6
Approach		1054	5.0	1109	5.0	0.294	4.3	NA	0.0	0.0	0.00	0.53	0.00	54.6
All Vehicles		2863	5.0	3014	5.0	0.504	4.3	NA	0.0	0.0	0.00	0.53	0.00	54.5

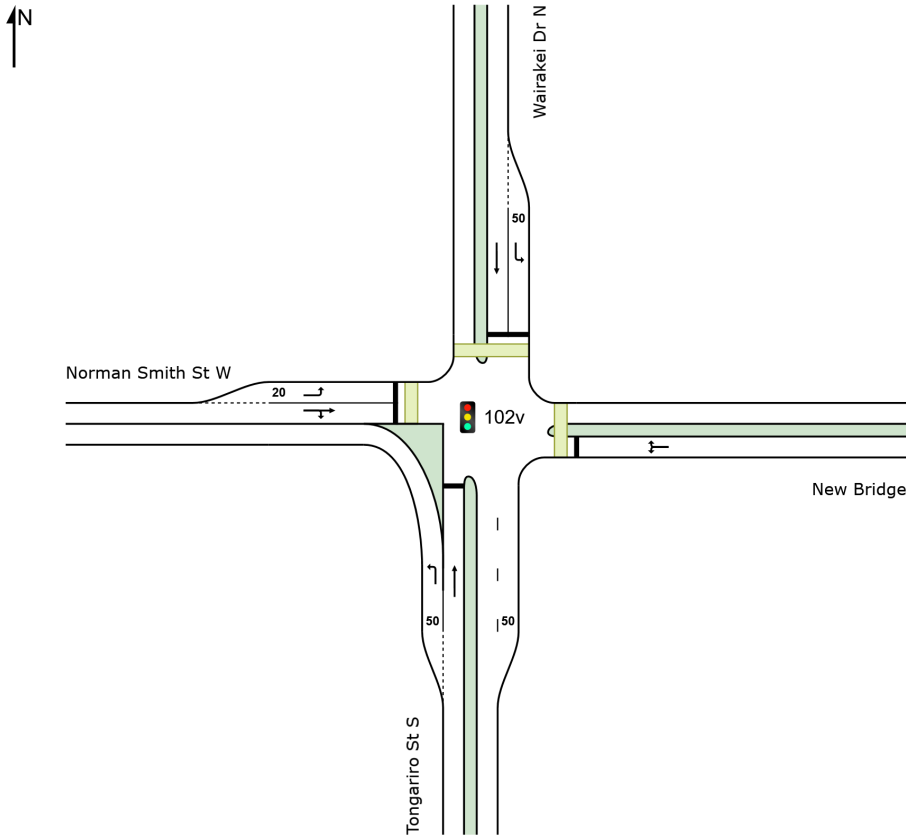
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and 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.

SITE LAYOUT

Site: 102v [Norman / Wairakei 2033 AM Base Option B1 (Site Folder: 2033 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 102v [Norman / Wairakei 2033 AM Base Option B1 (Site Folder: 2033 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tongariro St S														
1	L2	416	22	438	5.3	0.245	4.5	LOS A	0.0	0.0	0.00	0.46	0.00	48.1
2	T1	243	12	256	4.9	0.820	48.0	LOS D	14.3	104.1	0.90	0.89	1.09	45.9
Approach		659	34	694	5.2	0.820	20.6	LOS C	14.3	104.1	0.33	0.62	0.40	46.4
East: New Bridge														
4	L2	1	0	1	0.0	*0.510	56.5	LOS E	7.3	54.5	0.97	0.80	0.97	28.3
6	R2	125	9	132	7.2	0.510	56.5	LOS E	7.3	54.5	0.97	0.80	0.97	45.2
Approach		126	9	133	7.1	0.510	56.5	LOS E	7.3	54.5	0.97	0.80	0.97	45.2
North: Wairakei Dr N														
7	L2	416	12	438	2.9	*1.587	584.5	LOS F	95.3	683.9	1.00	2.26	3.96	23.6
8	T1	475	16	500	3.4	1.370	391.0	LOS F	90.0	647.9	1.00	2.61	3.25	28.7
Approach		891	28	938	3.1	1.587	481.3	LOS F	95.3	683.9	1.00	2.45	3.58	26.1
West: Norman Smith St W														
10	L2	8	0	8	0.0	0.014	32.7	LOS C	0.3	2.3	0.69	0.64	0.69	47.2
11	T1	702	13	739	1.9	*1.572	564.2	LOS F	279.3	1986.8	1.00	2.80	3.86	6.7
12	R2	511	10	538	2.0	1.572	568.9	LOS F	279.3	1986.8	1.00	2.80	3.86	6.7
Approach		1221	23	1285	1.9	1.572	562.7	LOS F	279.3	1986.8	1.00	2.79	3.83	6.9
All Vehicles		2897	94	3049	3.2	1.587	392.3	LOS F	279.3	1986.8	0.85	2.10	2.85	20.8

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.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: New Bridge												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	216.3	210.6	0.97
North: Wairakei Dr N												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	80.3	33.9	0.42
West: Norman Smith St W												
P4	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	78.8	31.9	0.40
All Pedestrians		50	158	54.3	LOS E	0.2	0.2	0.95	0.95	125.1	92.1	0.74

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 102v [Norman / Wairakei 2033 AM Base Option B1 (Site Folder: 2033 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

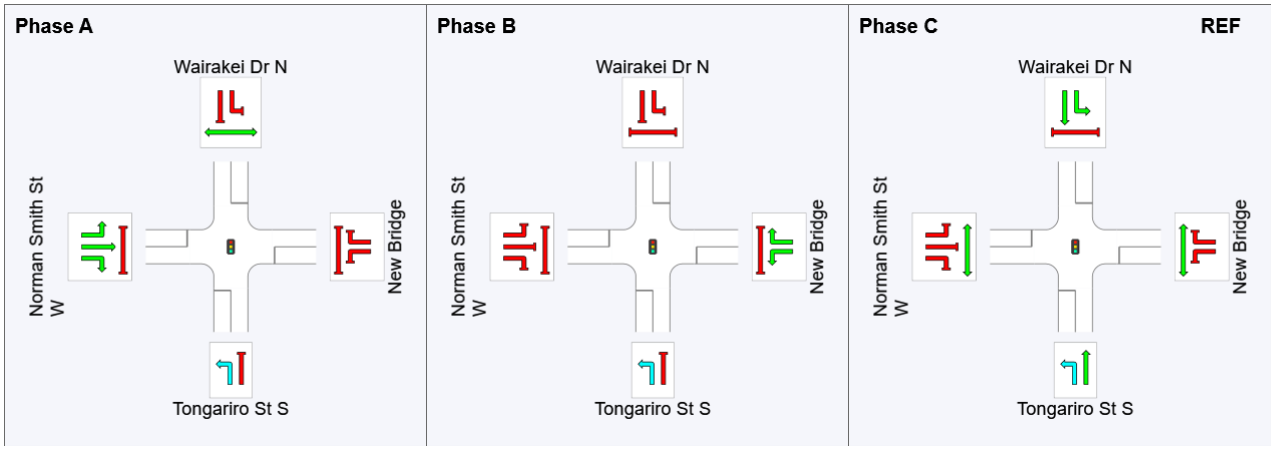
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase C
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

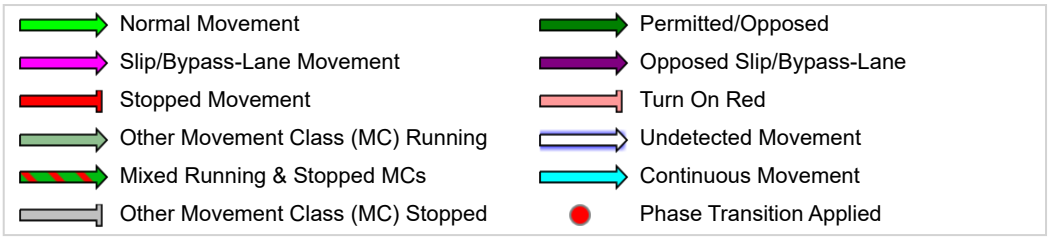
Phase	A	B	C
Phase Change Time (sec)	38	96	0
Green Time (sec)	52	18	32
Phase Time (sec)	58	24	38
Phase Split	48%	20%	32%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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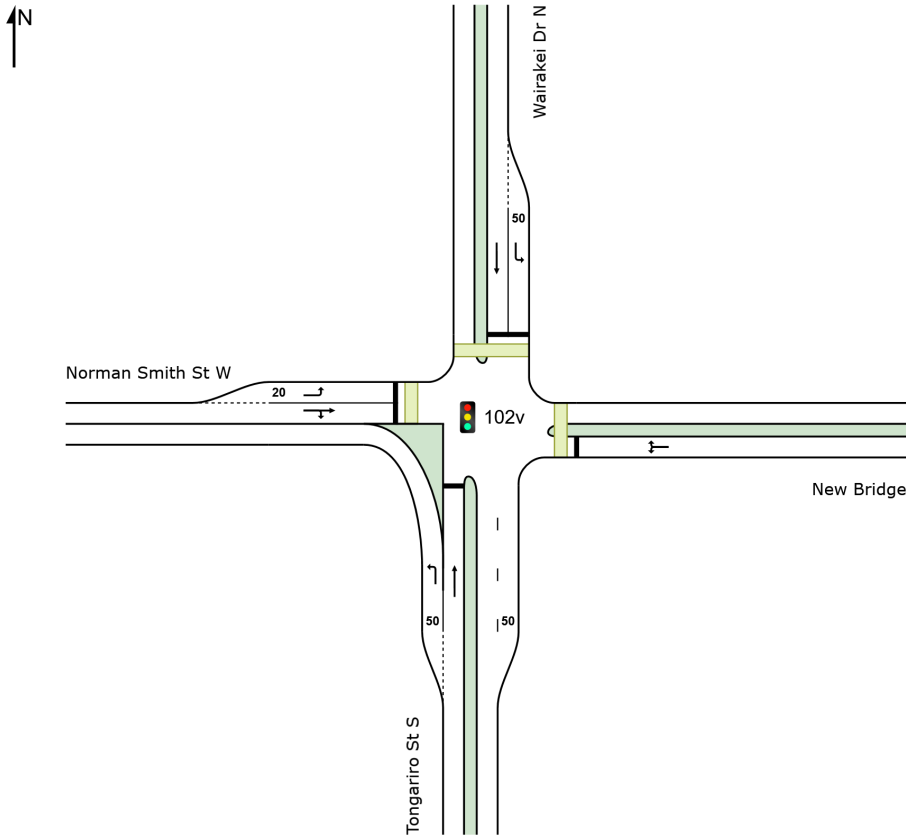
SITE LAYOUT

Site: 102v [Norman / Wairakei 2033 PM Base Option B1 (Site Folder: 2033 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 102v [Norman / Wairakei 2033 PM Base Option B1 (Site Folder: 2033 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tongariro St S														
1	L2	1100	18	1158	1.6	0.631	4.8	LOS A	0.0	0.0	0.00	0.46	0.00	47.8
2	T1	317	4	334	1.3	* 1.133	196.4	LOS F	42.0	297.3	1.00	1.77	2.31	36.5
Approach		1417	22	1492	1.6	1.133	47.6	LOS D	42.0	297.3	0.22	0.75	0.52	39.9
East: New Bridge														
4	L2	1	0	1	0.0	1.063	141.6	LOS F	42.7	304.1	1.00	1.27	1.90	16.9
6	R2	398	8	419	2.0	* 1.063	141.6	LOS F	42.7	304.1	1.00	1.27	1.90	39.4
Approach		399	8	420	2.0	1.063	141.6	LOS F	42.7	304.1	1.00	1.27	1.90	39.4
North: Wairakei Dr N														
7	L2	211	8	222	3.8	0.526	48.3	LOS D	11.5	82.9	0.93	0.81	0.93	45.8
8	T1	198	5	208	2.5	0.352	34.6	LOS C	9.4	67.5	0.82	0.69	0.82	47.0
Approach		409	13	431	3.2	0.526	41.6	LOS D	11.5	82.9	0.88	0.75	0.88	46.4
West: Norman Smith St W														
10	L2	6	0	6	0.0	0.015	42.9	LOS D	0.3	2.0	0.80	0.65	0.80	46.4
11	T1	357	13	376	3.6	* 1.112	169.7	LOS F	78.5	563.6	1.00	1.59	2.07	16.8
12	R2	280	6	295	2.1	1.112	174.3	LOS F	78.5	563.6	1.00	1.59	2.07	16.9
Approach		643	19	677	3.0	1.112	170.5	LOS F	78.5	563.6	1.00	1.58	2.06	17.4
All Vehicles		2868	62	3019	2.2	1.133	87.4	LOS F	78.5	563.6	0.60	1.01	1.11	37.5

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.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: New Bridge												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	216.3	210.6	0.97
North: Wairakei Dr N												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	80.3	33.9	0.42
West: Norman Smith St W												
P4	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	78.8	31.9	0.40
All Pedestrians		50	158	54.3	LOS E	0.2	0.2	0.95	0.95	125.1	92.1	0.74

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 102v [Norman / Wairakei 2033 PM Base Option B1 (Site Folder: 2033 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

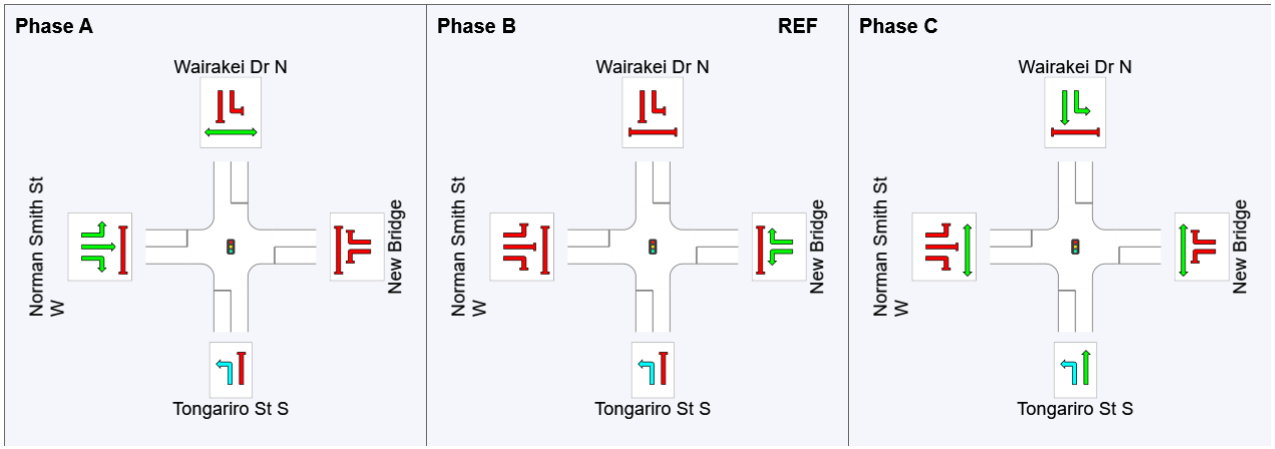
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase B
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

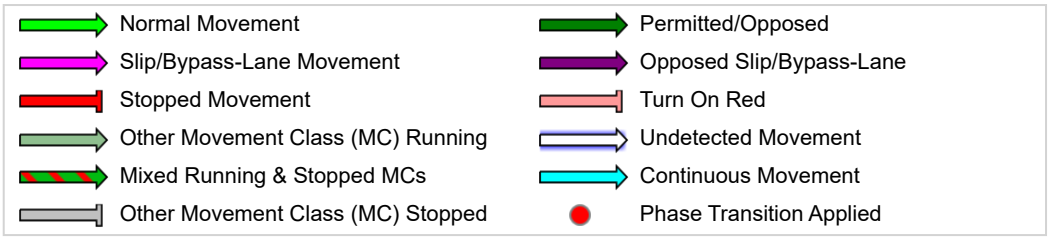
Phase	A	B	C
Phase Change Time (sec)	75	0	32
Green Time (sec)	39	26	37
Phase Time (sec)	45	32	43
Phase Split	38%	27%	36%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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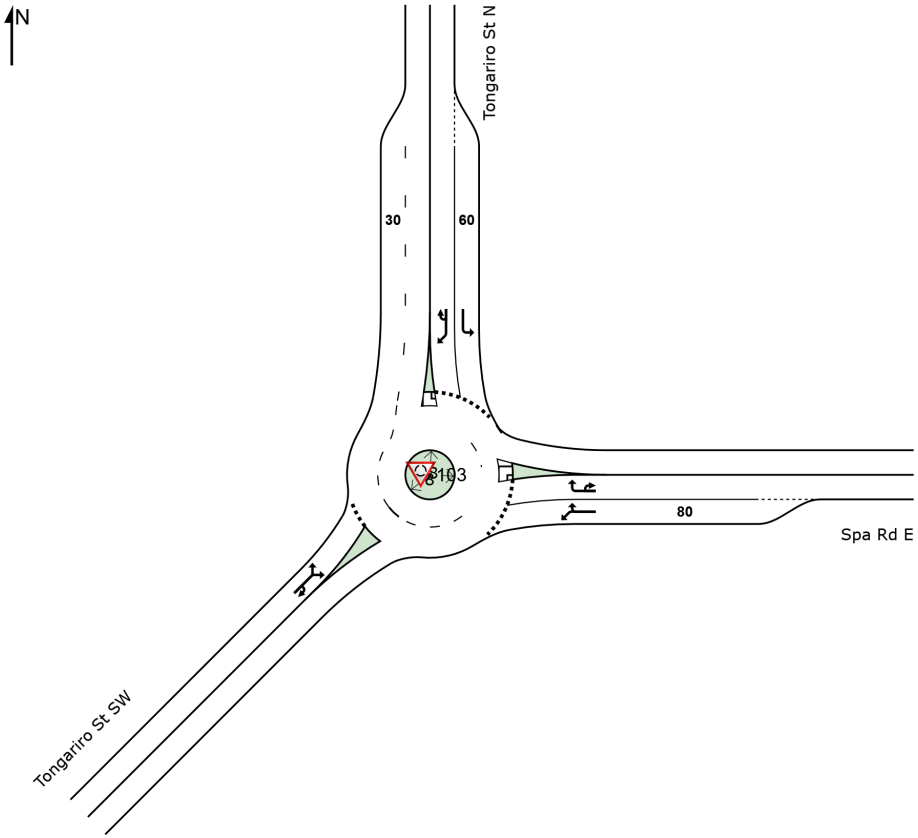
SITE LAYOUT

Site: 103 [Spa / Tongariro 2033 AM Base Option B1 (Site Folder: 2033 Option B1)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 103 [Spa / Tongariro 2033 AM Base Option B1 (Site Folder: 2033 Option B1)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
East: Spa Rd E														
4a	L1	37	0	39	0.0	0.112	7.8	LOS A	0.6	4.2	0.65	0.75	0.65	43.9
6	R2	369	18	388	4.9	0.368	10.6	LOS B	2.5	18.5	0.72	0.79	0.72	44.3
6u	U	1	1	1	100.0	0.368	15.6	LOS B	2.5	18.5	0.73	0.80	0.73	43.1
Approach		407	19	428	4.7	0.368	10.4	LOS B	2.5	18.5	0.71	0.79	0.71	44.2
North: Tongariro St N														
7	L2	410	6	432	1.5	0.328	4.9	LOS A	2.4	17.1	0.30	0.52	0.30	45.9
9a	R1	490	20	516	4.1	0.386	6.5	LOS A	3.1	22.5	0.30	0.57	0.30	44.9
9u	U	62	0	65	0.0	0.386	8.8	LOS A	3.1	22.5	0.30	0.57	0.30	46.3
Approach		962	26	1013	2.7	0.386	5.9	LOS A	3.1	22.5	0.30	0.54	0.30	45.4
SouthWest: Tongariro St SW														
30a	L1	358	15	377	4.2	0.566	5.0	LOS A	4.1	29.7	0.72	0.81	0.83	29.2
32a	R1	64	0	67	0.0	0.566	7.4	LOS A	4.1	29.7	0.72	0.81	0.83	29.2
32u	U	1	0	1	0.0	0.566	8.8	LOS A	4.1	29.7	0.72	0.81	0.83	29.8
Approach		423	15	445	3.5	0.566	5.3	LOS A	4.1	29.7	0.72	0.81	0.83	29.2
All Vehicles		1792	60	1886	3.3	0.566	6.8	LOS A	4.1	29.7	0.49	0.66	0.52	40.2

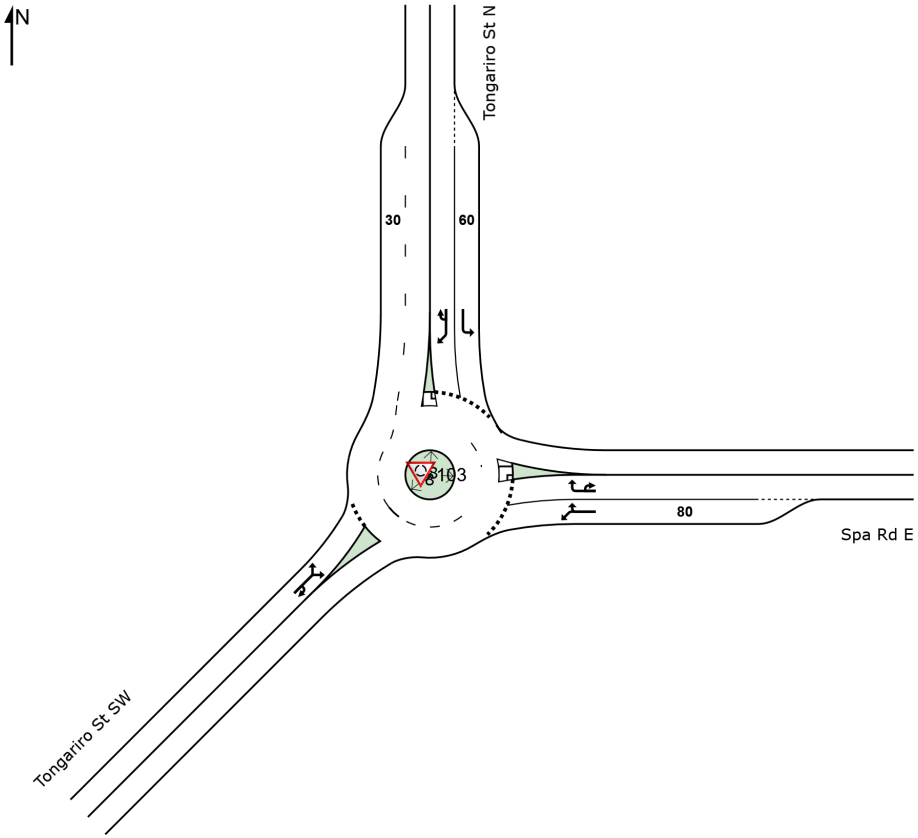
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 103 [Spa / Tongariro 2033 PM Base Option B1 (Site Folder: 2033 Option B1)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 103 [Spa / Tongariro 2033 PM Base Option B1 (Site Folder: 2033 Option B1)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
East: Spa Rd E														
4a	L1	26	0	27	0.0	0.201	6.2	LOS A	1.0	7.4	0.55	0.72	0.55	44.1
6	R2	881	13	927	1.5	0.657	10.9	LOS B	6.8	48.2	0.71	0.78	0.79	44.3
6u	U	1	1	1	100.0	0.657	15.7	LOS B	6.8	48.2	0.74	0.79	0.82	43.0
Approach		908	14	956	1.5	0.657	10.8	LOS B	6.8	48.2	0.71	0.78	0.78	44.3
North: Tongariro St N														
7	L2	192	2	202	1.0	0.150	4.5	LOS A	1.0	7.0	0.14	0.51	0.14	46.2
9a	R1	244	9	257	3.7	0.215	6.2	LOS A	1.6	11.4	0.14	0.58	0.14	45.1
9u	U	88	0	93	0.0	0.215	8.8	LOS A	1.6	11.4	0.14	0.58	0.14	46.4
Approach		524	11	552	2.1	0.215	6.0	LOS A	1.6	11.4	0.14	0.55	0.14	45.7
SouthWest: Tongariro St SW														
30a	L1	448	9	472	2.0	0.957	41.7	LOS D	17.9	127.3	1.00	2.26	3.11	22.5
32a	R1	19	0	20	0.0	0.957	43.2	LOS D	17.9	127.3	1.00	2.26	3.11	22.3
32u	U	1	0	1	0.0	0.957	44.6	LOS D	17.9	127.3	1.00	2.26	3.11	21.9
Approach		468	9	493	1.9	0.957	41.8	LOS D	17.9	127.3	1.00	2.26	3.11	22.5
All Vehicles		1900	34	2000	1.8	0.957	17.1	LOS B	17.9	127.3	0.62	1.08	1.18	36.5

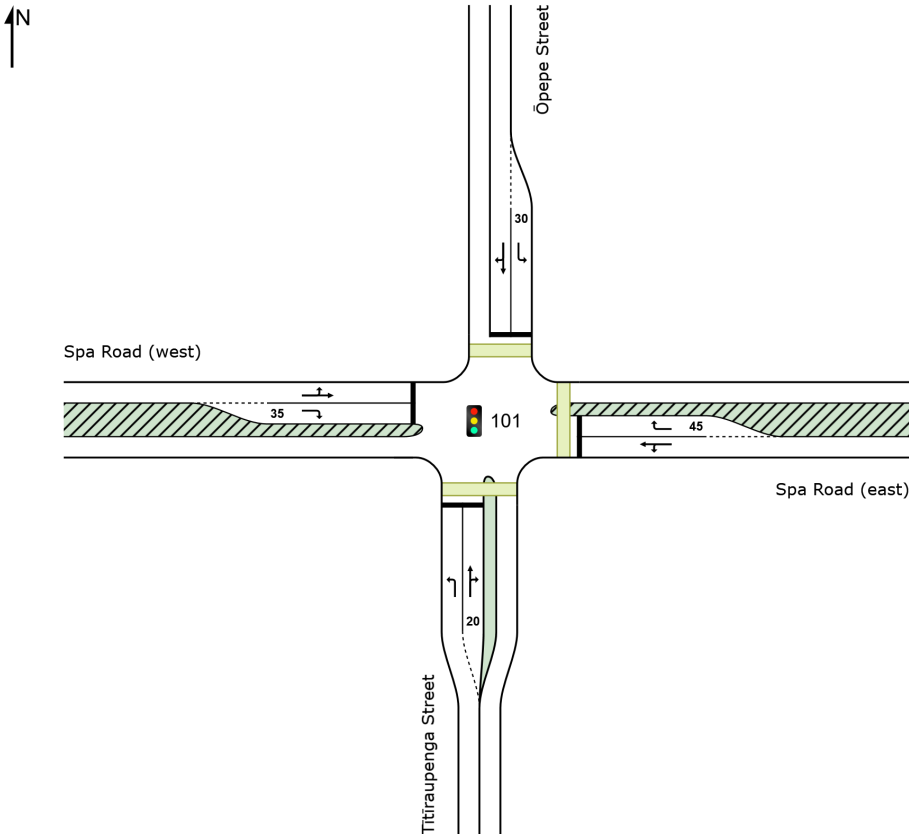
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 AM Base Option B1 (Site Folder: 2033 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 AM Base Option B1 (Site Folder: 2033 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street														
1	L2	119	1	125	0.8	0.275	38.4	LOS D	5.5	38.6	0.79	0.75	0.79	33.9
2	T1	70	1	74	1.4	*0.842	70.0	LOS E	5.3	37.6	1.00	0.93	1.40	31.5
3	R2	7	0	7	0.0	0.842	74.6	LOS E	5.3	37.6	1.00	0.93	1.40	43.9
Approach		196	2	206	1.0	0.842	51.0	LOS D	5.5	38.6	0.87	0.82	1.03	34.2
East: Spa Road (east)														
4	L2	10	0	11	0.0	*0.741	47.9	LOS D	16.5	120.5	0.92	0.82	0.97	46.3
5	T1	290	16	305	5.5	0.741	41.7	LOS D	16.5	120.5	0.92	0.82	0.97	46.2
6	R2	180	9	189	5.0	0.528	51.5	LOS D	10.1	73.5	0.95	0.81	0.95	45.6
Approach		480	25	505	5.2	0.741	45.5	LOS D	16.5	120.5	0.93	0.82	0.96	45.9
North: Ōpepe Street														
7	L2	502	23	528	4.6	*1.630	608.0	LOS F	108.3	787.9	1.00	2.31	4.07	22.8
8	T1	459	3	483	0.7	*1.710	690.3	LOS F	115.3	811.9	1.00	3.13	4.29	7.2
9	R2	4	0	4	0.0	1.710	694.9	LOS F	115.3	811.9	1.00	3.13	4.29	6.8
Approach		965	26	1016	2.7	1.710	647.5	LOS F	115.3	811.9	1.00	2.71	4.17	16.7
West: Spa Road (west)														
10	L2	1	0	1	0.0	0.177	38.1	LOS D	4.3	31.1	0.76	0.61	0.76	38.9
11	T1	95	5	100	5.3	0.177	31.7	LOS C	4.3	31.1	0.76	0.61	0.76	47.0
12	R2	26	0	27	0.0	0.074	46.4	LOS D	1.3	9.1	0.84	0.70	0.84	31.7
Approach		122	5	128	4.1	0.177	34.9	LOS C	4.3	31.1	0.78	0.63	0.78	46.1
All Vehicles		1763	58	1856	3.3	1.710	374.9	LOS F	115.3	811.9	0.95	1.84	2.71	24.2

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.

Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Tītīraupenga Street												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	230.3	228.8	0.99
East: Spa Road (east)												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.0	216.8	0.98
North: Ōpepe Street												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	218.8	213.9	0.98
All Pedestrians		150	158	54.3	LOS E	0.2	0.2	0.95	0.95	223.4	219.8	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 AM Base Option B1 (Site Folder: 2033 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

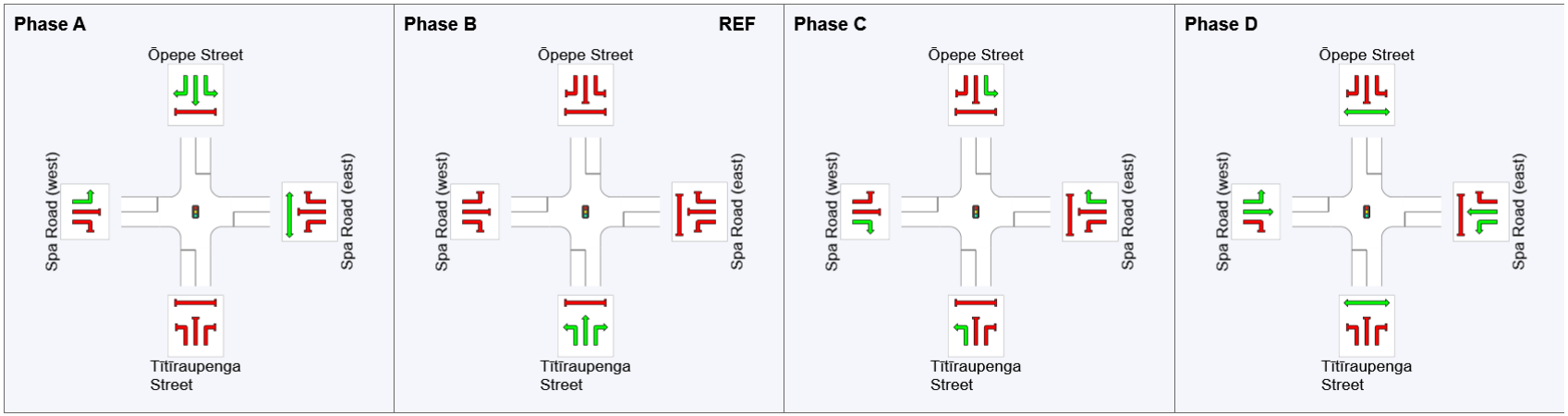
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase B
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Phase Timing Summary

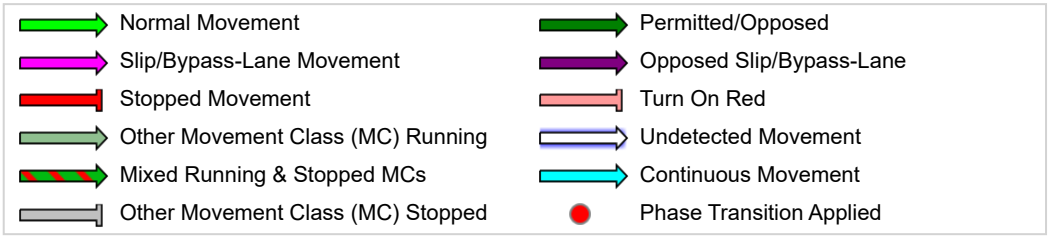
Phase	A	B	C	D
Phase Change Time (sec)	85	0	12	42
Green Time (sec)	29	6	24	37
Phase Time (sec)	35	12	30	43
Phase Split	29%	10%	25%	36%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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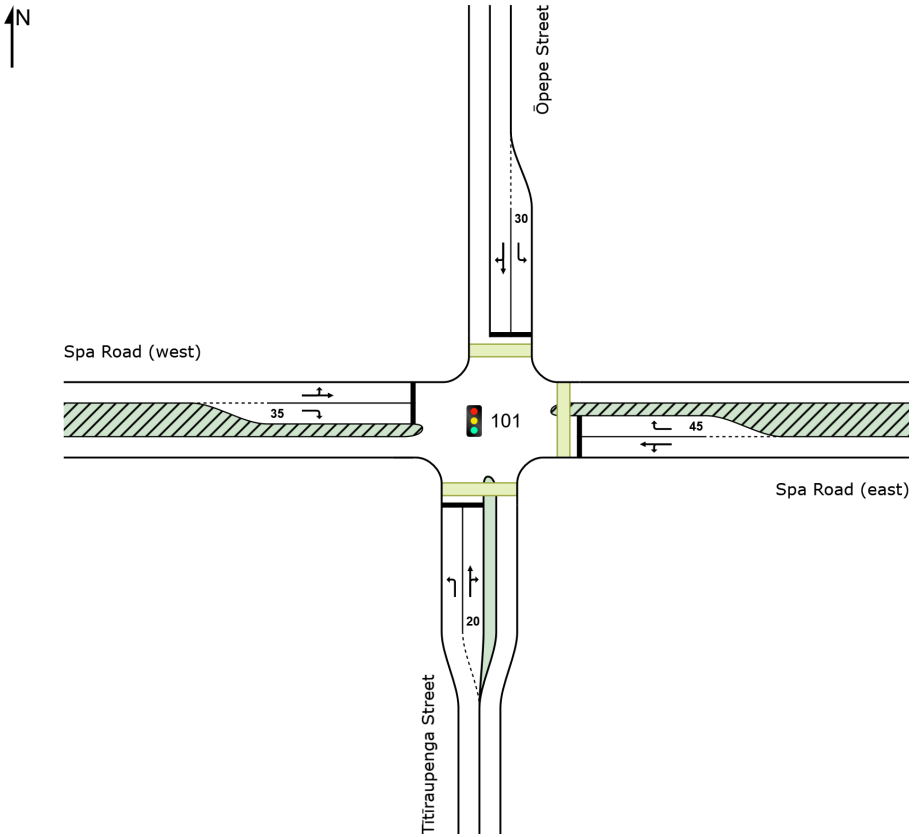
SITE LAYOUT

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 PM Base Option B1 (Site Folder: 2033 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 PM Base Option B1 (Site Folder: 2033 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street														
1	L2	184	1	194	0.5	0.521	41.6	LOS D	9.1	63.8	0.85	0.78	0.85	33.0
2	T1	136	1	143	0.7	*1.152	208.0	LOS F	18.8	132.1	1.00	1.54	2.49	17.8
3	R2	8	0	8	0.0	1.152	212.6	LOS F	18.8	132.1	1.00	1.54	2.49	35.2
Approach		328	2	345	0.6	1.152	114.8	LOS F	18.8	132.1	0.91	1.11	1.57	23.9
East: Spa Road (east)														
4	L2	5	0	5	0.0	*0.792	49.0	LOS D	17.1	124.0	0.90	0.86	1.01	46.2
5	T1	300	12	316	4.0	0.792	42.8	LOS D	17.1	124.0	0.90	0.86	1.01	46.1
6	R2	226	8	238	3.5	*1.129	193.5	LOS F	28.1	202.9	1.00	1.41	2.31	36.4
Approach		531	20	559	3.8	1.129	107.0	LOS F	28.1	202.9	0.94	1.09	1.56	41.3
North: Ōpepe Street														
7	L2	279	18	294	6.5	1.255	279.9	LOS F	39.0	287.7	1.00	1.64	2.85	31.7
8	T1	356	2	375	0.6	*1.140	199.0	LOS F	47.1	331.2	1.00	1.82	2.31	18.4
9	R2	1	0	1	0.0	1.140	203.5	LOS F	47.1	331.2	1.00	1.82	2.31	17.6
Approach		636	20	669	3.1	1.255	234.5	LOS F	47.1	331.2	1.00	1.74	2.55	27.4
West: Spa Road (west)														
10	L2	1	0	1	0.0	0.300	39.6	LOS D	7.8	55.3	0.80	0.66	0.80	38.5
11	T1	168	2	177	1.2	0.300	33.2	LOS C	7.8	55.3	0.80	0.66	0.80	46.9
12	R2	83	0	87	0.0	0.353	56.7	LOS E	4.8	33.4	0.95	0.77	0.95	29.4
Approach		252	2	265	0.8	0.353	40.9	LOS D	7.8	55.3	0.85	0.70	0.85	44.9
All Vehicles		1747	44	1839	2.5	1.255	145.3	LOS F	47.1	331.2	0.95	1.27	1.82	34.5

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.

Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Tītīraupenga Street												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	230.3	228.8	0.99
East: Spa Road (east)												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.0	216.8	0.98
North: Ōpepe Street												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	218.8	213.9	0.98
All Pedestrians		150	158	54.3	LOS E	0.2	0.2	0.95	0.95	223.4	219.8	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 PM Base Option B1 (Site Folder: 2033 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

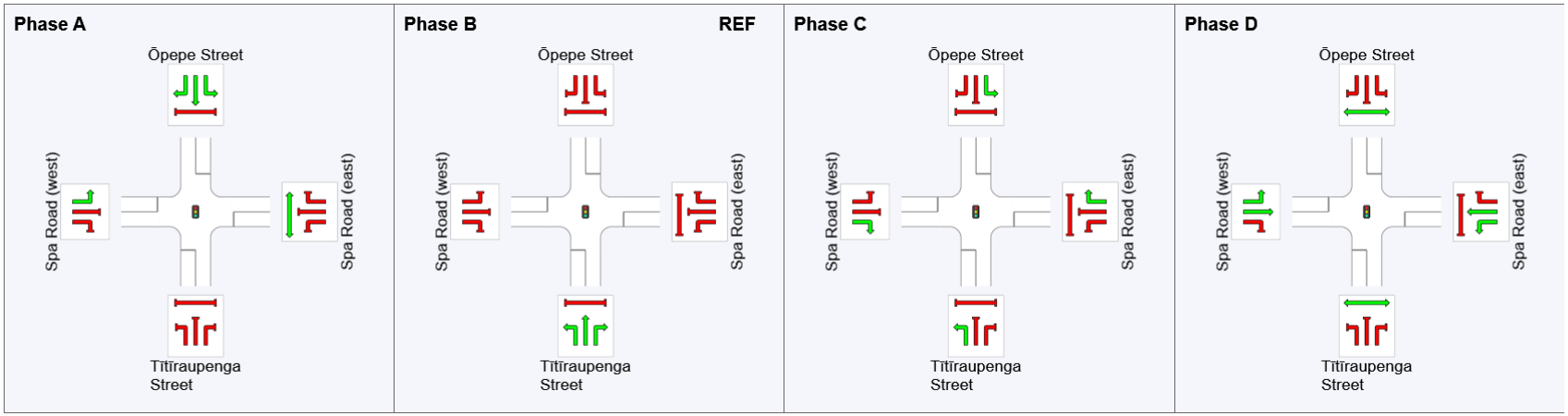
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase B
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Phase Timing Summary

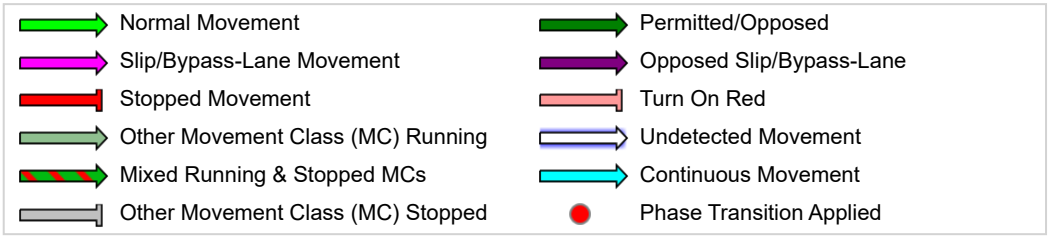
Phase	A	B	C	D
Phase Change Time (sec)	83	0	18	40
Green Time (sec)	31	12	16	37
Phase Time (sec)	37	18	22	43
Phase Split	31%	15%	18%	36%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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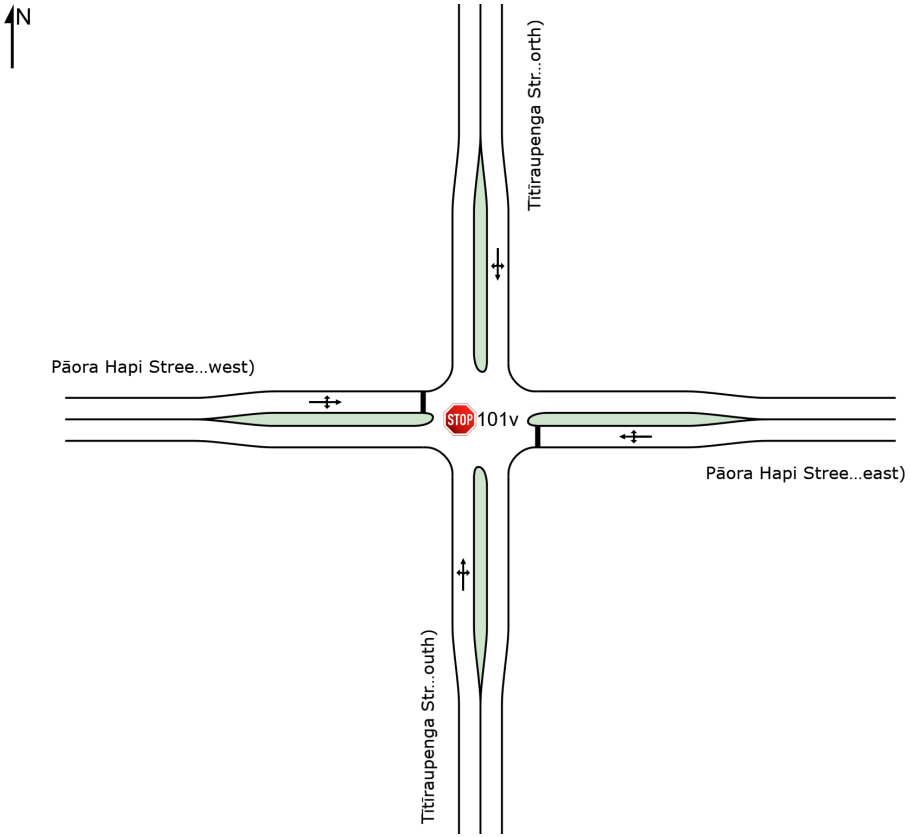
SITE LAYOUT

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2033 AM Base Option B1 (Site Folder: 2033 Option B1)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2033 AM Base Option B1 (Site Folder: 2033 Option B1)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street (south)														
1	L2	164	1	173	0.6	0.236	4.8	LOS A	0.2	1.3	0.05	0.21	0.05	39.5
2	T1	246	2	259	0.8	0.236	0.2	LOS A	0.2	1.3	0.05	0.21	0.05	47.7
3	R2	9	0	9	0.0	0.236	7.7	LOS A	0.2	1.3	0.05	0.21	0.05	46.1
Approach		419	3	441	0.7	0.236	2.1	NA	0.2	1.3	0.05	0.21	0.05	44.2
East: Pāora Hapi Street (east)														
4	L2	18	0	19	0.0	0.174	10.6	LOS B	0.6	4.1	0.72	1.01	0.72	36.9
5	T1	39	0	41	0.0	0.174	18.2	LOS C	0.6	4.1	0.72	1.01	0.72	28.8
6	R2	4	0	4	0.0	0.174	17.4	LOS C	0.6	4.1	0.72	1.01	0.72	34.3
Approach		61	0	64	0.0	0.174	15.9	LOS C	0.6	4.1	0.72	1.01	0.72	31.5
North: Tītīraupenga Street (north)														
7	L2	7	0	7	0.0	0.311	6.6	LOS A	0.3	2.4	0.07	0.03	0.08	48.2
8	T1	527	2	555	0.4	0.311	0.2	LOS A	0.3	2.4	0.07	0.03	0.08	49.4
9	R2	24	0	25	0.0	0.311	6.9	LOS A	0.3	2.4	0.07	0.03	0.08	38.3
Approach		558	2	587	0.4	0.311	0.5	NA	0.3	2.4	0.07	0.03	0.08	48.9
West: Pāora Hapi Street (west)														
10	L2	25	0	26	0.0	0.503	10.7	LOS B	2.2	15.8	0.77	1.17	1.16	26.0
11	T1	14	0	15	0.0	0.503	20.1	LOS C	2.2	15.8	0.77	1.17	1.16	25.2
12	R2	105	1	111	1.0	0.503	23.9	LOS C	2.2	15.8	0.77	1.17	1.16	28.3
Approach		144	1	152	0.7	0.503	21.3	LOS C	2.2	15.8	0.77	1.17	1.16	27.7
All Vehicles		1182	6	1244	0.5	0.503	4.4	NA	2.2	15.8	0.18	0.28	0.23	42.5

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.

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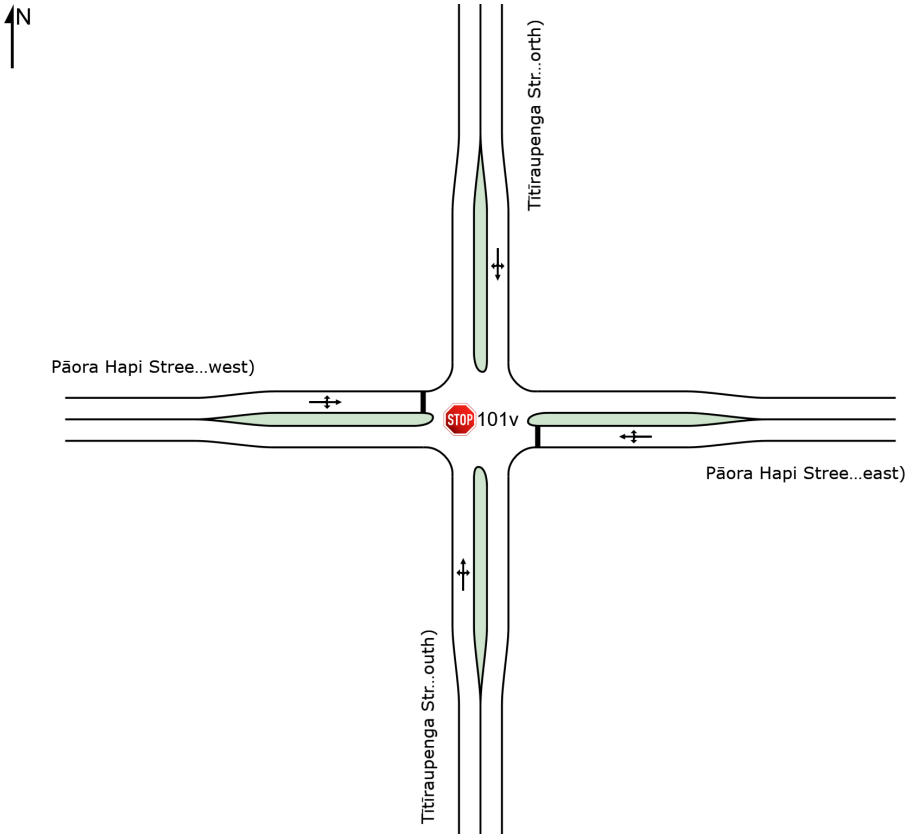
SITE LAYOUT

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2033 PM Base Option B1 (Site Folder: 2033 Option B1)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2033 PM Base Option B1 (Site Folder: 2033 Option B1)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street (south)														
1	L2	30	1	32	3.3	0.187	5.3	LOS A	0.1	1.0	0.05	0.06	0.05	40.6
2	T1	299	1	315	0.3	0.187	0.1	LOS A	0.1	1.0	0.05	0.06	0.05	49.2
3	R2	8	0	8	0.0	0.187	7.1	LOS A	0.1	1.0	0.05	0.06	0.05	47.5
Approach		337	2	355	0.6	0.187	0.7	NA	0.1	1.0	0.05	0.06	0.05	48.3
East: Pāora Hapi Street (east)														
4	L2	12	0	13	0.0	0.099	10.1	LOS B	0.3	2.3	0.65	0.99	0.65	38.0
5	T1	21	0	22	0.0	0.099	15.2	LOS C	0.3	2.3	0.65	0.99	0.65	29.6
6	R2	7	0	7	0.0	0.099	17.2	LOS C	0.3	2.3	0.65	0.99	0.65	35.5
Approach		40	0	42	0.0	0.099	14.0	LOS B	0.3	2.3	0.65	0.99	0.65	33.1
North: Tītīraupenga Street (north)														
7	L2	10	0	11	0.0	0.286	5.9	LOS A	0.3	2.0	0.07	0.04	0.07	48.2
8	T1	483	1	508	0.2	0.286	0.1	LOS A	0.3	2.0	0.07	0.04	0.07	49.4
9	R2	23	0	24	0.0	0.286	6.3	LOS A	0.3	2.0	0.07	0.04	0.07	38.3
Approach		516	1	543	0.2	0.286	0.5	NA	0.3	2.0	0.07	0.04	0.07	48.8
West: Pāora Hapi Street (west)														
10	L2	30	0	32	0.0	0.557	11.3	LOS B	2.8	19.5	0.78	1.23	1.28	26.5
11	T1	15	0	16	0.0	0.557	19.4	LOS C	2.8	19.5	0.78	1.23	1.28	25.6
12	R2	137	1	144	0.7	0.557	22.1	LOS C	2.8	19.5	0.78	1.23	1.28	28.8
Approach		182	1	192	0.5	0.557	20.1	LOS C	2.8	19.5	0.78	1.23	1.28	28.2
All Vehicles		1075	4	1132	0.4	0.557	4.4	NA	2.8	19.5	0.20	0.28	0.29	43.0

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.

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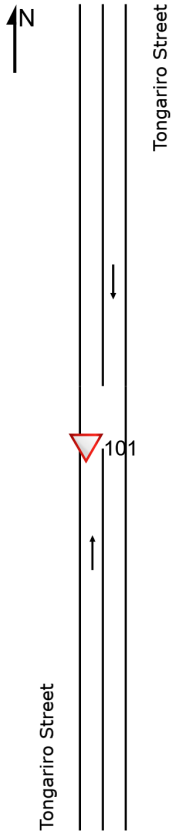
SITE LAYOUT

Site: 101 [TCG Bridge 2033 AM (Site Folder: 2033 Option B1)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [TCG Bridge 2033 AM (Site Folder: 2033 Option B1)]

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: Tongariro Street														
2	T1	659	5.0	694	5.0	0.367	4.3	LOS A	0.0	0.0	0.00	0.53	0.00	54.5
Approach		659	5.0	694	5.0	0.367	4.3	NA	0.0	0.0	0.00	0.53	0.00	54.5
North: Tongariro Street														
8	T1	986	5.0	1038	5.0	0.550	4.4	LOS A	0.0	0.0	0.00	0.53	0.00	54.4
Approach		986	5.0	1038	5.0	0.550	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.4
All Vehicles		1645	5.0	1732	5.0	0.550	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.4

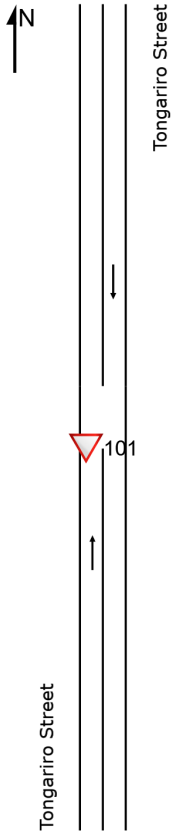
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and 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.

SITE LAYOUT

Site: 101 [TCG Bridge 2033 PM (Site Folder: 2033 Option B1)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [TCG Bridge 2033 PM (Site Folder: 2033 Option B1)]

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: Tongariro Street														
2	T1	1417	5.0	1492	5.0	0.790	4.8	LOS A	0.0	0.0	0.00	0.52	0.00	53.7
Approach		1417	5.0	1492	5.0	0.790	4.8	NA	0.0	0.0	0.00	0.52	0.00	53.7
North: Tongariro Street														
8	T1	478	5.0	503	5.0	0.266	4.2	LOS A	0.0	0.0	0.00	0.53	0.00	54.6
Approach		478	5.0	503	5.0	0.266	4.2	NA	0.0	0.0	0.00	0.53	0.00	54.6
All Vehicles		1895	5.0	1995	5.0	0.790	4.7	NA	0.0	0.0	0.00	0.52	0.00	53.9

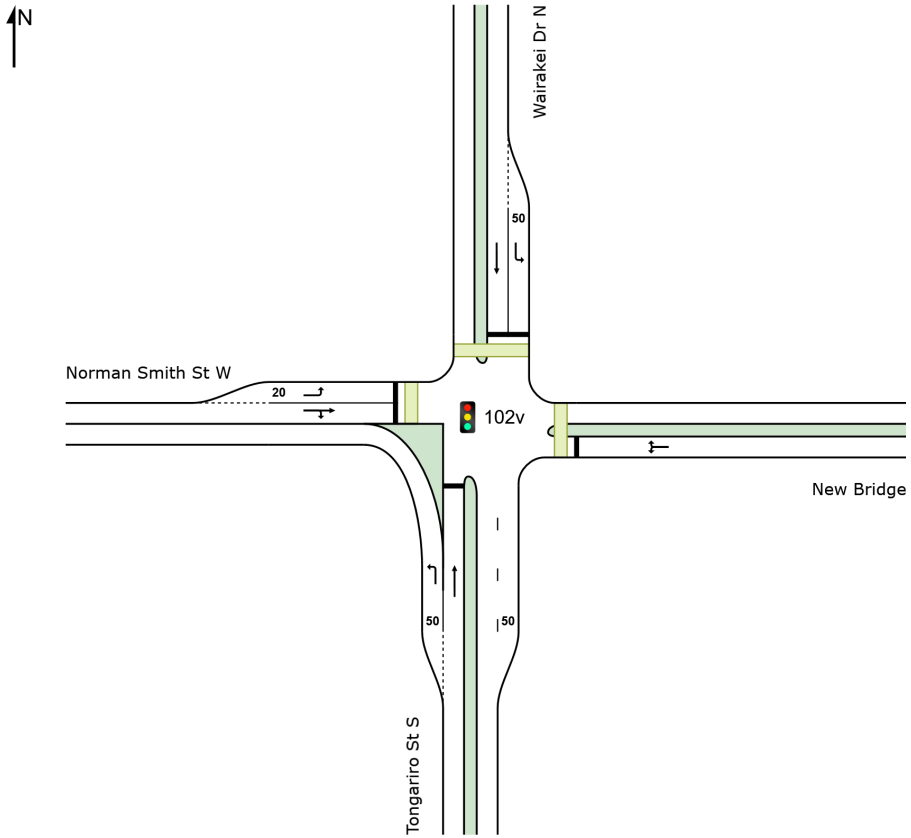
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and 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.

SITE LAYOUT

Site: 102v [Norman / Wairakei 2033 AM Base Option B2 (Site Folder: 2033 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 102v [Norman / Wairakei 2033 AM Base Option B2 (Site Folder: 2033 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tongariro St S														
1	L2	413	21	435	5.1	0.243	4.5	LOS A	0.0	0.0	0.00	0.46	0.00	48.1
2	T1	87	7	92	8.0	0.165	33.1	LOS C	3.9	29.3	0.77	0.62	0.77	47.1
Approach		500	28	526	5.6	0.243	9.5	LOS A	3.9	29.3	0.13	0.49	0.13	47.6
East: New Bridge														
4	L2	1	0	1	0.0	1.500	507.3	LOS F	62.8	458.7	1.00	2.06	3.72	6.2
6	R2	294	15	309	5.1	*1.500	507.3	LOS F	62.8	458.7	1.00	2.06	3.72	25.3
Approach		295	15	311	5.1	1.500	507.3	LOS F	62.8	458.7	1.00	2.06	3.72	25.3
North: Wairakei Dr N														
7	L2	423	13	445	3.1	*1.563	563.5	LOS F	95.3	684.7	1.00	2.23	3.89	24.1
8	T1	459	14	483	3.1	1.226	268.2	LOS F	71.6	514.5	1.00	2.20	2.67	33.1
Approach		882	27	928	3.1	1.563	409.8	LOS F	95.3	684.7	1.00	2.21	3.26	28.1
West: Norman Smith St W														
10	L2	8	0	8	0.0	0.015	34.9	LOS C	0.3	2.3	0.72	0.64	0.72	47.0
11	T1	737	14	776	1.9	*1.568	560.2	LOS F	278.1	1977.1	1.00	2.82	3.84	6.7
12	R2	475	8	500	1.7	1.568	564.8	LOS F	278.1	1977.1	1.00	2.82	3.84	6.8
Approach		1220	22	1284	1.8	1.568	558.5	LOS F	278.1	1977.1	1.00	2.81	3.82	7.0
All Vehicles		2897	92	3049	3.2	1.568	413.3	LOS F	278.1	1977.1	0.85	2.15	3.00	20.2

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.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: New Bridge												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	216.3	210.6	0.97
North: Wairakei Dr N												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	80.3	33.9	0.42
West: Norman Smith St W												
P4	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	78.8	31.9	0.40
All Pedestrians		50	158	54.3	LOS E	0.2	0.2	0.95	0.95	125.1	92.1	0.74

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 102v [Norman / Wairakei 2033 AM Base Option B2 (Site Folder: 2033 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

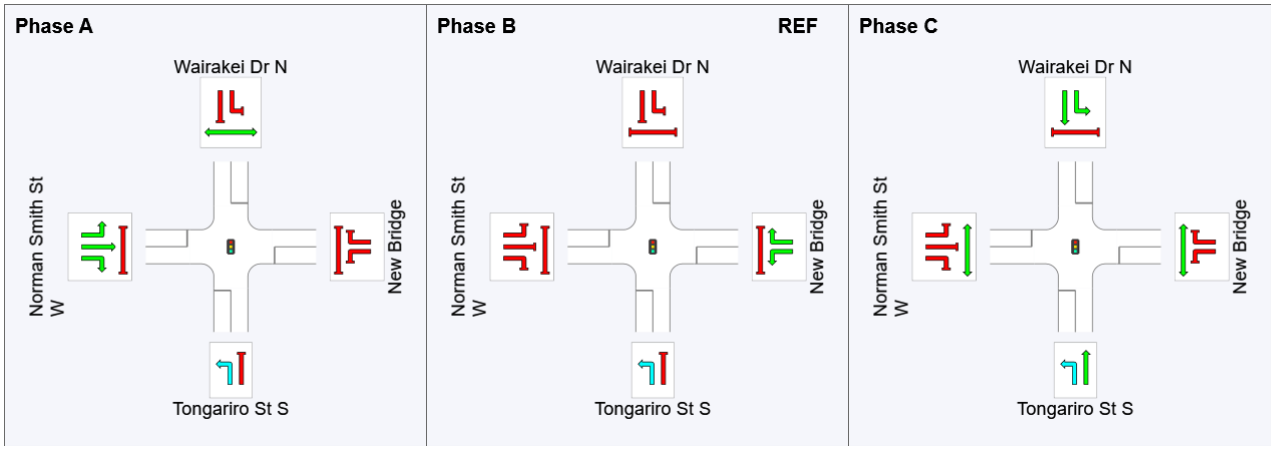
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase B
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

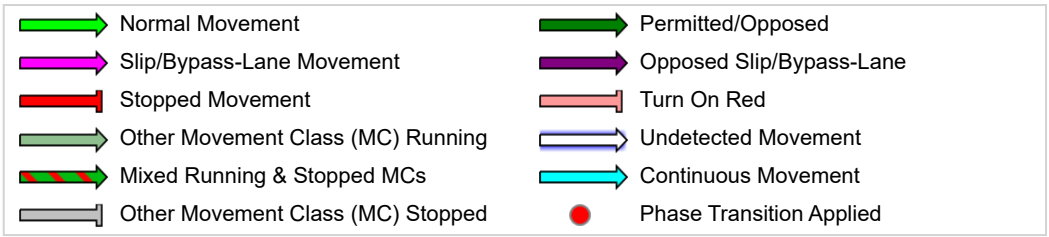
Phase	A	B	C
Phase Change Time (sec)	62	0	20
Green Time (sec)	52	14	36
Phase Time (sec)	58	20	42
Phase Split	48%	17%	35%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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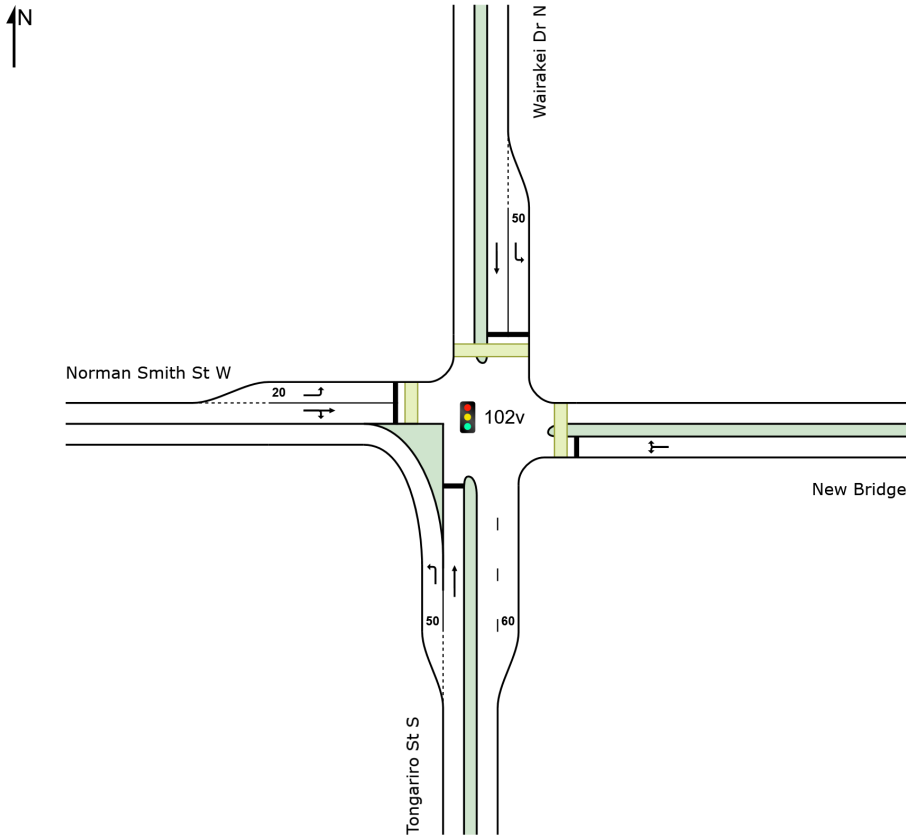
SITE LAYOUT

Site: 102v [Norman / Wairakei 2033 PM Base Option B2 (Site Folder: 2033 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 102v [Norman / Wairakei 2033 PM Base Option B2 (Site Folder: 2033 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tongariro St S														
1	L2	1098	19	1156	1.7	0.630	4.8	LOS A	0.0	0.0	0.00	0.46	0.00	47.8
2	T1	59	0	62	0.0	0.147	40.9	LOS D	2.9	20.6	0.85	0.65	0.85	46.5
Approach		1157	19	1218	1.6	0.630	6.6	LOS A	2.9	20.6	0.04	0.47	0.04	47.4
East: New Bridge														
4	L2	1	0	1	0.0	1.174	224.8	LOS F	96.3	684.3	1.00	1.52	2.38	12.1
6	R2	680	12	716	1.8	*1.174	224.8	LOS F	96.3	684.3	1.00	1.52	2.38	35.0
Approach		681	12	717	1.8	1.174	224.8	LOS F	96.3	684.3	1.00	1.52	2.38	35.0
North: Wairakei Dr N														
7	L2	271	8	285	3.0	*1.178	232.3	LOS F	37.6	269.7	1.00	1.55	2.51	34.6
8	T1	134	4	141	3.0	0.340	43.1	LOS D	7.0	50.4	0.89	0.72	0.89	46.3
Approach		405	12	426	3.0	1.178	169.7	LOS F	37.6	269.7	0.96	1.28	1.97	37.7
West: Norman Smith St W														
10	L2	6	0	6	0.0	0.019	48.4	LOS D	0.3	2.1	0.85	0.65	0.85	46.0
11	T1	491	16	517	3.3	*1.207	247.8	LOS F	96.4	692.1	1.00	1.99	2.53	12.9
12	R2	154	3	162	1.9	1.207	252.4	LOS F	96.4	692.1	1.00	1.99	2.53	13.0
Approach		651	19	685	2.9	1.207	247.1	LOS F	96.4	692.1	1.00	1.98	2.52	13.4
All Vehicles		2894	62	3046	2.1	1.207	134.9	LOS F	96.4	692.1	0.61	1.17	1.42	33.0

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.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: New Bridge												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	216.3	210.6	0.97
North: Wairakei Dr N												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	80.3	33.9	0.42
West: Norman Smith St W												
P4	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	78.8	31.9	0.40
All Pedestrians		50	158	54.3	LOS E	0.2	0.2	0.95	0.95	125.1	92.1	0.74

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 102v [Norman / Wairakei 2033 PM Base Option B2 (Site Folder: 2033 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

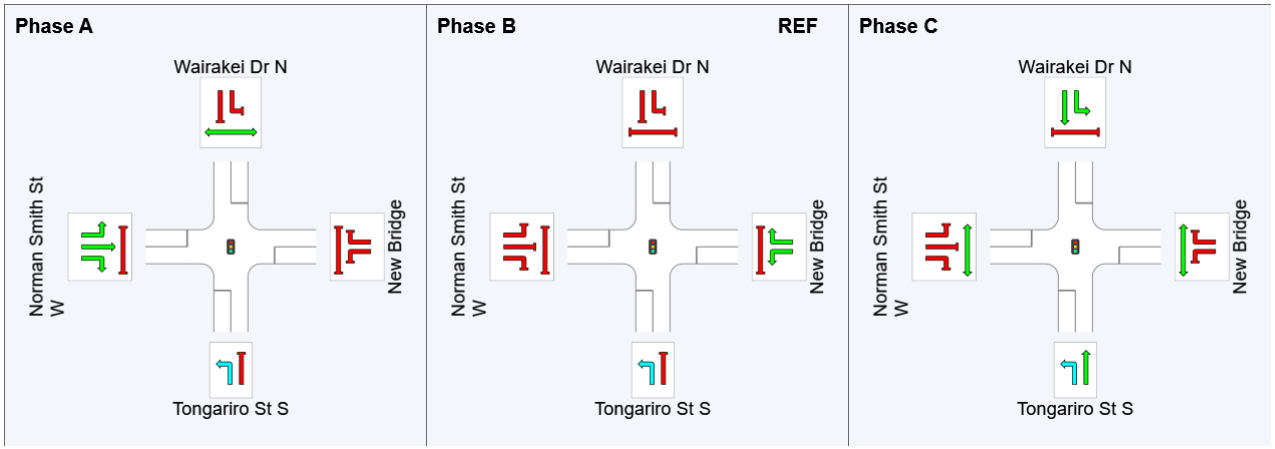
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase B
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

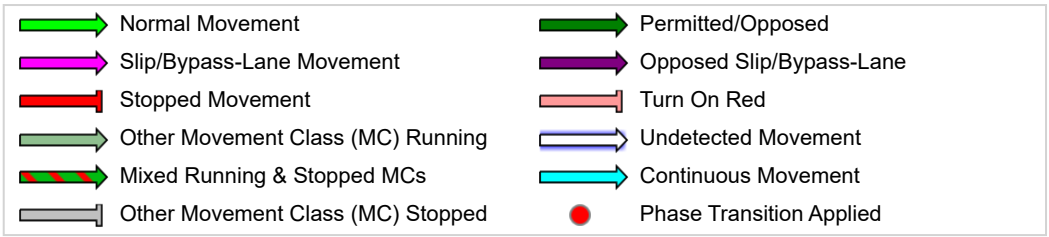
Phase	A	B	C
Phase Change Time (sec)	78	0	46
Green Time (sec)	36	40	26
Phase Time (sec)	42	46	32
Phase Split	35%	38%	27%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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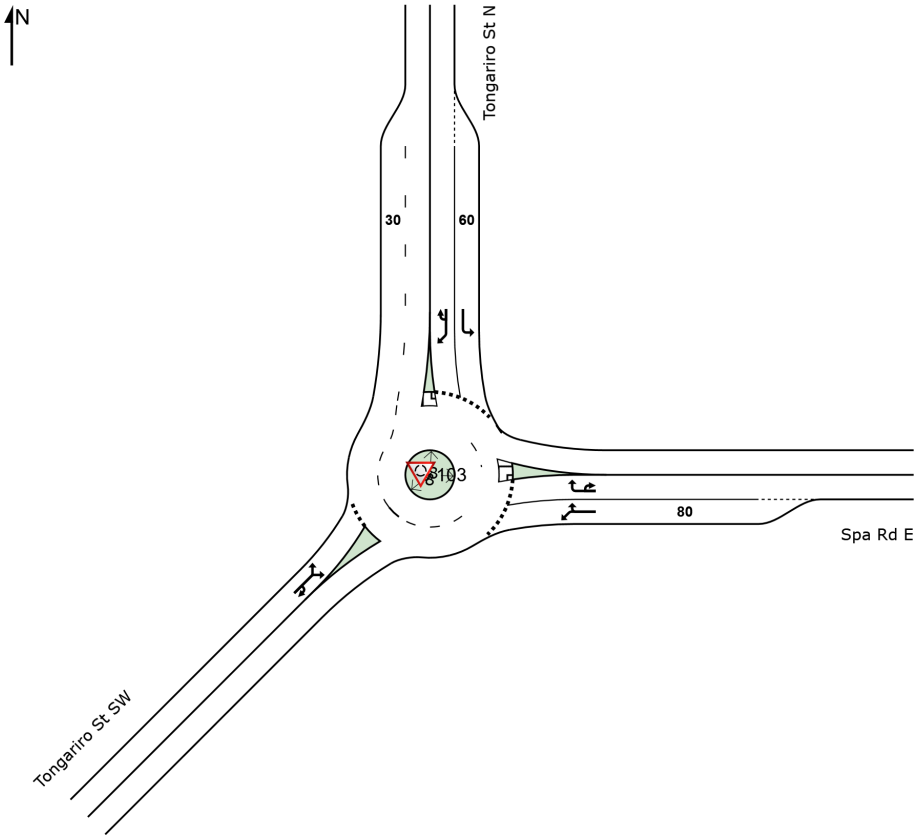
SITE LAYOUT

Site: 103 [Spa / Tongariro 2033 AM Base Option B2 (Site Folder: 2033 Option B2)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 103 [Spa / Tongariro 2033 AM Base Option B2 (Site Folder: 2033 Option B2)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
East: Spa Rd E														
4a	L1	28	0	29	0.0	0.102	8.3	LOS A	0.5	3.9	0.68	0.76	0.68	43.4
6	R2	323	15	340	4.6	0.335	11.0	LOS B	2.3	16.8	0.74	0.81	0.74	44.1
6u	U	1	1	1	100.0	0.335	16.2	LOS B	2.3	16.8	0.75	0.81	0.75	42.9
Approach		352	16	371	4.5	0.335	10.8	LOS B	2.3	16.8	0.74	0.80	0.74	44.0
North: Tongariro St N														
7	L2	299	4	315	1.3	0.260	4.9	LOS A	1.7	12.1	0.28	0.52	0.28	45.9
9a	R1	555	18	584	3.2	0.424	6.5	LOS A	3.5	25.1	0.31	0.57	0.31	44.9
9u	U	58	0	61	0.0	0.424	8.8	LOS A	3.5	25.1	0.31	0.57	0.31	46.3
Approach		912	22	960	2.4	0.424	6.1	LOS A	3.5	25.1	0.30	0.55	0.30	45.4
SouthWest: Tongariro St SW														
30a	L1	254	14	267	5.5	0.412	3.1	LOS A	2.3	16.7	0.61	0.62	0.61	29.5
32a	R1	64	0	67	0.0	0.412	5.6	LOS A	2.3	16.7	0.61	0.62	0.61	29.6
32u	U	1	0	1	0.0	0.412	7.0	LOS A	2.3	16.7	0.61	0.62	0.61	30.3
Approach		319	14	336	4.4	0.412	3.6	LOS A	2.3	16.7	0.61	0.62	0.61	29.6
All Vehicles		1583	52	1666	3.3	0.424	6.6	LOS A	3.5	25.1	0.46	0.62	0.46	40.9

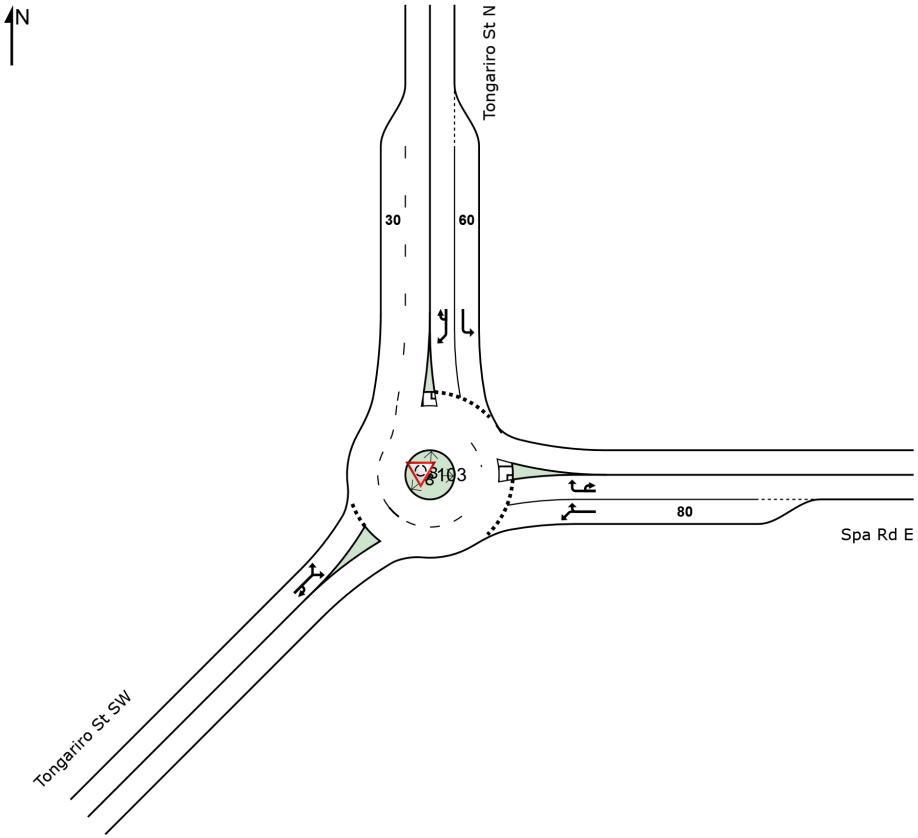
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 103 [Spa / Tongariro 2033 PM Base Option B2 (Site Folder: 2033 Option B2)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 103 [Spa / Tongariro 2033 PM Base Option B2 (Site Folder: 2033 Option B2)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
East: Spa Rd E														
4a	L1	36	0	38	0.0	0.148	5.5	LOS A	0.7	5.3	0.49	0.66	0.49	44.7
6	R2	662	13	697	2.0	0.484	8.9	LOS A	3.5	25.2	0.56	0.68	0.56	45.0
6u	U	1	1	1	100.0	0.484	12.8	LOS B	3.5	25.2	0.57	0.69	0.57	43.8
Approach		699	14	736	2.0	0.484	8.8	LOS A	3.5	25.2	0.55	0.68	0.55	45.0
North: Tongariro St N														
7	L2	40	0	42	0.0	0.042	4.6	LOS A	0.2	1.6	0.15	0.50	0.15	46.2
9a	R1	212	6	223	2.8	0.176	6.2	LOS A	1.2	8.7	0.15	0.58	0.15	45.2
9u	U	56	0	59	0.0	0.176	8.7	LOS A	1.2	8.7	0.15	0.58	0.15	46.5
Approach		308	6	324	1.9	0.176	6.4	LOS A	1.2	8.7	0.15	0.57	0.15	45.6
SouthWest: Tongariro St SW														
30a	L1	449	6	473	1.3	0.753	11.6	LOS B	7.4	52.1	0.90	1.22	1.39	27.8
32a	R1	22	0	23	0.0	0.753	13.8	LOS B	7.4	52.1	0.90	1.22	1.39	27.7
32u	U	1	0	1	0.0	0.753	15.2	LOS B	7.4	52.1	0.90	1.22	1.39	28.1
Approach		472	6	497	1.3	0.753	11.7	LOS B	7.4	52.1	0.90	1.22	1.39	27.8
All Vehicles		1479	26	1557	1.8	0.753	9.2	LOS A	7.4	52.1	0.58	0.83	0.74	38.0

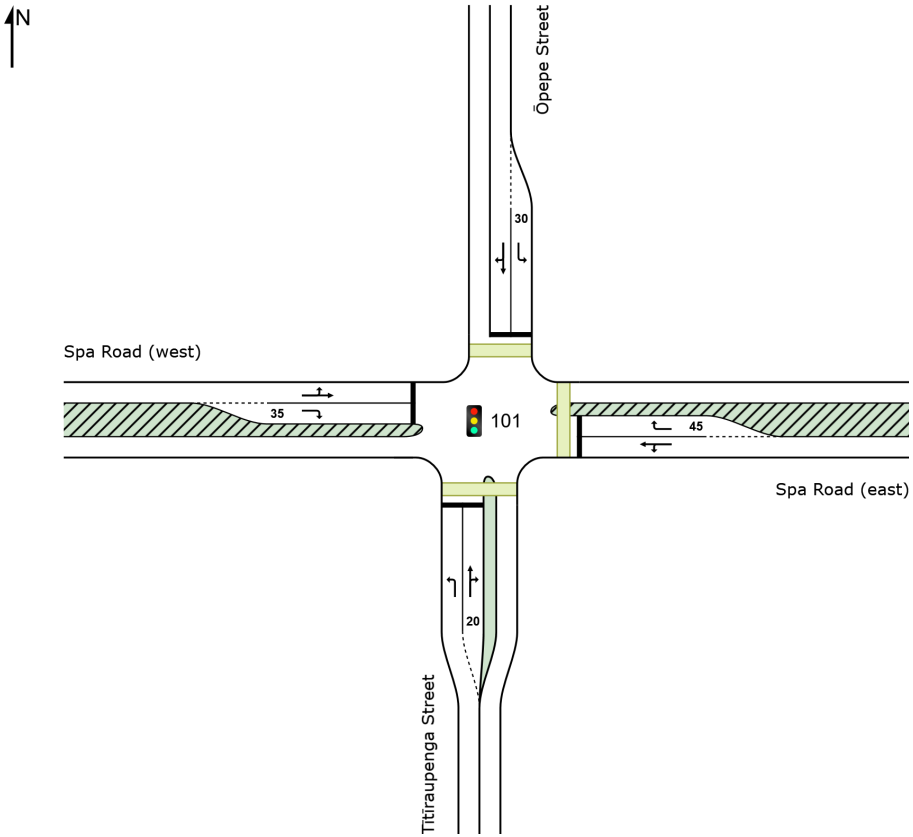
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 AM Base Option B2 (Site Folder: 2033 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 AM Base Option B2 (Site Folder: 2033 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street														
1	L2	189	1	199	0.5	0.608	45.5	LOS D	9.8	69.2	0.89	0.79	0.89	32.1
2	T1	107	1	113	0.9	*1.344	366.7	LOS F	20.5	144.6	1.00	1.74	3.27	13.4
3	R2	7	0	7	0.0	1.344	371.3	LOS F	20.5	144.6	1.00	1.74	3.27	28.6
Approach		303	2	319	0.7	1.344	166.4	LOS F	20.5	144.6	0.93	1.15	1.78	19.8
East: Spa Road (east)														
4	L2	98	1	103	1.0	1.254	295.0	LOS F	97.2	705.7	1.00	2.20	2.76	31.6
5	T1	500	25	526	5.0	*1.254	288.8	LOS F	97.2	705.7	1.00	2.20	2.76	31.4
6	R2	122	1	128	0.8	0.464	55.9	LOS E	7.0	49.5	0.96	0.79	0.96	45.4
Approach		720	27	758	3.8	1.254	250.2	LOS F	97.2	705.7	0.99	1.96	2.45	33.4
North: Ōpepe Street														
7	L2	40	1	42	2.5	*0.173	35.2	LOS D	1.6	11.6	0.92	0.72	0.92	47.0
8	T1	60	1	63	1.7	0.163	42.0	LOS D	3.1	22.3	0.86	0.67	0.86	38.5
9	R2	2	0	2	0.0	0.163	46.5	LOS D	3.1	22.3	0.86	0.67	0.86	37.8
Approach		102	2	107	2.0	0.173	39.4	LOS D	3.1	22.3	0.88	0.69	0.88	44.3
West: Spa Road (west)														
10	L2	2	0	2	0.0	1.054	133.5	LOS F	68.3	495.4	1.00	1.53	1.79	25.3
11	T1	624	27	657	4.3	1.054	127.1	LOS F	68.3	495.4	1.00	1.53	1.79	39.8
12	R2	151	1	159	0.7	0.573	56.9	LOS E	8.9	62.4	0.98	0.81	0.98	29.3
Approach		777	28	818	3.6	1.054	113.5	LOS F	68.3	495.4	1.00	1.39	1.64	39.3
All Vehicles		1902	59	2002	3.1	1.344	169.7	LOS F	97.2	705.7	0.98	1.53	1.93	34.9

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.

Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Tītīraupenga Street												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	230.3	228.8	0.99
East: Spa Road (east)												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.0	216.8	0.98
North: Ōpepe Street												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	218.8	213.9	0.98
All Pedestrians		150	158	54.3	LOS E	0.2	0.2	0.95	0.95	223.4	219.8	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 AM Base Option B2 (Site Folder: 2033 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

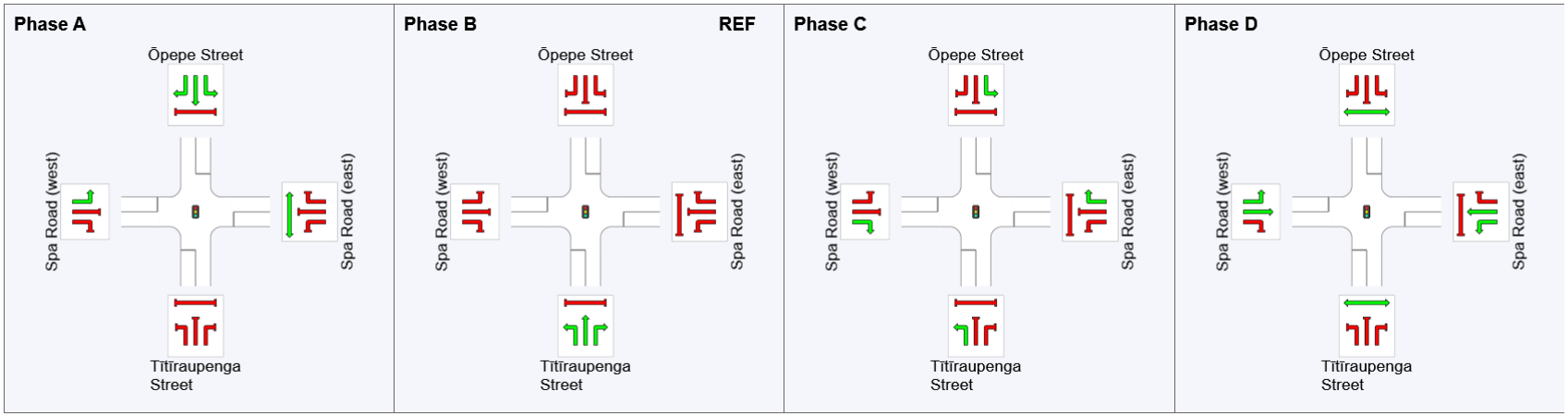
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase B
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Phase Timing Summary

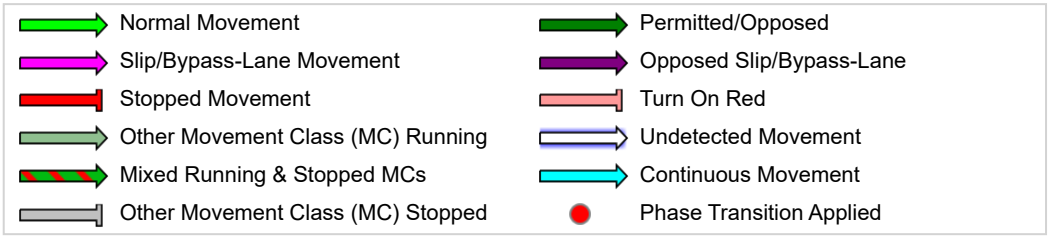
Phase	A	B	C	D
Phase Change Time (sec)	89	0	12	36
Green Time (sec)	25	6	18	47
Phase Time (sec)	31	12	24	53
Phase Split	26%	10%	20%	44%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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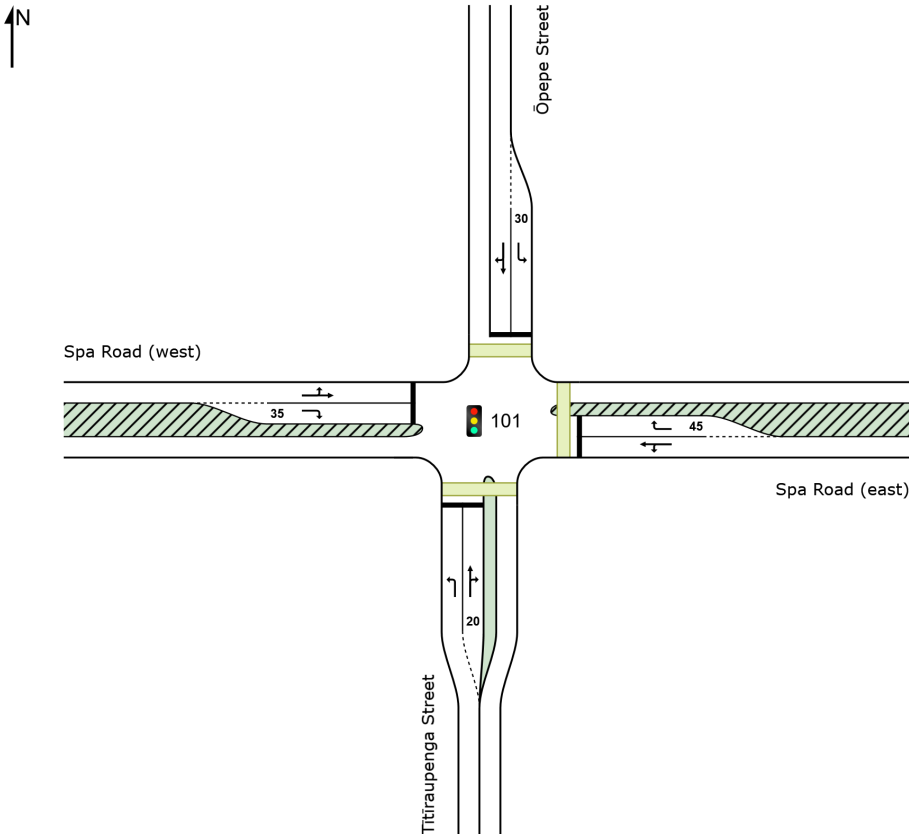
SITE LAYOUT

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 PM Base Option B2 (Site Folder: 2033 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 PM Base Option B2 (Site Folder: 2033 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street														
1	L2	145	1	153	0.7	0.378	44.3	LOS D	7.3	51.6	0.86	0.78	0.86	32.3
2	T1	34	0	36	0.0	*0.458	63.9	LOS E	2.7	18.9	1.00	0.73	1.00	34.3
3	R2	8	0	8	0.0	0.458	68.5	LOS E	2.7	18.9	1.00	0.73	1.00	44.3
Approach		187	1	197	0.5	0.458	48.9	LOS D	7.3	51.6	0.89	0.77	0.89	34.6
East: Spa Road (east)														
4	L2	59	0	62	0.0	1.117	179.6	LOS F	81.4	584.8	1.00	1.74	2.10	37.1
5	T1	593	20	624	3.4	*1.117	173.4	LOS F	81.4	584.8	1.00	1.74	2.10	37.0
6	R2	22	1	23	4.5	0.086	52.3	LOS D	1.2	8.6	0.89	0.70	0.89	45.7
Approach		674	21	709	3.1	1.117	170.0	LOS F	81.4	584.8	1.00	1.70	2.06	37.2
North: Ōpepe Street														
7	L2	45	1	47	2.2	*0.194	35.4	LOS D	1.8	13.1	0.92	0.73	0.92	47.0
8	T1	87	0	92	0.0	0.228	42.6	LOS D	4.5	31.7	0.87	0.69	0.87	38.4
9	R2	1	0	1	0.0	0.228	47.2	LOS D	4.5	31.7	0.87	0.69	0.87	37.6
Approach		133	1	140	0.8	0.228	40.2	LOS D	4.5	31.7	0.89	0.70	0.89	43.8
West: Spa Road (west)														
10	L2	7	0	7	0.0	0.828	44.2	LOS D	29.8	215.7	0.92	0.88	1.00	38.9
11	T1	517	21	544	4.1	0.828	37.8	LOS D	29.8	215.7	0.92	0.88	1.00	46.5
12	R2	71	0	75	0.0	0.268	54.0	LOS D	3.9	27.6	0.93	0.76	0.93	30.0
Approach		595	21	626	3.5	0.828	39.8	LOS D	29.8	215.7	0.92	0.87	0.99	45.9
All Vehicles		1589	44	1673	2.8	1.117	96.1	LOS F	81.4	584.8	0.95	1.20	1.42	40.6

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.

Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Tītīraupenga Street												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	230.3	228.8	0.99
East: Spa Road (east)												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.0	216.8	0.98
North: Ōpepe Street												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	218.8	213.9	0.98
All Pedestrians		150	158	54.3	LOS E	0.2	0.2	0.95	0.95	223.4	219.8	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2033 PM Base Option B2 (Site Folder: 2033 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

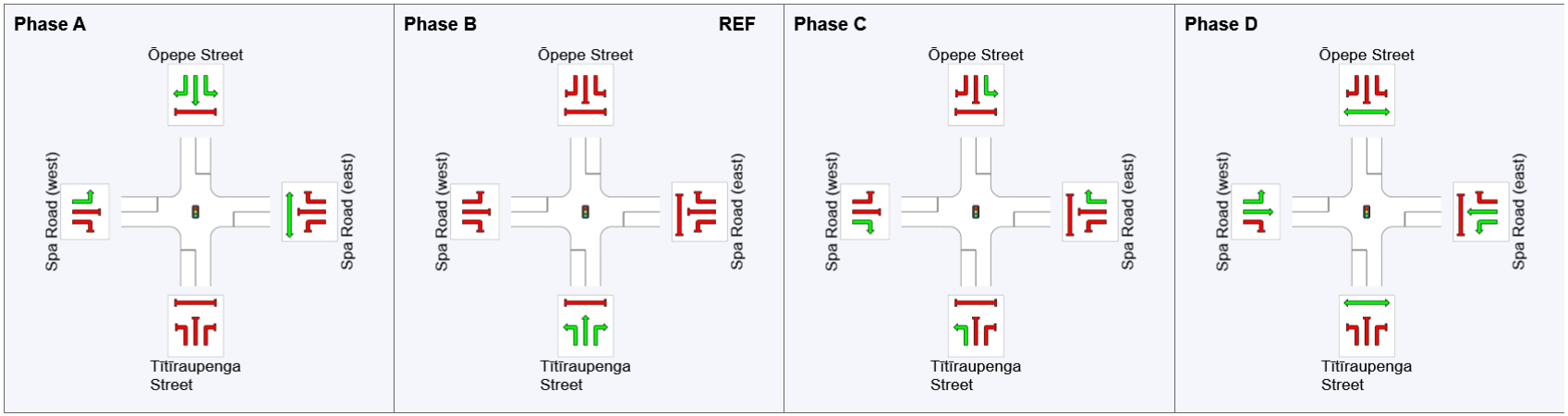
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase B
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Phase Timing Summary

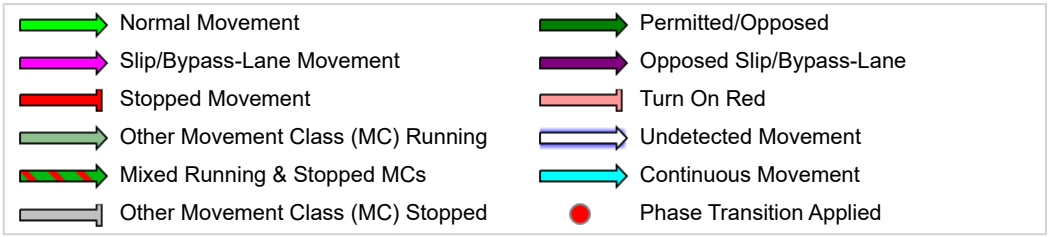
Phase	A	B	C	D
Phase Change Time (sec)	89	0	12	36
Green Time (sec)	25	6	18	47
Phase Time (sec)	31	12	24	53
Phase Split	26%	10%	20%	44%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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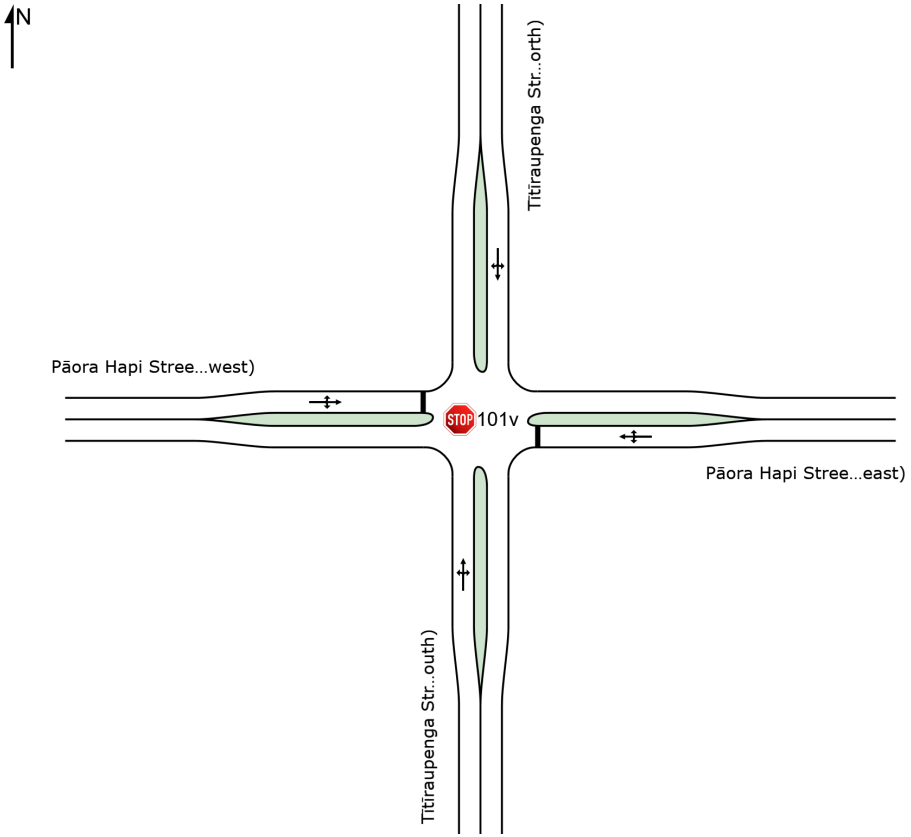
SITE LAYOUT

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2033 AM Base Option B2 (Site Folder: 2033 Option B2)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2033 AM Base Option B2 (Site Folder: 2033 Option B2)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street (south)														
1	L2	90	2	95	2.2	0.264	4.7	LOS A	0.1	0.9	0.03	0.11	0.03	40.3
2	T1	378	2	398	0.5	0.264	0.0	LOS A	0.1	0.9	0.03	0.11	0.03	48.8
3	R2	9	0	9	0.0	0.264	5.8	LOS A	0.1	0.9	0.03	0.11	0.03	47.2
Approach		477	4	502	0.8	0.264	1.0	NA	0.1	0.9	0.03	0.11	0.03	47.0
East: Pāora Hapi Street (east)														
4	L2	16	0	17	0.0	0.082	8.6	LOS A	0.3	2.0	0.51	0.96	0.51	39.3
5	T1	23	0	24	0.0	0.082	13.8	LOS B	0.3	2.0	0.51	0.96	0.51	30.7
6	R2	4	0	4	0.0	0.082	13.9	LOS B	0.3	2.0	0.51	0.96	0.51	36.9
Approach		43	0	45	0.0	0.082	11.9	LOS B	0.3	2.0	0.51	0.96	0.51	34.5
North: Tītīraupenga Street (north)														
7	L2	3	0	3	0.0	0.165	6.7	LOS A	0.3	2.1	0.13	0.06	0.13	47.6
8	T1	257	3	271	1.2	0.165	0.3	LOS A	0.3	2.1	0.13	0.06	0.13	48.9
9	R2	24	0	25	0.0	0.165	6.9	LOS A	0.3	2.1	0.13	0.06	0.13	37.9
Approach		284	3	299	1.1	0.165	1.0	NA	0.3	2.1	0.13	0.06	0.13	48.0
West: Pāora Hapi Street (west)														
10	L2	21	0	22	0.0	0.765	16.6	LOS C	5.6	39.8	0.87	1.59	2.04	24.9
11	T1	18	0	19	0.0	0.765	22.3	LOS C	5.6	39.8	0.87	1.59	2.04	24.1
12	R2	239	3	252	1.3	0.765	25.1	LOS D	5.6	39.8	0.87	1.59	2.04	27.3
Approach		278	3	293	1.1	0.765	24.3	LOS C	5.6	39.8	0.87	1.59	2.04	26.9
All Vehicles		1082	10	1139	0.9	0.765	7.4	NA	5.6	39.8	0.29	0.51	0.59	39.4

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.

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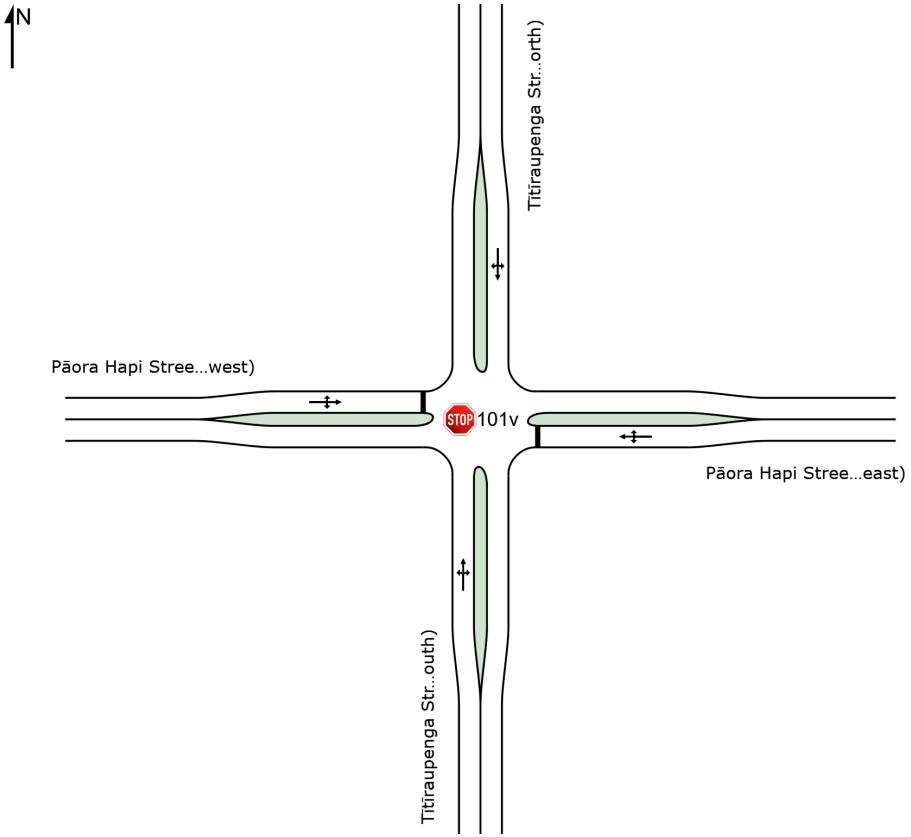
SITE LAYOUT

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2033 PM Base Option B2 (Site Folder: 2033 Option B2)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2033 PM Base Option B2 (Site Folder: 2033 Option B2)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street (south)														
1	L2	41	1	43	2.4	0.133	4.8	LOS A	0.1	0.7	0.04	0.11	0.04	40.3
2	T1	191	1	201	0.5	0.133	0.1	LOS A	0.1	0.7	0.04	0.11	0.04	48.8
3	R2	8	0	8	0.0	0.133	5.6	LOS A	0.1	0.7	0.04	0.11	0.04	47.2
Approach		240	2	253	0.8	0.133	1.0	NA	0.1	0.7	0.04	0.11	0.04	47.1
East: Pāora Hapi Street (east)														
4	L2	9	0	9	0.0	0.060	8.5	LOS A	0.2	1.5	0.47	0.95	0.47	40.5
5	T1	23	0	24	0.0	0.060	10.6	LOS B	0.2	1.5	0.47	0.95	0.47	31.6
6	R2	7	0	7	0.0	0.060	11.2	LOS B	0.2	1.5	0.47	0.95	0.47	38.2
Approach		39	0	41	0.0	0.060	10.2	LOS B	0.2	1.5	0.47	0.95	0.47	34.8
North: Tītīraupenga Street (north)														
7	L2	7	0	7	0.0	0.159	5.4	LOS A	0.2	1.6	0.09	0.06	0.09	47.8
8	T1	251	1	264	0.4	0.159	0.1	LOS A	0.2	1.6	0.09	0.06	0.09	49.0
9	R2	25	0	26	0.0	0.159	5.5	LOS A	0.2	1.6	0.09	0.06	0.09	38.0
Approach		283	1	298	0.4	0.159	0.7	NA	0.2	1.6	0.09	0.06	0.09	48.0
West: Pāora Hapi Street (west)														
10	L2	26	0	27	0.0	0.634	9.9	LOS A	4.6	32.1	0.68	1.32	1.26	28.8
11	T1	18	0	19	0.0	0.634	13.8	LOS B	4.6	32.1	0.68	1.32	1.26	27.9
12	R2	288	2	303	0.7	0.634	15.2	LOS C	4.6	32.1	0.68	1.32	1.26	30.9
Approach		332	2	349	0.6	0.634	14.7	LOS B	4.6	32.1	0.68	1.32	1.26	30.7
All Vehicles		894	5	941	0.6	0.634	6.4	NA	4.6	32.1	0.31	0.58	0.53	39.2

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.

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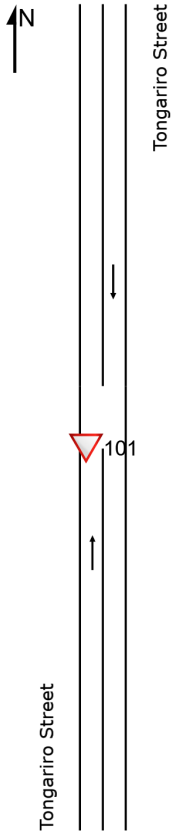
SITE LAYOUT

Site: 101 [TCG Bridge 2033 AM (Site Folder: 2033 Option B2)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [TCG Bridge 2033 AM (Site Folder: 2033 Option B2)]

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: Tongariro Street														
2	T1	500	5.0	526	5.0	0.279	4.3	LOS A	0.0	0.0	0.00	0.53	0.00	54.6
Approach		500	5.0	526	5.0	0.279	4.3	NA	0.0	0.0	0.00	0.53	0.00	54.6
North: Tongariro Street														
8	T1	934	5.0	983	5.0	0.521	4.4	LOS A	0.0	0.0	0.00	0.53	0.00	54.4
Approach		934	5.0	983	5.0	0.521	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.4
All Vehicles		1434	5.0	1509	5.0	0.521	4.3	NA	0.0	0.0	0.00	0.53	0.00	54.5

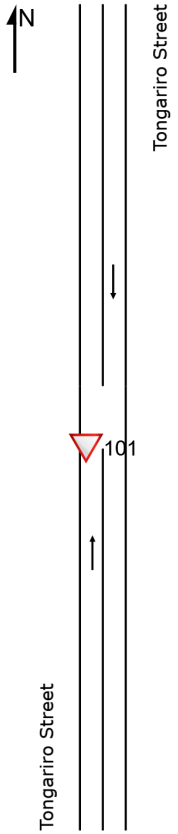
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and 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.

SITE LAYOUT

Site: 101 [TCG Bridge 2033 PM (Site Folder: 2033 Option B2)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [TCG Bridge 2033 PM (Site Folder: 2033 Option B2)]

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: Tongariro Street														
2	T1	1158	5.0	1219	5.0	0.645	4.5	LOS A	0.0	0.0	0.00	0.53	0.00	54.2
Approach		1158	5.0	1219	5.0	0.645	4.5	NA	0.0	0.0	0.00	0.53	0.00	54.2
North: Tongariro Street														
8	T1	288	5.0	303	5.0	0.161	4.2	LOS A	0.0	0.0	0.00	0.53	0.00	54.7
Approach		288	5.0	303	5.0	0.161	4.2	NA	0.0	0.0	0.00	0.53	0.00	54.7
All Vehicles		1446	5.0	1522	5.0	0.645	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.3

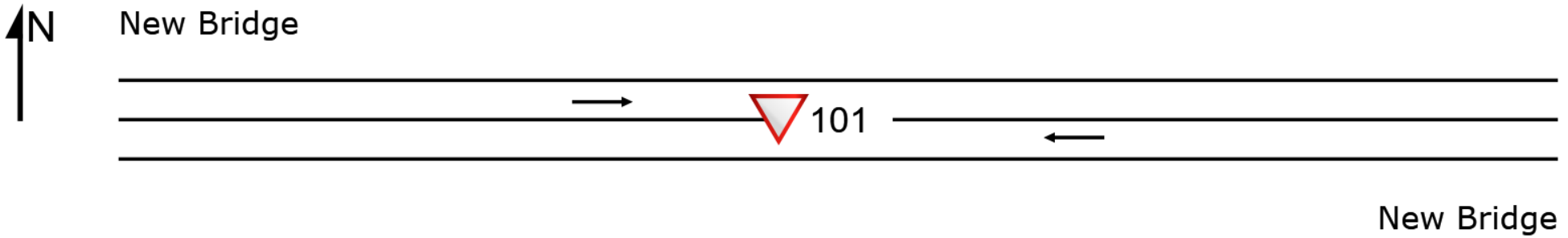
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and 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.

SITE LAYOUT

Site: 101 [New Bridge 2033 AM (Site Folder: 2033 Option B2)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Organisation: WSP NEW ZEALAND LIMITED | Licence: NETWORK / Enterprise | Created: Tuesday, 23 April 2024 9:06:28 am
Project: C:\Users\NZCK32050\WSP O365\NZ Project - Taupo DC Northern Access Study (1-C2420.00) - General\04 SIDRA\Stage 1\Taupo - Base models and Options - IWv3 - Copy.sip9

MOVEMENT SUMMARY

Site: 101 [New Bridge 2033 AM (Site Folder: 2033 Option B2)]

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
East: New Bridge														
8	T1	1160	5.0	1221	5.0	0.647	4.5	LOS A	0.0	0.0	0.00	0.53	0.00	54.2
Approach		1160	5.0	1221	5.0	0.647	4.5	NA	0.0	0.0	0.00	0.53	0.00	54.2
West: New Bridge														
2	T1	294	5.0	309	5.0	0.164	4.2	LOS A	0.0	0.0	0.00	0.53	0.00	54.7
Approach		294	5.0	309	5.0	0.164	4.2	NA	0.0	0.0	0.00	0.53	0.00	54.7
All Vehicles		1454	5.0	1531	5.0	0.647	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.3

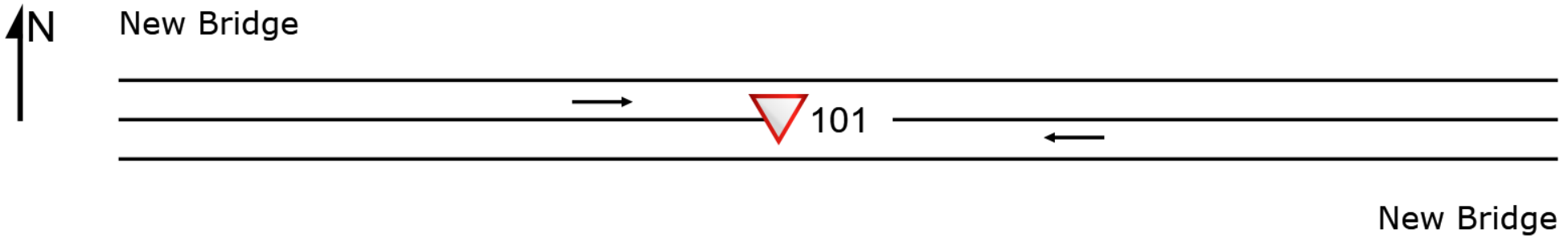
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and 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.

SITE LAYOUT

Site: 101 [New Bridge 2033 PM (Site Folder: 2033 Option B2)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 101 [New Bridge 2033 PM (Site Folder: 2033 Option B2)]

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
East: New Bridge														
8	T1	762	5.0	802	5.0	0.425	4.3	LOS A	0.0	0.0	0.00	0.53	0.00	54.5
Approach		762	5.0	802	5.0	0.425	4.3	NA	0.0	0.0	0.00	0.53	0.00	54.5
West: New Bridge														
2	T1	680	5.0	716	5.0	0.379	4.3	LOS A	0.0	0.0	0.00	0.53	0.00	54.5
Approach		680	5.0	716	5.0	0.379	4.3	NA	0.0	0.0	0.00	0.53	0.00	54.5
All Vehicles		1442	5.0	1518	5.0	0.425	4.3	NA	0.0	0.0	0.00	0.53	0.00	54.5

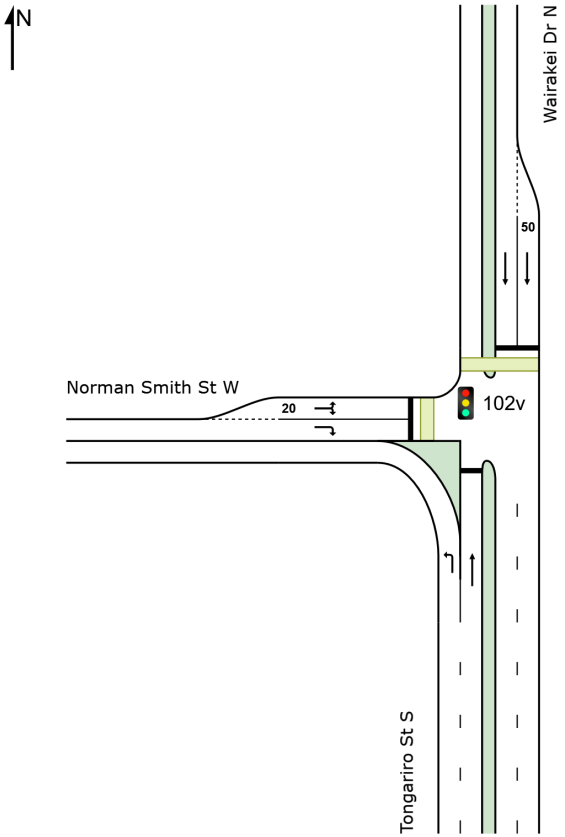
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and 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.

SITE LAYOUT

Site: 102v [Norman / Wairakei 2053 AM Base Option A1 (Site Folder: 2053 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 102v [Norman / Wairakei 2053 AM Base Option A1 (Site Folder: 2053 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tongariro St S														
1	L2	438	31	461	7.1	0.261	4.5	LOS A	0.0	0.0	0.00	0.46	0.00	48.1
2	T1	350	26	368	7.4	0.566	33.9	LOS C	17.4	129.8	0.87	0.75	0.87	47.1
Approach		788	57	829	7.2	0.566	17.6	LOS B	17.4	129.8	0.38	0.59	0.38	47.2
North: Wairakei Dr N														
8	T1	1362	31	1434	2.3	* 1.624	615.0	LOS F	162.3	1158.2	1.00	3.30	4.04	23.1
Approach		1362	31	1434	2.3	1.624	615.0	LOS F	162.3	1158.2	1.00	3.30	4.04	23.1
West: Norman Smith St W														
10	L2	24	1	25	4.2	* 1.593	595.1	LOS F	187.4	1334.3	1.00	2.23	3.96	23.9
12	R2	1607	31	1692	1.9	1.593	594.7	LOS F	200.5	1426.9	1.00	2.23	3.95	6.5
Approach		1631	32	1717	2.0	1.593	594.7	LOS F	200.5	1426.9	1.00	2.23	3.95	6.9
All Vehicles		3781	120	3980	3.2	1.624	481.7	LOS F	200.5	1426.9	0.87	2.27	3.24	18.9

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.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [Ped	Dist]	Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed

		ped/h	ped/h	sec		ped	m			sec	m	m/sec
North: Wairakei Dr N												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	80.3	33.9	0.42
West: Norman Smith St W												
P4	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	78.8	31.9	0.40
All Pedestrians		0	105	54.3	LOS E	0.2	0.2	0.95	0.95	79.6	32.9	0.41

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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PHASING SUMMARY

Site: 102v [Norman / Wairakei 2053 AM Base Option A1 (Site Folder: 2053 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

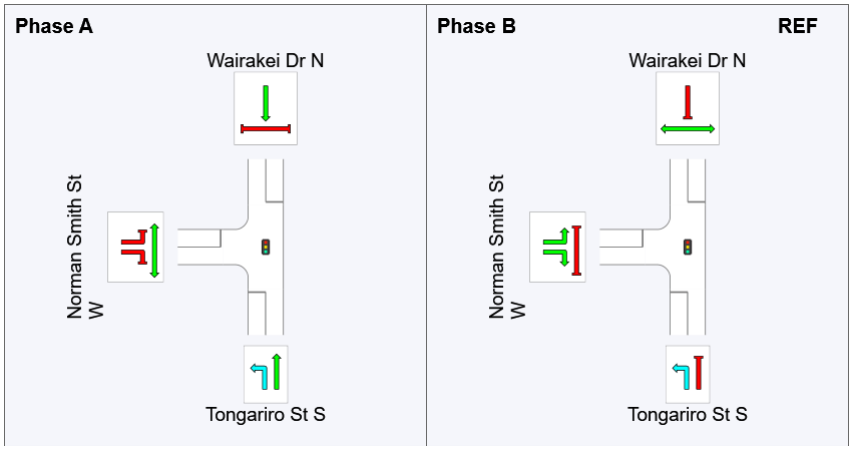
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase B
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Summary

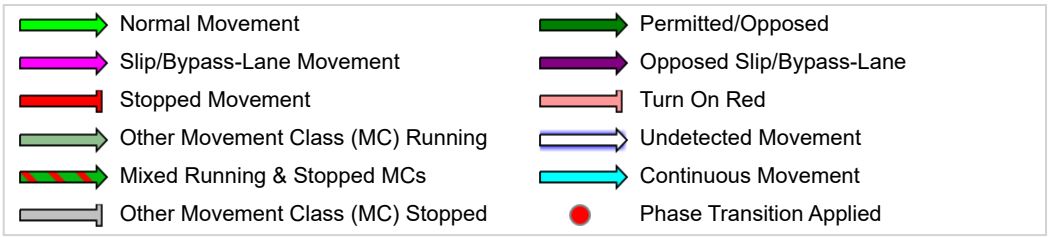
Phase	A	B
Phase Change Time (sec)	72	0
Green Time (sec)	42	66
Phase Time (sec)	48	72
Phase Split	40%	60%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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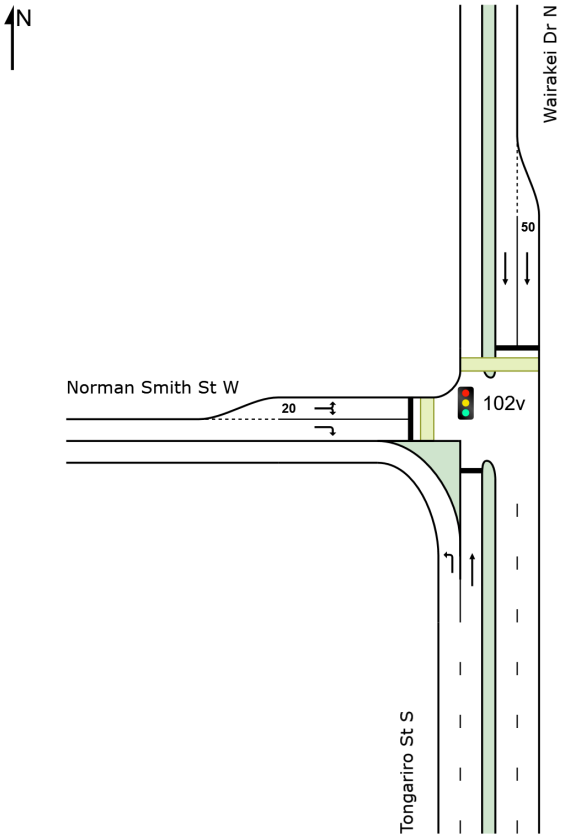
SITE LAYOUT

Site: 102v [Norman / Wairakei 2053 PM Base Option A1 (Site Folder: 2053 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 102v [Norman / Wairakei 2053 PM Base Option A1 (Site Folder: 2053 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tongariro St S														
1	L2	1680	26	1768	1.5	0.963	9.0	LOS A	0.0	0.0	0.00	0.41	0.00	43.2
2	T1	1039	16	1094	1.5	* 1.172	212.2	LOS F	148.0	1049.5	1.00	1.97	2.31	35.7
Approach		2719	42	2862	1.5	1.172	86.7	LOS F	148.0	1049.5	0.38	1.01	0.88	37.1
North: Wairakei Dr N														
8	T1	468	16	493	3.4	0.267	19.5	LOS B	8.4	60.6	0.63	0.54	0.63	48.3
Approach		468	16	493	3.4	0.267	19.5	LOS B	8.4	60.6	0.63	0.54	0.63	48.3
West: Norman Smith St W														
10	L2	8	0	8	0.0	1.172	229.8	LOS F	65.1	467.7	1.00	1.52	2.44	35.1
12	R2	919	28	967	3.0	* 1.172	229.3	LOS F	69.8	501.3	1.00	1.52	2.44	13.8
Approach		927	28	976	3.0	1.172	229.3	LOS F	69.8	501.3	1.00	1.52	2.44	14.3
All Vehicles		4114	86	4331	2.1	1.172	111.2	LOS F	148.0	1049.5	0.55	1.07	1.21	34.5

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.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [Ped	Dist]	Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed

		ped/h	ped/h	sec		ped	m			sec	m	m/sec
North: Wairakei Dr N												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	80.3	33.9	0.42
West: Norman Smith St W												
P4	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	78.8	31.9	0.40
All Pedestrians		0	105	54.3	LOS E	0.2	0.2	0.95	0.95	79.6	32.9	0.41

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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PHASING SUMMARY

Site: 102v [Norman / Wairakei 2053 PM Base Option A1 (Site Folder: 2053 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

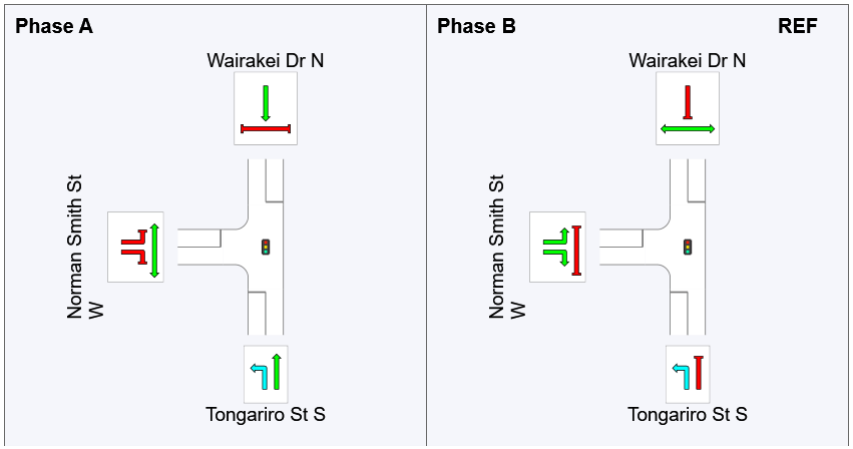
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase B
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Summary

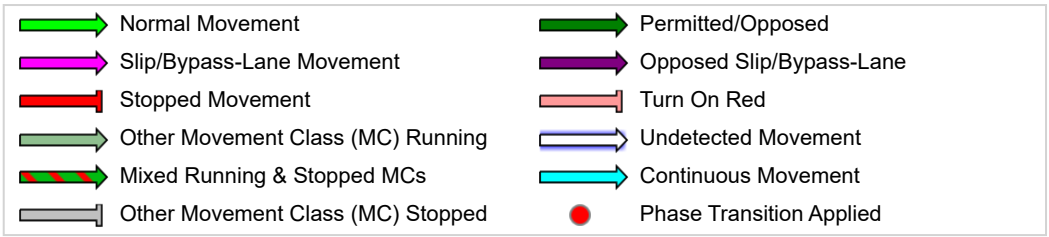
Phase	A	B
Phase Change Time (sec)	56	0
Green Time (sec)	58	50
Phase Time (sec)	64	56
Phase Split	53%	47%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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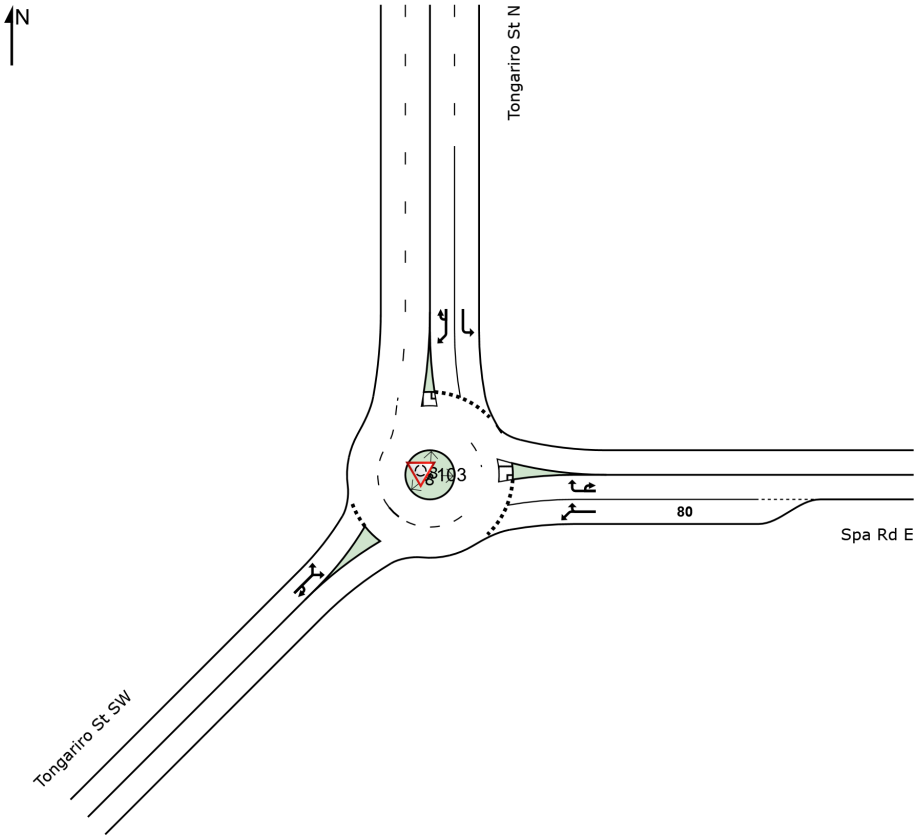
SITE LAYOUT

Site: 103 [Spa / Tongariro 2053 AM Base Option A1 (Site Folder: 2053 Option A1)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 103 [Spa / Tongariro 2053 AM Base Option A1 (Site Folder: 2053 Option A1)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
East: Spa Rd E														
4a	L1	10	0	11	0.0	1.065	161.9	LOS F	33.7	249.4	1.00	2.39	4.13	14.4
6	R2	510	36	537	7.1	1.065	169.0	LOS F	33.7	249.4	1.00	2.30	3.99	15.8
6u	U	1	1	1	100.0	1.065	186.1	LOS F	26.0	193.8	1.00	2.18	3.81	15.1
Approach		521	37	548	7.1	1.065	168.9	LOS F	33.7	249.4	1.00	2.30	3.99	15.8
North: Tongariro St N														
7	L2	1728	38	1819	2.2	1.128	123.3	LOS F	220.5	1572.2	1.00	1.06	2.46	19.1
9a	R1	1080	23	1137	2.1	0.910	7.7	LOS A	27.4	194.9	0.99	0.46	0.99	43.5
9u	U	90	1	95	1.1	0.910	10.0	LOS A	27.4	194.9	0.99	0.46	0.99	45.0
Approach		2898	62	3051	2.1	1.128	76.7	LOS F	220.5	1572.2	1.00	0.81	1.87	24.3
SouthWest: Tongariro St SW														
30a	L1	365	20	384	5.5	0.646	6.1	LOS A	4.6	33.8	0.79	0.96	1.01	28.9
32a	R1	52	0	55	0.0	0.646	8.6	LOS A	4.6	33.8	0.79	0.96	1.01	28.9
32u	U	1	0	1	0.0	0.646	10.0	LOS A	4.6	33.8	0.79	0.96	1.01	29.4
Approach		418	20	440	4.8	0.646	6.4	LOS A	4.6	33.8	0.79	0.96	1.01	28.9
All Vehicles		3837	119	4039	3.1	1.128	81.6	LOS F	220.5	1572.2	0.98	1.03	2.06	22.9

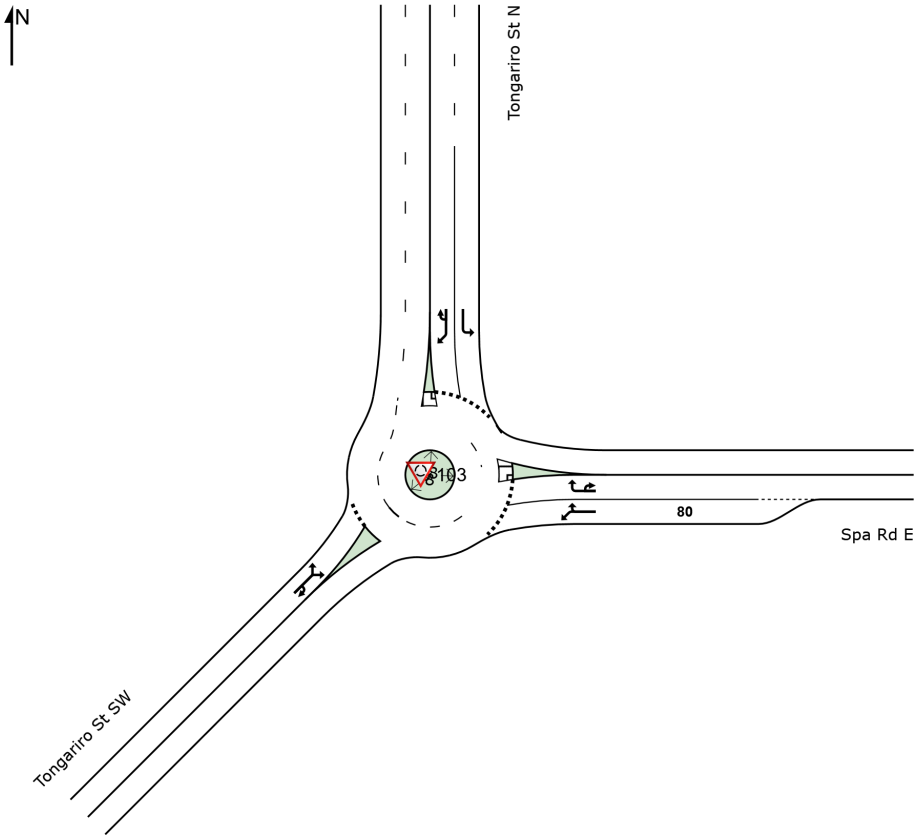
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 103 [Spa / Tongariro 2053 PM Base Option A1 (Site Folder: 2053 Option A1)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 103 [Spa / Tongariro 2053 PM Base Option A1 (Site Folder: 2053 Option A1)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
East: Spa Rd E														
4a	L1	2	0	2	0.0	0.946	36.5	LOS D	30.5	217.0	1.00	1.86	3.03	31.4
6	R2	1529	29	1609	1.9	0.946	42.1	LOS D	30.5	217.0	1.00	1.89	3.06	32.6
6u	U	1	1	1	100.0	0.946	54.4	LOS E	27.1	193.4	1.00	1.92	3.09	31.1
Approach		1532	30	1613	2.0	0.946	42.1	LOS D	30.5	217.0	1.00	1.89	3.06	32.6
North: Tongariro St N														
7	L2	817	31	860	3.8	0.498	4.5	LOS A	5.1	37.0	0.10	0.51	0.10	46.2
9a	R1	501	13	527	2.6	0.471	6.1	LOS A	4.6	32.6	0.10	0.59	0.10	45.2
9u	U	168	0	177	0.0	0.471	8.4	LOS A	4.6	32.6	0.10	0.59	0.10	46.5
Approach		1486	44	1564	3.0	0.498	5.5	LOS A	5.1	37.0	0.10	0.54	0.10	45.9
SouthWest: Tongariro St SW														
30a	L1	644	9	678	1.4	2.328	1203.9	LOS F	258.6	1831.7	1.00	13.11	24.09	2.6
32a	R1	12	0	13	0.0	2.328	1206.5	LOS F	258.6	1831.7	1.00	13.11	24.09	2.5
32u	U	1	0	1	0.0	2.328	1207.9	LOS F	258.6	1831.7	1.00	13.11	24.09	2.3
Approach		657	9	692	1.4	2.328	1204.0	LOS F	258.6	1831.7	1.00	13.11	24.09	2.6
All Vehicles		3675	83	3868	2.3	2.328	235.0	LOS F	258.6	1831.7	0.64	3.35	5.62	11.8

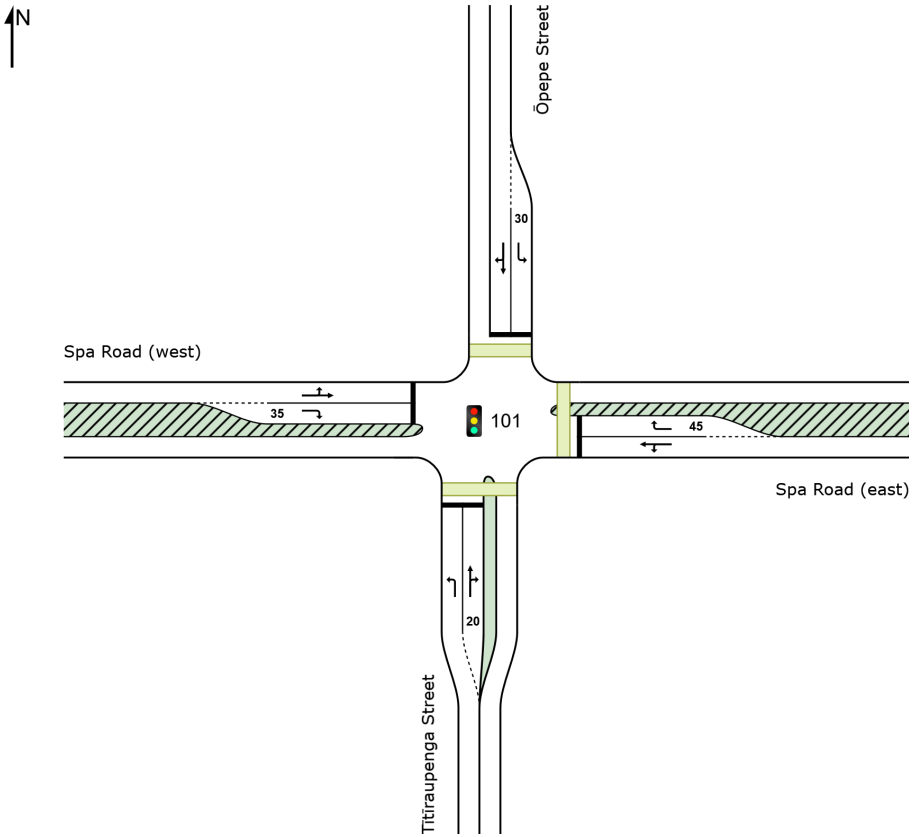
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 AM Base Option A1 (Site Folder: 2053 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 AM Base Option A1 (Site Folder: 2053 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street														
1	L2	215	1	226	0.5	0.744	51.8	LOS D	12.3	86.6	0.94	0.85	1.03	30.6
2	T1	106	1	112	0.9	* 1.361	381.2	LOS F	21.1	149.0	1.00	1.76	3.33	13.1
3	R2	9	0	9	0.0	1.361	385.8	LOS F	21.1	149.0	1.00	1.76	3.33	28.1
Approach		330	2	347	0.6	1.361	166.7	LOS F	21.1	149.0	0.96	1.17	1.83	19.7
East: Spa Road (east)														
4	L2	95	2	100	2.1	1.355	382.5	LOS F	128.0	936.4	1.00	2.52	3.16	28.5
5	T1	588	34	619	5.8	1.355	376.3	LOS F	128.0	936.4	1.00	2.52	3.16	28.3
6	R2	192	2	202	1.0	1.012	112.8	LOS F	17.4	123.2	1.00	1.18	1.81	41.5
Approach		875	38	921	4.3	1.355	319.1	LOS F	128.0	936.4	1.00	2.23	2.87	30.6
North: Ōpepe Street														
7	L2	53	2	56	3.8	0.285	38.1	LOS D	2.3	16.4	0.96	0.74	0.96	46.8
8	T1	72	1	76	1.4	0.194	42.3	LOS D	3.8	26.7	0.86	0.68	0.86	38.4
9	R2	2	0	2	0.0	0.194	46.9	LOS D	3.8	26.7	0.86	0.68	0.86	37.7
Approach		127	3	134	2.4	0.285	40.6	LOS D	3.8	26.7	0.90	0.70	0.90	44.3
West: Spa Road (west)														
10	L2	2	0	2	0.0	* 1.304	336.3	LOS F	145.2	1053.3	1.00	2.45	2.94	14.0
11	T1	818	35	861	4.3	1.304	329.9	LOS F	145.2	1053.3	1.00	2.45	2.94	29.9
12	R2	200	2	211	1.0	* 1.277	316.4	LOS F	33.0	232.7	1.00	1.70	2.98	10.0
Approach		1020	37	1074	3.6	1.304	327.3	LOS F	145.2	1053.3	1.00	2.30	2.95	27.8
All Vehicles		2352	80	2476	3.4	1.361	286.2	LOS F	145.2	1053.3	0.99	2.03	2.65	29.1

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.

Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Tītīraupenga Street												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	230.3	228.8	0.99
East: Spa Road (east)												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.0	216.8	0.98
North: Ōpepe Street												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	218.8	213.9	0.98
All Pedestrians		150	158	54.3	LOS E	0.2	0.2	0.95	0.95	223.4	219.8	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 AM Base Option A1 (Site Folder: 2053 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

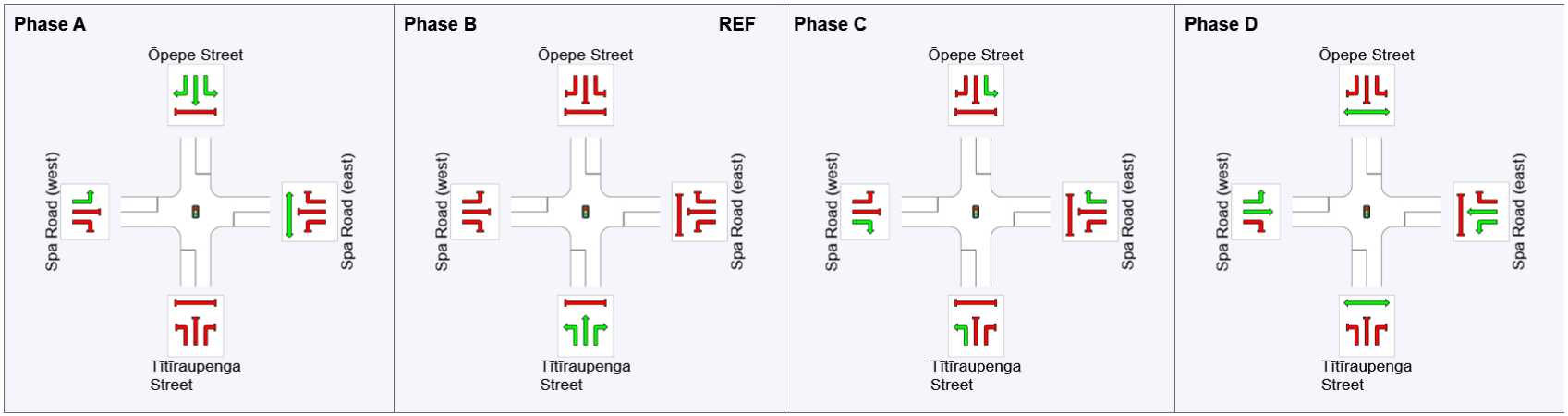
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase B
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Phase Timing Summary

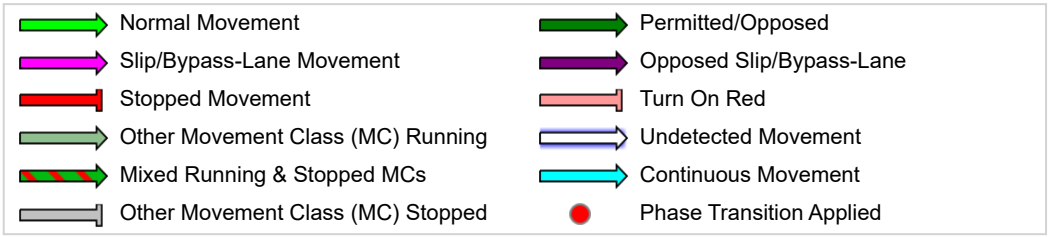
Phase	A	B	C	D
Phase Change Time (sec)	89	0	12	33
Green Time (sec)	25	6	15	50
Phase Time (sec)	31	12	21	56
Phase Split	26%	10%	18%	47%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

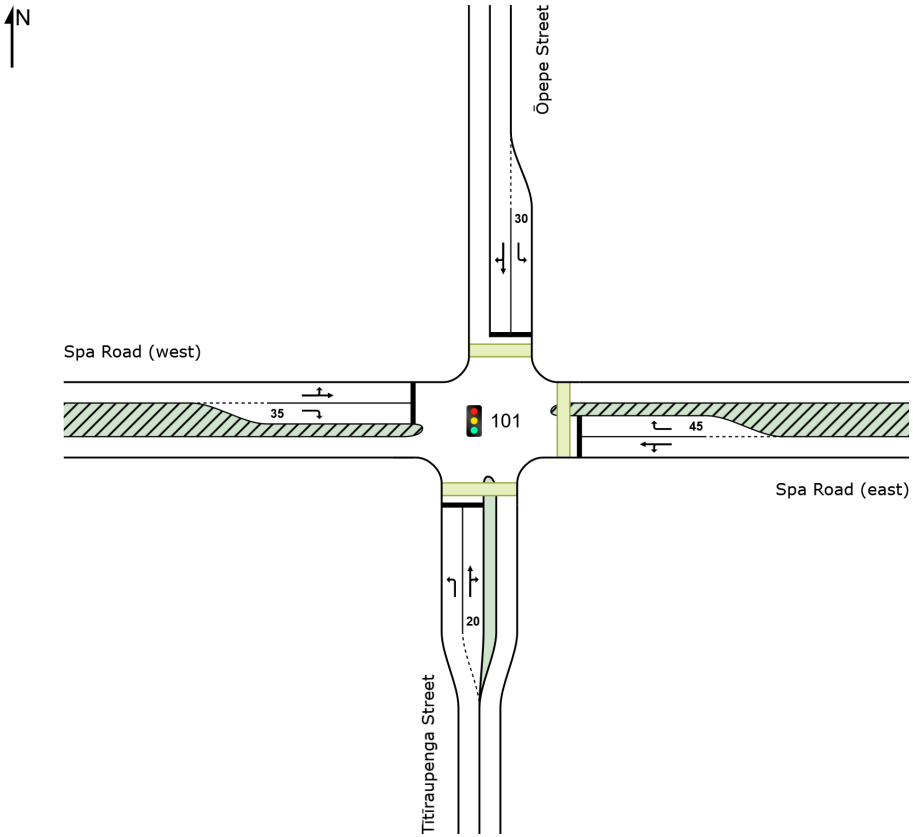


SITE LAYOUT

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 PM Base Option A1 (Site Folder: 2053 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 PM Base Option A1 (Site Folder: 2053 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street														
1	L2	144	0	152	0.0	0.392	44.2	LOS D	7.3	50.9	0.86	0.78	0.86	32.4
2	T1	47	1	49	2.1	*0.639	65.4	LOS E	3.8	27.0	1.00	0.80	1.11	34.0
3	R2	11	0	12	0.0	0.639	70.0	LOS E	3.8	27.0	1.00	0.80	1.11	44.2
Approach		202	1	213	0.5	0.639	50.6	LOS D	7.3	50.9	0.90	0.78	0.93	35.0
East: Spa Road (east)														
4	L2	75	1	79	1.3	1.497	504.8	LOS F	190.1	1368.4	1.00	2.94	3.64	25.0
5	T1	807	28	849	3.5	*1.497	498.6	LOS F	190.1	1368.4	1.00	2.94	3.64	24.8
6	R2	28	1	29	3.6	0.108	52.5	LOS D	1.5	10.9	0.90	0.71	0.90	45.6
Approach		910	30	958	3.3	1.497	485.4	LOS F	190.1	1368.4	1.00	2.87	3.56	25.2
North: Ōpepe Street														
7	L2	54	1	57	1.9	*0.233	35.6	LOS D	2.2	15.7	0.93	0.74	0.93	47.0
8	T1	112	1	118	0.9	0.300	43.4	LOS D	6.0	42.5	0.89	0.71	0.89	38.2
9	R2	3	0	3	0.0	0.300	48.0	LOS D	6.0	42.5	0.89	0.71	0.89	37.4
Approach		169	2	178	1.2	0.300	41.0	LOS D	6.0	42.5	0.90	0.72	0.90	43.5
West: Spa Road (west)														
10	L2	12	0	13	0.0	1.052	130.1	LOS F	72.9	529.2	1.00	1.51	1.76	25.6
11	T1	666	29	701	4.4	1.052	123.7	LOS F	72.9	529.2	1.00	1.51	1.76	40.0
12	R2	70	0	74	0.0	0.265	54.0	LOS D	3.9	27.2	0.93	0.76	0.93	30.0
Approach		748	29	787	3.9	1.052	117.2	LOS F	72.9	529.2	0.99	1.44	1.68	39.7
All Vehicles		2029	62	2136	3.1	1.497	269.4	LOS F	190.1	1368.4	0.98	1.95	2.38	30.5

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.

Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Tītīraupenga Street												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	230.3	228.8	0.99
East: Spa Road (east)												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.0	216.8	0.98
North: Ōpepe Street												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	218.8	213.9	0.98
All Pedestrians		150	158	54.3	LOS E	0.2	0.2	0.95	0.95	223.4	219.8	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 PM Base Option A1 (Site Folder: 2053 Option A1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

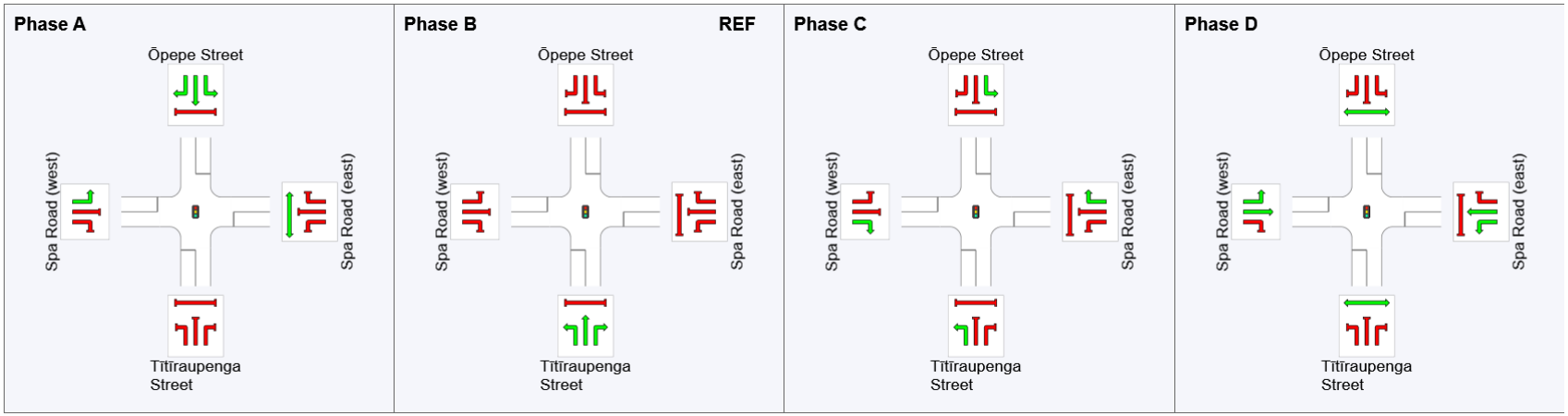
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase B
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Phase Timing Summary

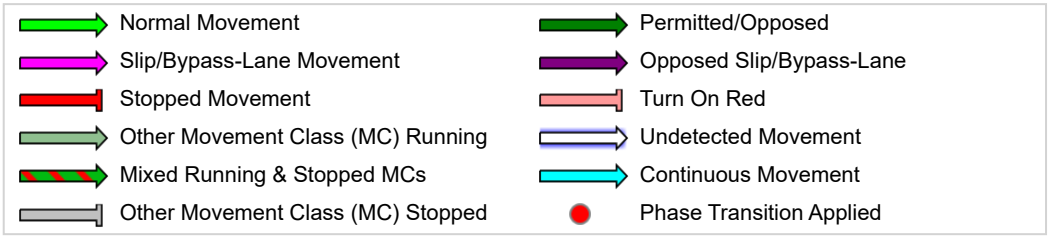
Phase	A	B	C	D
Phase Change Time (sec)	89	0	12	36
Green Time (sec)	25	6	18	47
Phase Time (sec)	31	12	24	53
Phase Split	26%	10%	20%	44%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

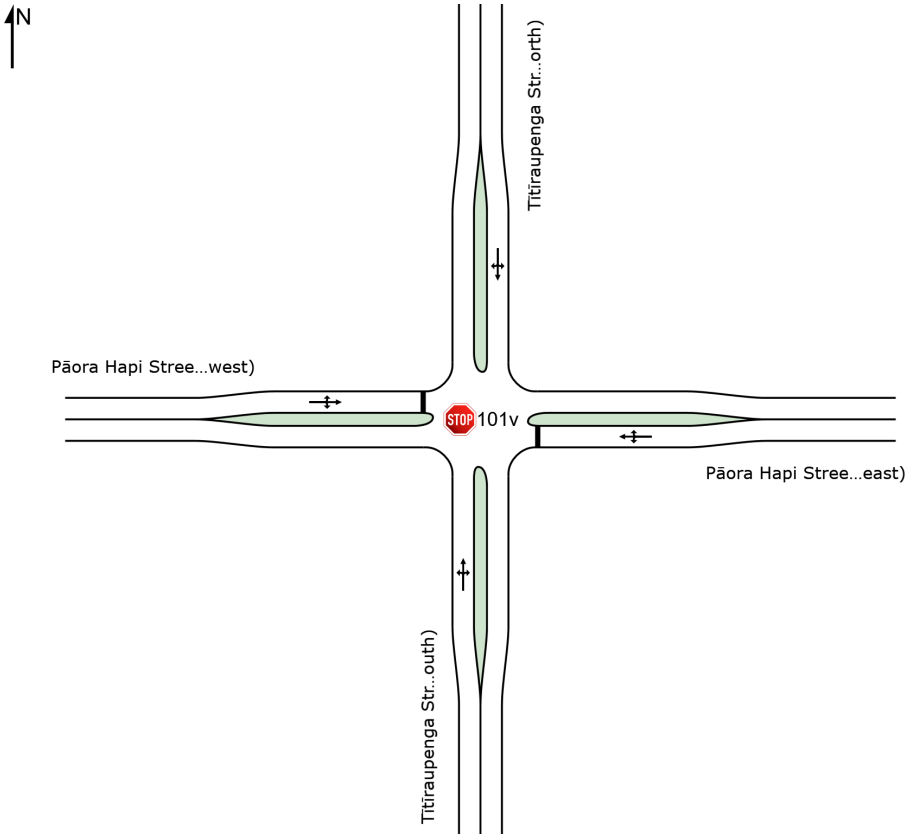


SITE LAYOUT

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2053 AM Base Option A1 (Site Folder: 2053 Option A1)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2053 AM Base Option A1 (Site Folder: 2053 Option A1)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street (south)														
1	L2	143	2	151	1.4	0.329	4.7	LOS A	0.2	1.3	0.04	0.14	0.04	40.1
2	T1	439	2	462	0.5	0.329	0.1	LOS A	0.2	1.3	0.04	0.14	0.04	48.5
3	R2	11	0	12	0.0	0.329	6.5	LOS A	0.2	1.3	0.04	0.14	0.04	46.9
Approach		593	4	624	0.7	0.329	1.3	NA	0.2	1.3	0.04	0.14	0.04	46.2
East: Pāora Hapi Street (east)														
4	L2	23	0	24	0.0	0.134	9.0	LOS A	0.4	3.1	0.60	0.96	0.60	37.9
5	T1	27	0	28	0.0	0.134	17.9	LOS C	0.4	3.1	0.60	0.96	0.60	29.5
6	R2	5	0	5	0.0	0.134	17.0	LOS C	0.4	3.1	0.60	0.96	0.60	35.3
Approach		55	0	58	0.0	0.134	14.1	LOS B	0.4	3.1	0.60	0.96	0.60	33.6
North: Tītīraupenga Street (north)														
7	L2	3	0	3	0.0	0.213	7.8	LOS A	0.4	2.7	0.13	0.05	0.13	47.6
8	T1	335	4	353	1.2	0.213	0.4	LOS A	0.4	2.7	0.13	0.05	0.13	48.9
9	R2	25	0	26	0.0	0.213	8.0	LOS A	0.4	2.7	0.13	0.05	0.13	37.9
Approach		363	4	382	1.1	0.213	1.0	NA	0.4	2.7	0.13	0.05	0.13	48.1
West: Pāora Hapi Street (west)														
10	L2	22	0	23	0.0	1.014	72.4	LOS F	16.7	118.1	1.00	3.15	5.55	13.3
11	T1	22	0	23	0.0	1.014	81.5	LOS F	16.7	118.1	1.00	3.15	5.55	12.7
12	R2	228	3	240	1.3	1.014	86.1	LOS F	16.7	118.1	1.00	3.15	5.55	15.3
Approach		272	3	286	1.1	1.014	84.6	LOS F	16.7	118.1	1.00	3.15	5.55	15.0
All Vehicles		1283	11	1351	0.9	1.014	19.4	NA	16.7	118.1	0.29	0.79	1.25	32.4

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.

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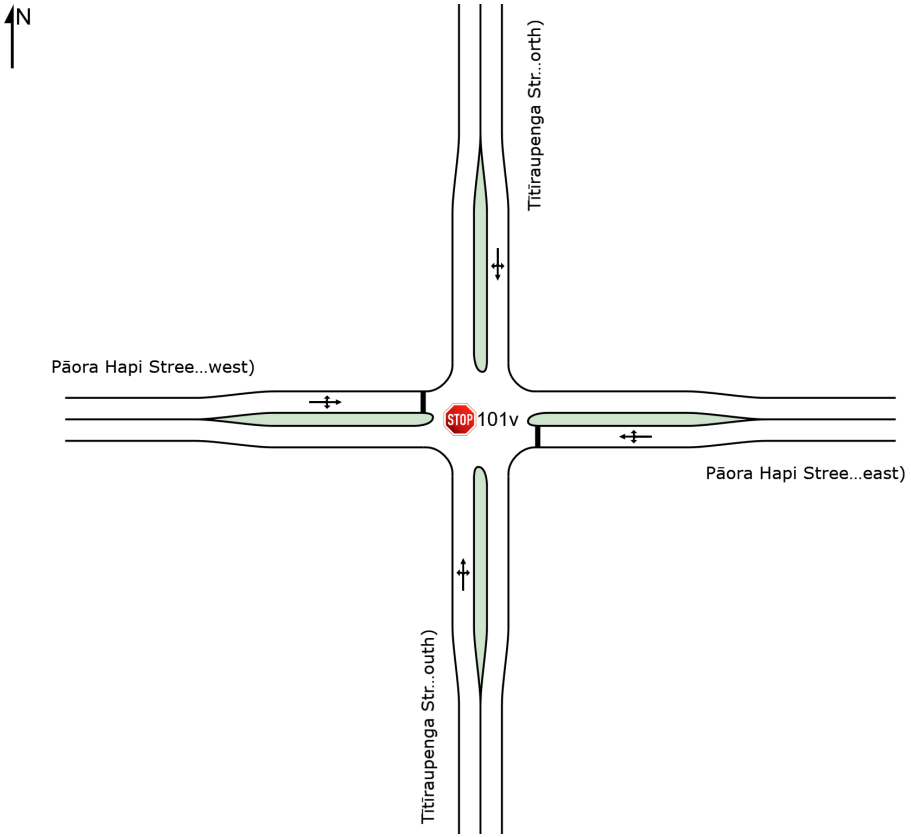
SITE LAYOUT

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2053 PM Base Option A1 (Site Folder: 2053 Option A1)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2053 PM Base Option A1 (Site Folder: 2053 Option A1)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street (south)														
1	L2	103	1	108	1.0	0.179	4.7	LOS A	0.1	1.0	0.05	0.18	0.05	39.8
2	T1	206	1	217	0.5	0.179	0.1	LOS A	0.1	1.0	0.05	0.18	0.05	48.0
3	R2	10	0	11	0.0	0.179	6.0	LOS A	0.1	1.0	0.05	0.18	0.05	46.4
Approach		319	2	336	0.6	0.179	1.8	NA	0.1	1.0	0.05	0.18	0.05	45.0
East: Pāora Hapi Street (east)														
4	L2	13	0	14	0.0	0.084	8.9	LOS A	0.3	2.0	0.52	0.98	0.52	39.8
5	T1	26	0	27	0.0	0.084	12.2	LOS B	0.3	2.0	0.52	0.98	0.52	31.0
6	R2	8	0	8	0.0	0.084	12.4	LOS B	0.3	2.0	0.52	0.98	0.52	37.4
Approach		47	0	49	0.0	0.084	11.3	LOS B	0.3	2.0	0.52	0.98	0.52	34.5
North: Tītīraupenga Street (north)														
7	L2	7	0	7	0.0	0.196	5.8	LOS A	0.3	2.1	0.10	0.06	0.10	47.8
8	T1	312	1	328	0.3	0.196	0.2	LOS A	0.3	2.1	0.10	0.06	0.10	49.0
9	R2	28	0	29	0.0	0.196	5.9	LOS A	0.3	2.1	0.10	0.06	0.10	38.0
Approach		347	1	365	0.3	0.196	0.8	NA	0.3	2.1	0.10	0.06	0.10	48.1
West: Pāora Hapi Street (west)														
10	L2	26	0	27	0.0	0.754	13.5	LOS B	6.2	43.5	0.80	1.55	1.86	26.4
11	T1	22	0	23	0.0	0.754	19.0	LOS C	6.2	43.5	0.80	1.55	1.86	25.5
12	R2	284	2	299	0.7	0.754	21.1	LOS C	6.2	43.5	0.80	1.55	1.86	28.7
Approach		332	2	349	0.6	0.754	20.4	LOS C	6.2	43.5	0.80	1.55	1.86	28.3
All Vehicles		1045	5	1100	0.5	0.754	7.8	NA	6.2	43.5	0.32	0.61	0.66	38.4

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.

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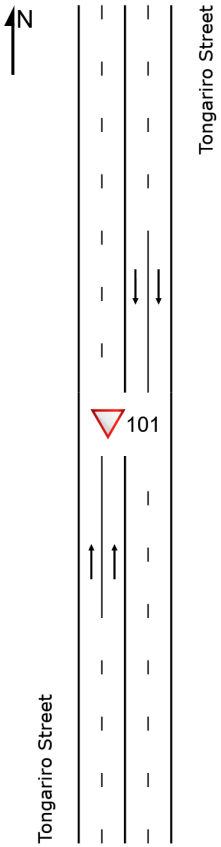
SITE LAYOUT

Site: 101 [TCG Bridge 2053 AM (Site Folder: 2053 Option A1)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [TCG Bridge 2053 AM (Site Folder: 2053 Option A1)]

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: Tongariro Street														
2	T1	787	5.0	828	5.0	0.219	4.2	LOS A	0.0	0.0	0.00	0.53	0.00	54.6
Approach		787	5.0	828	5.0	0.219	4.2	NA	0.0	0.0	0.00	0.53	0.00	54.6
North: Tongariro Street														
8	T1	2968	5.0	3124	5.0	0.827	5.0	LOS A	0.0	0.0	0.00	0.52	0.00	53.4
Approach		2968	5.0	3124	5.0	0.827	5.0	NA	0.0	0.0	0.00	0.52	0.00	53.4
All Vehicles		3755	5.0	3953	5.0	0.827	4.9	NA	0.0	0.0	0.00	0.52	0.00	53.7

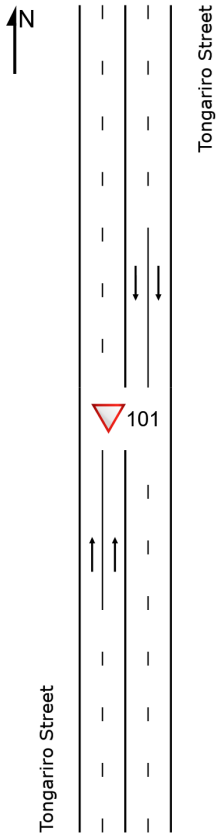
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and 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.

SITE LAYOUT

Site: 101 [TCG Bridge 2053 PM (Site Folder: 2053 Option A1)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [TCG Bridge 2053 PM (Site Folder: 2053 Option A1)]

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: Tongariro Street														
2	T1	2718	5.0	2861	5.0	0.757	4.7	LOS A	0.0	0.0	0.00	0.52	0.00	53.8
Approach		2718	5.0	2861	5.0	0.757	4.7	NA	0.0	0.0	0.00	0.52	0.00	53.8
North: Tongariro Street														
8	T1	1387	5.0	1460	5.0	0.387	4.3	LOS A	0.0	0.0	0.00	0.53	0.00	54.5
Approach		1387	5.0	1460	5.0	0.387	4.3	NA	0.0	0.0	0.00	0.53	0.00	54.5
All Vehicles		4105	5.0	4321	5.0	0.757	4.6	NA	0.0	0.0	0.00	0.52	0.00	54.1

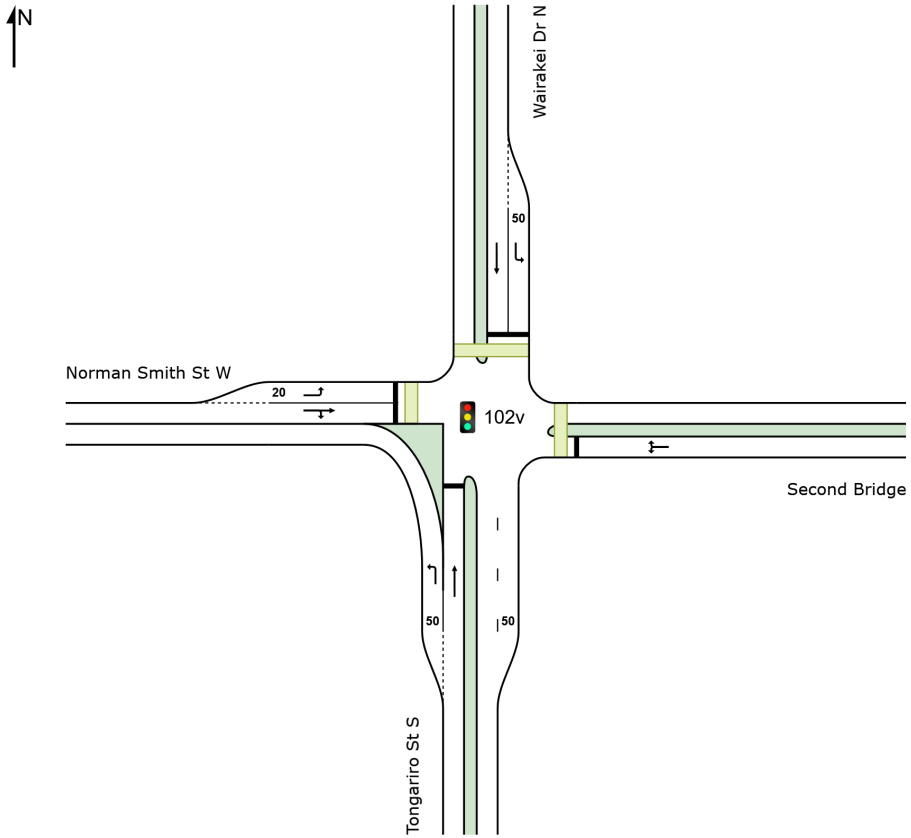
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and 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.

SITE LAYOUT

Site: 102v [Norman / Wairakei 2053 AM Base Option B1 (Site Folder: 2053 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 102v [Norman / Wairakei 2053 AM Base Option B1 (Site Folder: 2053 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tongariro St S														
1	L2	479	31	504	6.5	0.284	4.5	LOS A	0.0	0.0	0.00	0.46	0.00	48.1
2	T1	280	15	295	5.4	0.916	62.9	LOS E	19.2	140.8	0.90	1.06	1.30	44.8
Approach		759	46	799	6.1	0.916	26.1	LOS C	19.2	140.8	0.33	0.68	0.48	45.5
East: Second Bridge														
4	L2	1	0	1	0.0	*0.477	56.3	LOS E	6.7	50.9	0.96	0.79	0.96	28.3
6	R2	115	11	121	9.6	0.477	56.3	LOS E	6.7	50.9	0.96	0.79	0.96	45.2
Approach		116	11	122	9.5	0.477	56.3	LOS E	6.7	50.9	0.96	0.79	0.96	45.2
North: Wairakei Dr N														
7	L2	442	15	465	3.4	1.873	837.9	LOS F	119.2	858.5	1.00	2.59	4.65	19.3
8	T1	981	20	1033	2.0	*2.363	1273.7	LOS F	311.7	2220.1	1.00	4.42	5.42	14.7
Approach		1423	35	1498	2.5	2.363	1138.3	LOS F	311.7	2220.1	1.00	3.85	5.18	15.9
West: Norman Smith St W														
10	L2	22	1	23	4.5	0.044	37.0	LOS D	1.0	7.0	0.75	0.68	0.75	46.8
11	T1	961	20	1012	2.1	*2.349	1262.8	LOS F	552.9	3927.3	1.00	3.78	5.39	3.2
12	R2	774	10	815	1.3	2.349	1267.5	LOS F	552.9	3927.3	1.00	3.78	5.39	3.3
Approach		1757	31	1849	1.8	2.349	1249.5	LOS F	552.9	3927.3	1.00	3.74	5.33	3.5
All Vehicles		4055	123	4268	3.0	2.363	947.3	LOS F	552.9	3927.3	0.87	3.12	4.25	11.7

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.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Second Bridge												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	216.3	210.6	0.97
North: Wairakei Dr N												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	80.3	33.9	0.42
West: Norman Smith St W												
P4	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	78.8	31.9	0.40
All Pedestrians		50	158	54.3	LOS E	0.2	0.2	0.95	0.95	125.1	92.1	0.74

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 102v [Norman / Wairakei 2053 AM Base Option B1 (Site Folder: 2053 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

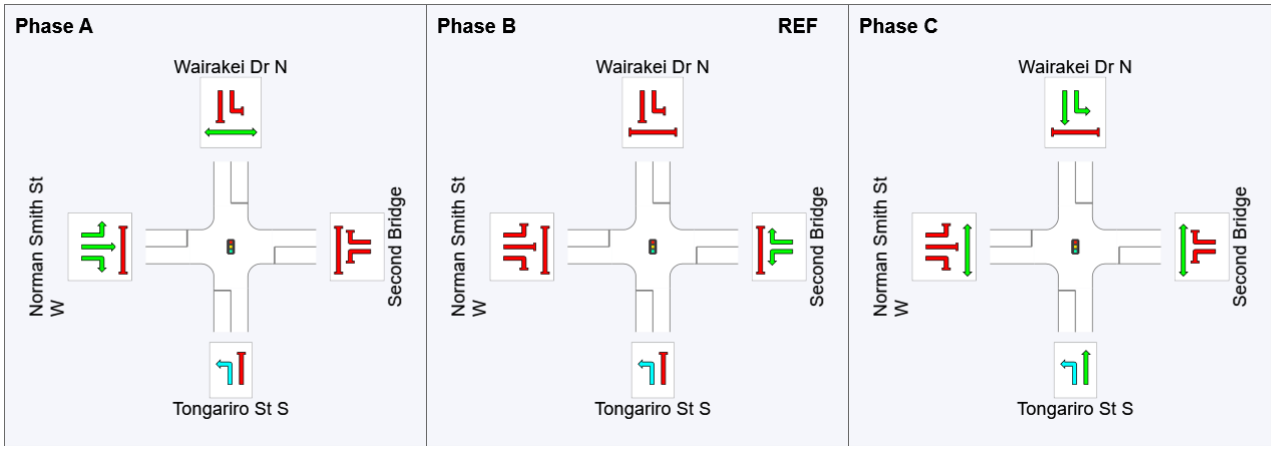
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase B
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

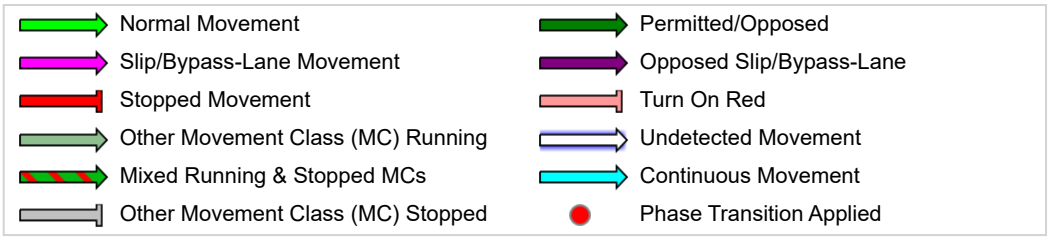
Phase	A	B	C
Phase Change Time (sec)	64	0	24
Green Time (sec)	50	18	34
Phase Time (sec)	56	24	40
Phase Split	47%	20%	33%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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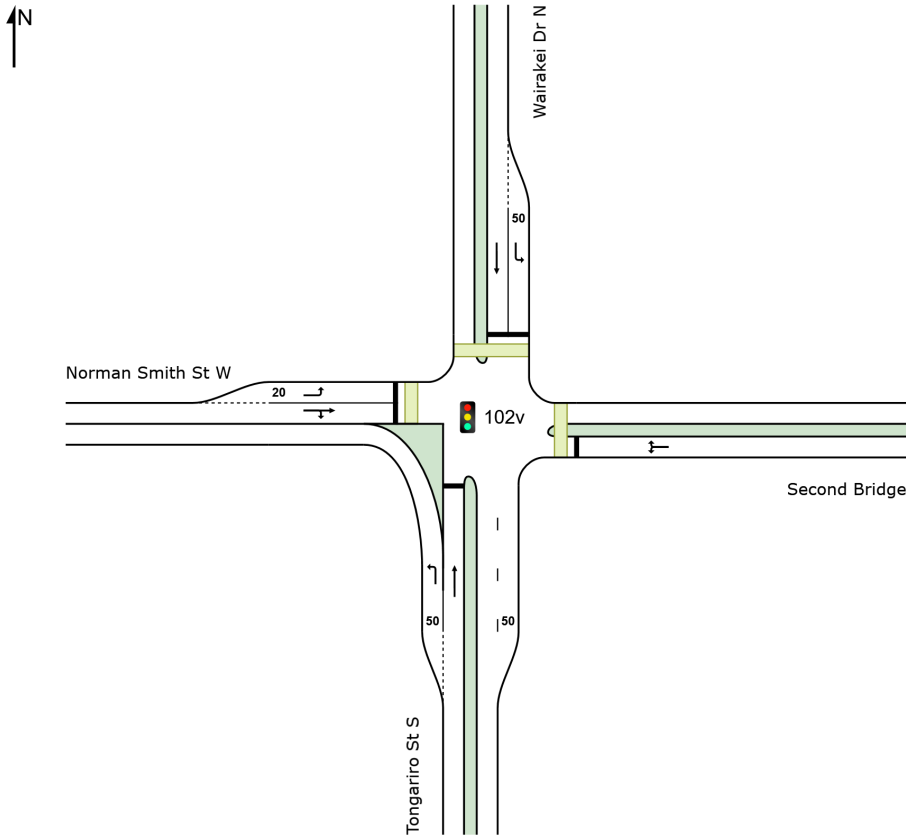
SITE LAYOUT

Site: 102v [Norman / Wairakei 2053 PM Base Option B1 (Site Folder: 2053 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 102v [Norman / Wairakei 2053 PM Base Option B1 (Site Folder: 2053 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tongariro St S														
1	L2	1612	24	1697	1.5	0.923	7.0	LOS A	0.0	0.0	0.00	0.44	0.00	45.3
2	T1	173	1	182	0.6	0.803	61.4	LOS E	11.3	79.4	1.00	0.94	1.19	44.9
Approach		1785	25	1879	1.4	0.923	12.2	LOS B	11.3	79.4	0.10	0.49	0.12	45.1
East: Second Bridge														
4	L2	1	0	1	0.0	1.626	617.7	LOS F	264.8	1879.5	1.00	2.28	4.01	5.3
6	R2	1109	18	1167	1.6	*1.626	617.6	LOS F	264.8	1879.5	1.00	2.28	4.01	23.0
Approach		1110	18	1168	1.6	1.626	617.6	LOS F	264.8	1879.5	1.00	2.28	4.01	23.0
North: Wairakei Dr N														
7	L2	135	8	142	5.9	3.190	2004.1	LOS F	49.4	363.5	1.00	2.46	6.27	10.4
8	T1	335	7	353	2.1	*1.601	590.4	LOS F	77.1	549.4	1.00	2.72	4.01	23.5
Approach		470	15	495	3.2	3.190	996.5	LOS F	77.1	549.4	1.00	2.64	4.66	17.3
West: Norman Smith St W														
10	L2	6	0	6	0.0	0.016	43.8	LOS D	0.3	2.0	0.81	0.65	0.81	46.3
11	T1	413	20	435	4.8	*1.648	632.8	LOS F	238.8	1711.8	1.00	2.76	4.08	6.0
12	R2	577	8	607	1.4	1.648	637.5	LOS F	238.8	1711.8	1.00	2.76	4.08	6.1
Approach		996	28	1048	2.8	1.648	632.0	LOS F	238.8	1711.8	1.00	2.75	4.06	6.2
All Vehicles		4361	86	4591	2.0	3.190	413.9	LOS F	264.8	1879.5	0.63	1.69	2.50	19.5

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.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Second Bridge												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	216.3	210.6	0.97
North: Wairakei Dr N												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	80.3	33.9	0.42
West: Norman Smith St W												
P4	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	78.8	31.9	0.40
All Pedestrians		50	158	54.3	LOS E	0.2	0.2	0.95	0.95	125.1	92.1	0.74

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 102v [Norman / Wairakei 2053 PM Base Option B1 (Site Folder: 2053 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

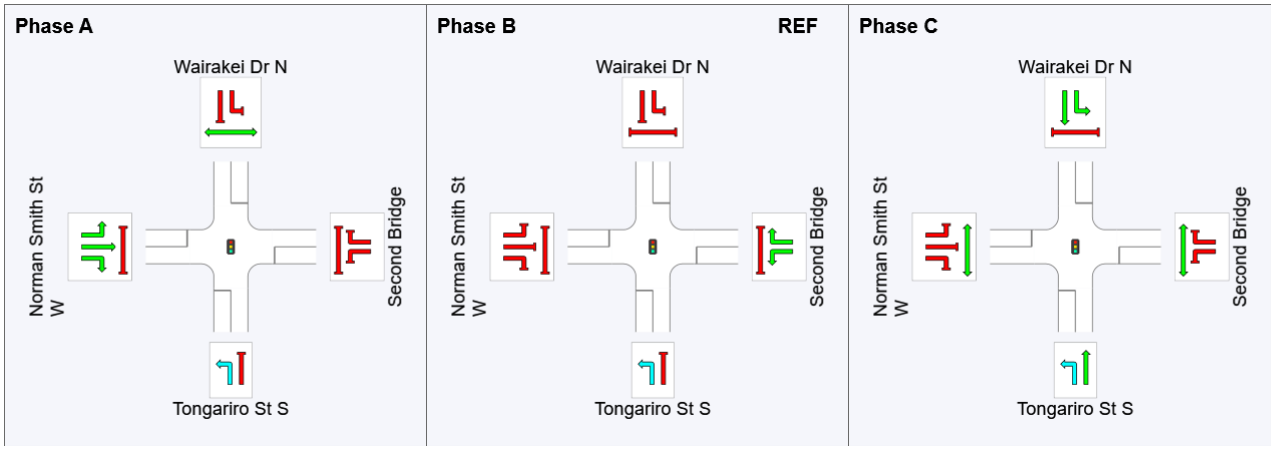
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase B
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

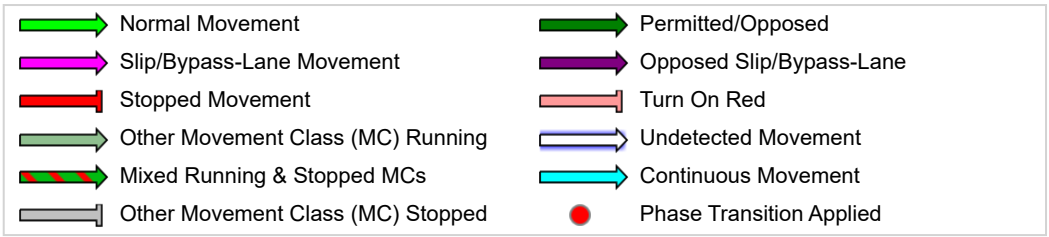
Phase	A	B	C
Phase Change Time (sec)	73	0	53
Green Time (sec)	41	47	14
Phase Time (sec)	47	53	20
Phase Split	39%	44%	17%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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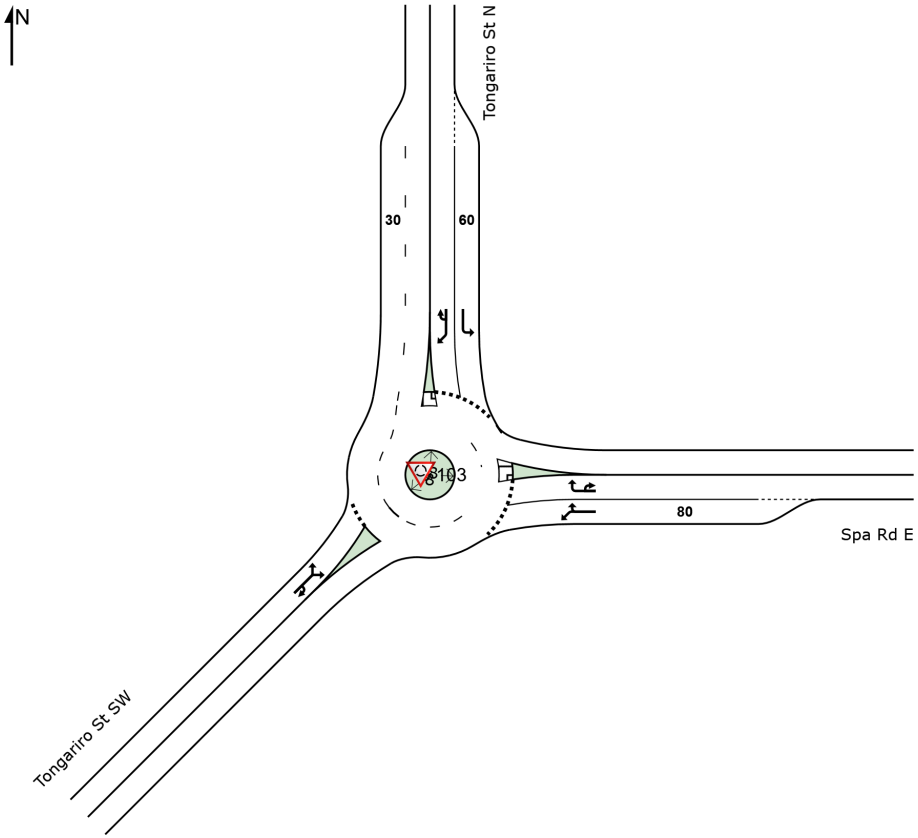
SITE LAYOUT

Site: 103 [Spa / Tongariro 2053 AM Base Option B1 (Site Folder: 2053 Option B1)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 103 [Spa / Tongariro 2053 AM Base Option B1 (Site Folder: 2053 Option B1)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
East: Spa Rd E														
4a	L1	26	0	27	0.0	0.186	10.9	LOS B	1.1	7.9	0.82	0.89	0.82	41.7
6	R2	468	25	493	5.3	0.607	17.5	LOS B	6.6	48.4	0.97	1.08	1.26	41.1
6u	U	1	1	1	100.0	0.607	24.6	LOS C	6.6	48.4	0.98	1.11	1.32	39.8
Approach		495	26	521	5.3	0.607	17.2	LOS B	6.6	48.4	0.96	1.07	1.24	41.1
North: Tongariro St N														
7	L2	900	10	947	1.1	0.619	5.0	LOS A	7.2	50.9	0.45	0.51	0.45	45.6
9a	R1	719	19	757	2.6	0.633	6.9	LOS A	7.4	53.1	0.49	0.56	0.49	44.5
9u	U	88	1	93	1.1	0.633	9.3	LOS A	7.4	53.1	0.49	0.56	0.49	45.9
Approach		1707	30	1797	1.8	0.633	6.0	LOS A	7.4	53.1	0.47	0.53	0.47	45.2
SouthWest: Tongariro St SW														
30a	L1	367	20	386	5.4	0.676	7.8	LOS A	5.8	42.3	0.85	1.05	1.11	28.5
32a	R1	72	0	76	0.0	0.676	10.1	LOS B	5.8	42.3	0.85	1.05	1.11	28.5
32u	U	1	0	1	0.0	0.676	11.4	LOS B	5.8	42.3	0.85	1.05	1.11	29.0
Approach		440	20	463	4.5	0.676	8.2	LOS A	5.8	42.3	0.85	1.05	1.11	28.5
All Vehicles		2642	76	2781	2.9	0.676	8.5	LOS A	7.4	53.1	0.62	0.72	0.72	40.7

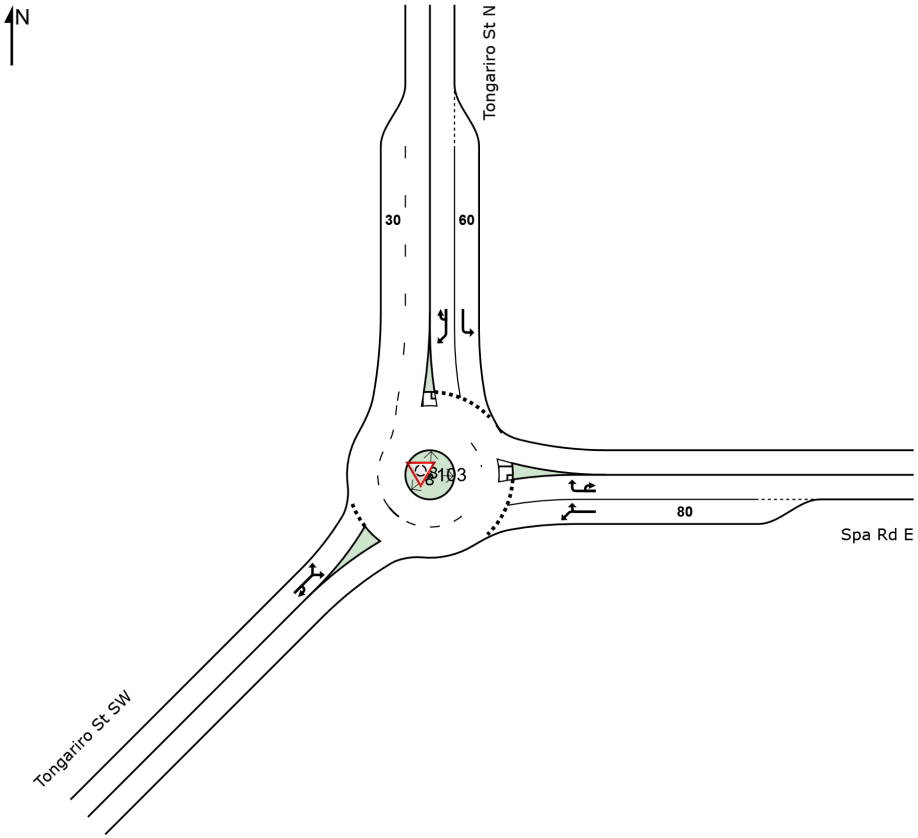
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 103 [Spa / Tongariro 2053 PM Base Option B1 (Site Folder: 2053 Option B1)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 103 [Spa / Tongariro 2053 PM Base Option B1 (Site Folder: 2053 Option B1)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
East: Spa Rd E														
4a	L1	18	0	19	0.0	0.299	7.6	LOS A	1.7	11.7	0.66	0.81	0.66	43.1
6	R2	1207	16	1271	1.3	0.979	35.6	LOS D	39.5	279.8	0.95	1.61	2.60	34.7
6u	U	1	1	1	100.0	0.979	46.9	LOS D	39.5	279.8	1.00	1.74	2.93	32.5
Approach		1226	17	1291	1.4	0.979	35.2	LOS D	39.5	279.8	0.95	1.60	2.58	34.7
North: Tongariro St N														
7	L2	477	4	502	0.8	0.302	4.5	LOS A	2.5	17.3	0.14	0.50	0.14	46.2
9a	R1	367	11	386	3.0	0.331	6.2	LOS A	2.7	19.4	0.16	0.57	0.16	45.1
9u	U	93	0	98	0.0	0.331	8.8	LOS A	2.7	19.4	0.16	0.57	0.16	46.5
Approach		937	15	986	1.6	0.331	5.6	LOS A	2.7	19.4	0.15	0.54	0.15	45.8
SouthWest: Tongariro St SW														
30a	L1	446	8	469	1.8	1.535	504.3	LOS F	120.6	856.3	1.00	8.38	13.91	5.6
32a	R1	26	0	27	0.0	1.535	504.8	LOS F	120.6	856.3	1.00	8.38	13.91	5.4
32u	U	1	0	1	0.0	1.535	506.1	LOS F	120.6	856.3	1.00	8.38	13.91	4.9
Approach		473	8	498	1.7	1.535	504.3	LOS F	120.6	856.3	1.00	8.38	13.91	5.6
All Vehicles		2636	40	2775	1.5	1.535	108.9	LOS F	120.6	856.3	0.67	2.44	3.75	19.6

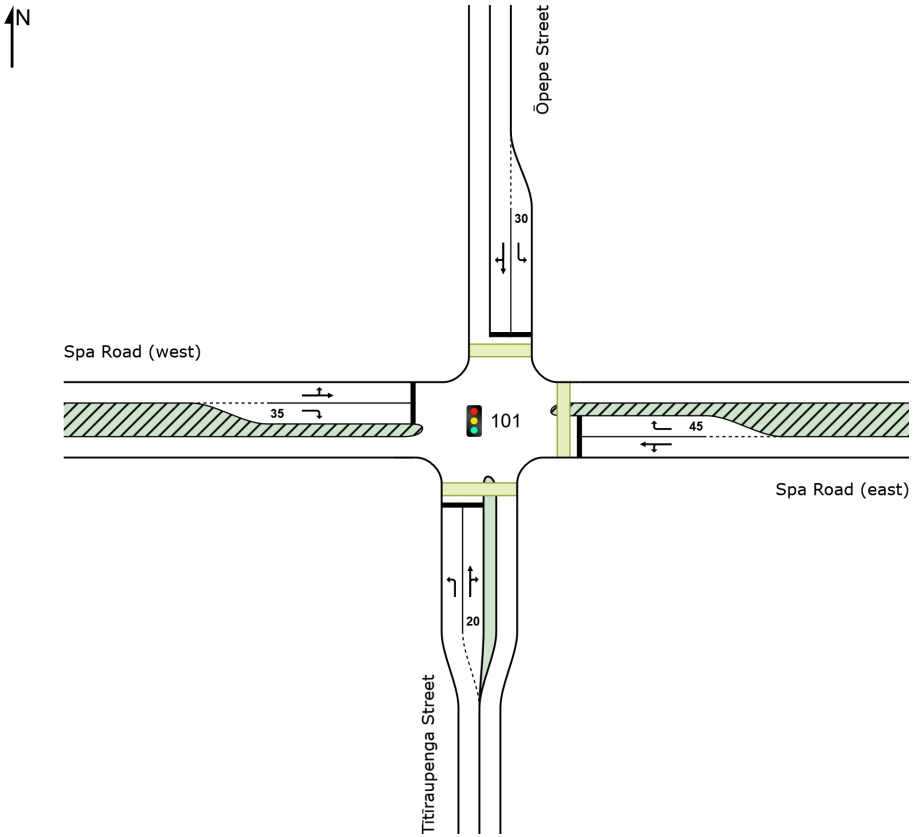
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 AM Base Option B1 (Site Folder: 2053 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 AM Base Option B1 (Site Folder: 2053 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street														
1	L2	168	4	177	2.4	0.487	40.4	LOS D	8.1	57.9	0.83	0.77	0.83	33.4
2	T1	114	1	120	0.9	*1.441	450.8	LOS F	24.7	174.4	1.00	1.88	3.60	10.1
3	R2	9	0	9	0.0	1.441	455.4	LOS F	24.7	174.4	1.00	1.88	3.60	26.1
Approach		291	5	306	1.7	1.441	214.0	LOS F	24.7	174.4	0.90	1.24	2.00	16.6
East: Spa Road (east)														
4	L2	13	0	14	0.0	*0.893	63.1	LOS E	23.3	172.2	0.96	1.04	1.23	45.0
5	T1	336	22	354	6.5	0.893	56.9	LOS E	23.3	172.2	0.96	1.04	1.23	44.9
6	R2	174	10	183	5.7	0.536	52.4	LOS D	9.8	72.1	0.95	0.81	0.95	45.5
Approach		523	32	551	6.1	0.893	55.6	LOS E	23.3	172.2	0.95	0.96	1.14	45.1
North: Ōpepe Street														
7	L2	601	27	633	4.5	*1.963	906.3	LOS F	156.2	1135.5	1.00	2.67	4.81	18.2
8	T1	544	8	573	1.5	*2.076	1017.2	LOS F	170.6	1208.6	1.00	3.70	5.02	5.1
9	R2	39	0	41	0.0	2.076	1021.7	LOS F	170.6	1208.6	1.00	3.70	5.02	4.8
Approach		1184	35	1246	3.0	2.076	961.1	LOS F	170.6	1208.6	1.00	3.18	4.91	12.6
West: Spa Road (west)														
10	L2	1	0	1	0.0	0.514	41.9	LOS D	13.1	94.5	0.86	0.73	0.86	37.9
11	T1	263	10	277	3.8	0.514	35.5	LOS D	13.1	94.5	0.86	0.73	0.86	46.7
12	R2	53	0	56	0.0	0.157	48.3	LOS D	2.7	19.2	0.87	0.74	0.87	31.3
Approach		317	10	334	3.2	0.514	37.6	LOS D	13.1	94.5	0.86	0.73	0.86	46.0
All Vehicles		2315	82	2437	3.5	2.076	536.1	LOS F	170.6	1208.6	0.96	2.10	3.14	19.7

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.

Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Tītīraupenga Street												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	230.3	228.8	0.99
East: Spa Road (east)												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.0	216.8	0.98
North: Ōpepe Street												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	218.8	213.9	0.98
All Pedestrians		150	158	54.3	LOS E	0.2	0.2	0.95	0.95	223.4	219.8	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 AM Base Option B1 (Site Folder: 2053 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

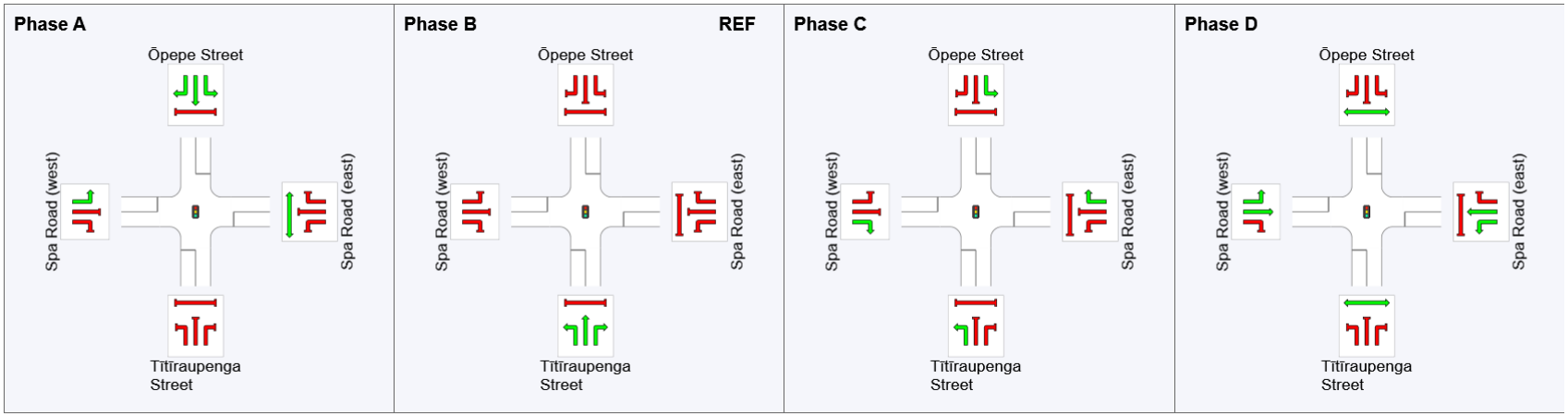
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase B
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Phase Timing Summary

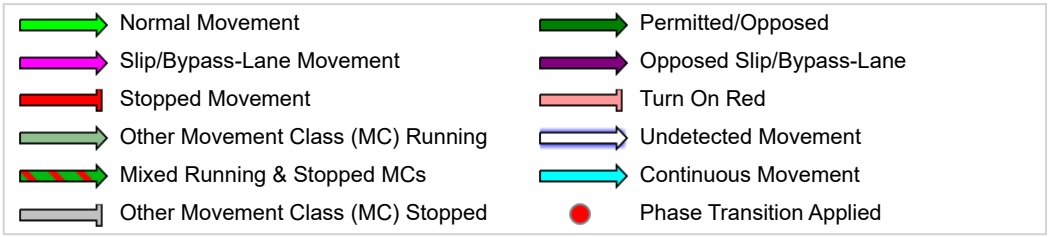
Phase	A	B	C	D
Phase Change Time (sec)	84	0	12	41
Green Time (sec)	30	6	23	37
Phase Time (sec)	36	12	29	43
Phase Split	30%	10%	24%	36%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

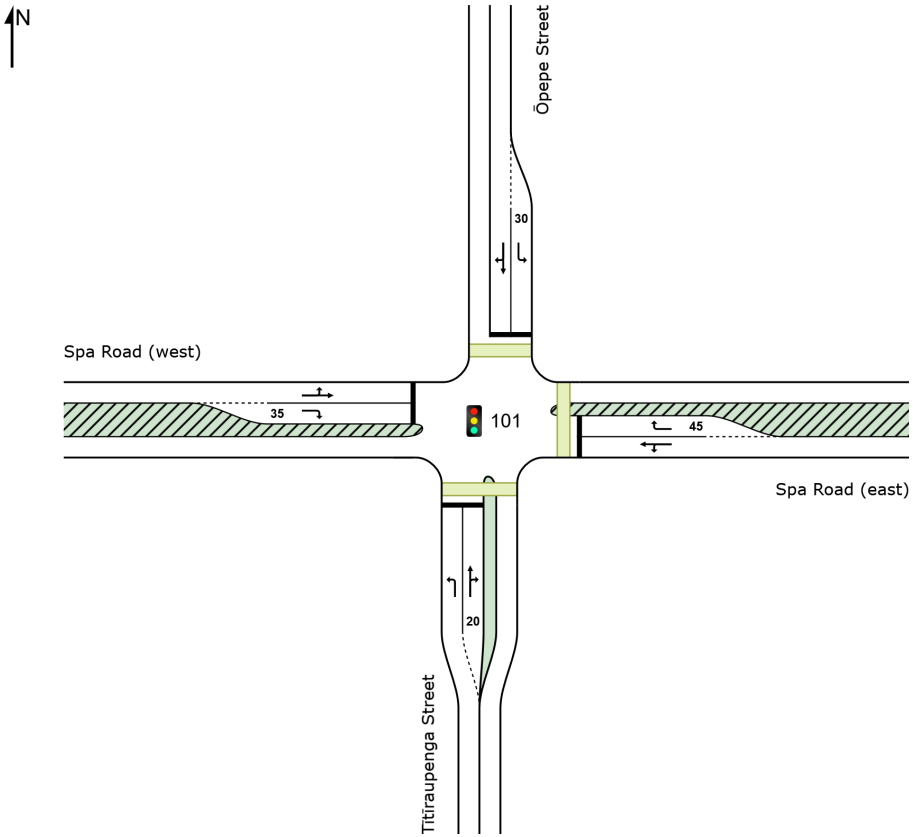


SITE LAYOUT

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 PM Base Option B1 (Site Folder: 2053 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 PM Base Option B1 (Site Folder: 2053 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street														
1	L2	660	5	695	0.8	1.494	503.0	LOS F	142.3	1002.2	1.00	2.15	3.66	6.9
2	T1	264	4	278	1.5	*2.080	1017.9	LOS F	79.6	563.9	1.00	2.90	5.06	5.1
3	R2	9	0	9	0.0	2.080	1022.4	LOS F	79.6	563.9	1.00	2.90	5.06	16.5
Approach		933	9	982	1.0	2.080	653.7	LOS F	142.3	1002.2	1.00	2.37	4.07	6.3
East: Spa Road (east)														
4	L2	6	0	6	0.0	*0.281	42.2	LOS D	6.5	48.8	0.82	0.68	0.82	46.7
5	T1	130	11	137	8.5	0.281	36.0	LOS D	6.5	48.8	0.82	0.68	0.82	46.7
6	R2	462	15	486	3.2	*2.016	962.8	LOS F	131.7	947.4	1.00	2.61	4.91	17.6
Approach		598	26	629	4.3	2.016	752.1	LOS F	131.7	947.4	0.96	2.17	3.98	20.4
North: Ōpepe Street														
7	L2	267	22	281	8.2	*1.346	354.1	LOS F	42.0	314.7	1.00	1.80	3.20	29.0
8	T1	191	4	201	2.1	0.845	55.6	LOS E	12.1	86.5	0.94	0.95	1.22	34.1
9	R2	3	0	3	0.0	0.845	60.2	LOS E	12.1	86.5	0.94	0.95	1.22	33.1
Approach		461	26	485	5.6	1.346	228.5	LOS F	42.0	314.7	0.97	1.44	2.37	29.6
West: Spa Road (west)														
10	L2	1	0	1	0.0	0.262	39.1	LOS D	6.7	47.5	0.79	0.65	0.79	38.6
11	T1	145	3	153	2.1	0.262	32.7	LOS C	6.7	47.5	0.79	0.65	0.79	47.0
12	R2	423	1	445	0.2	1.906	864.6	LOS F	115.4	809.2	1.00	2.52	4.71	4.2
Approach		569	4	599	0.7	1.906	651.2	LOS F	115.4	809.2	0.95	2.04	3.70	11.0
All Vehicles		2561	65	2696	2.5	2.080	599.6	LOS F	142.3	1002.2	0.97	2.08	3.66	15.1

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.

Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Tītīraupenga Street												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	230.3	228.8	0.99
East: Spa Road (east)												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.0	216.8	0.98
North: Ōpepe Street												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	218.8	213.9	0.98
All Pedestrians		150	158	54.3	LOS E	0.2	0.2	0.95	0.95	223.4	219.8	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 PM Base Option B1 (Site Folder: 2053 Option B1)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

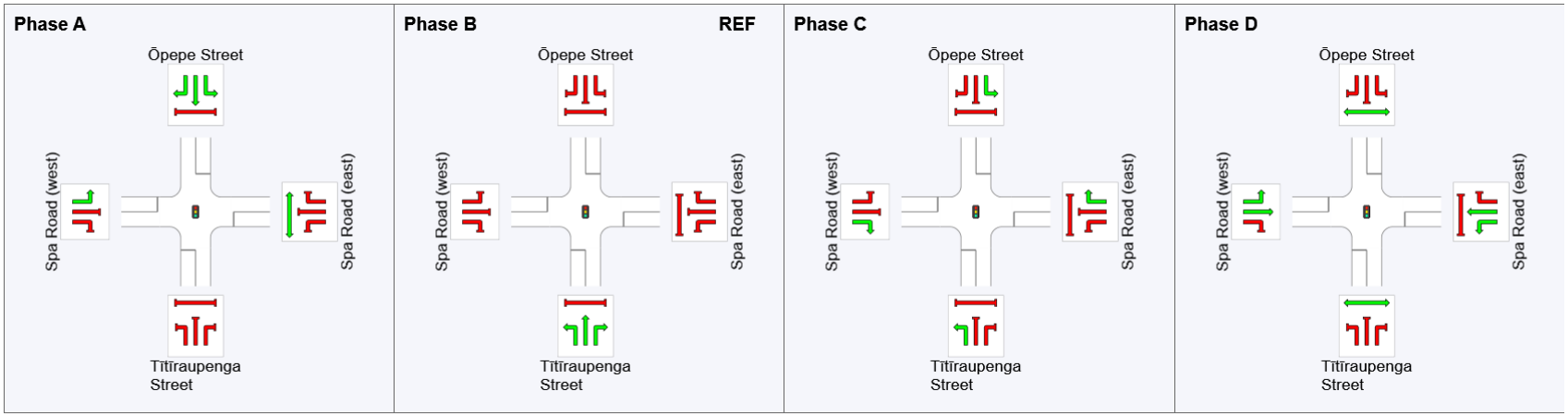
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase B
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Phase Timing Summary

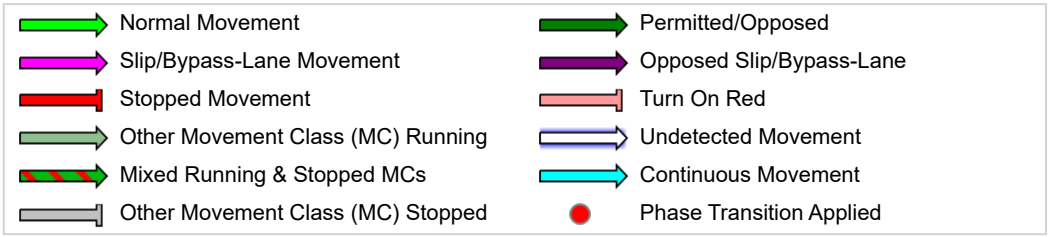
Phase	A	B	C	D
Phase Change Time (sec)	89	0	23	46
Green Time (sec)	25	17	17	37
Phase Time (sec)	31	23	23	43
Phase Split	26%	19%	19%	36%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

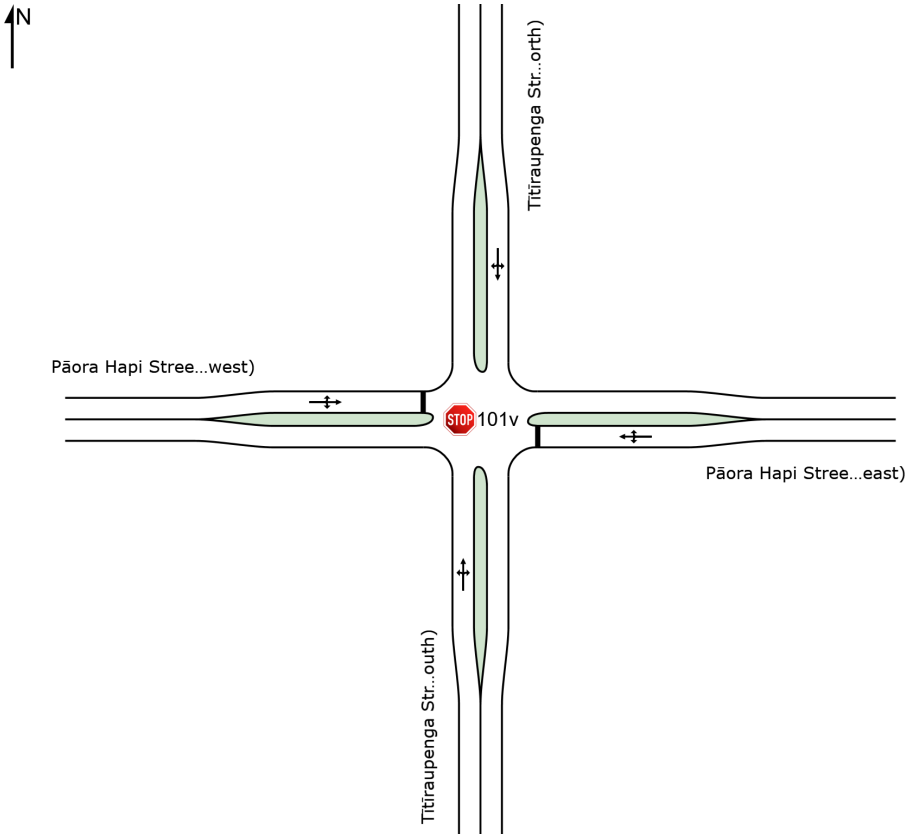


SITE LAYOUT

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2053 AM Base Option B1 (Site Folder: 2053 Option B1)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2053 AM Base Option B1 (Site Folder: 2053 Option B1)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street (south)														
1	L2	239	2	252	0.8	0.315	4.9	LOS A	0.3	2.1	0.06	0.23	0.07	39.3
2	T1	309	2	325	0.6	0.315	0.3	LOS A	0.3	2.1	0.06	0.23	0.07	47.4
3	R2	9	0	9	0.0	0.315	9.6	LOS A	0.3	2.1	0.06	0.23	0.07	45.8
Approach		557	4	586	0.7	0.315	2.4	NA	0.3	2.1	0.06	0.23	0.07	43.6
East: Pāora Hapi Street (east)														
4	L2	26	0	27	0.0	0.414	16.0	LOS C	1.5	10.8	0.87	1.09	1.13	30.9
5	T1	57	0	60	0.0	0.414	32.4	LOS D	1.5	10.8	0.87	1.09	1.13	24.0
6	R2	5	0	5	0.0	0.414	28.9	LOS D	1.5	10.8	0.87	1.09	1.13	28.1
Approach		88	0	93	0.0	0.414	27.4	LOS D	1.5	10.8	0.87	1.09	1.13	26.3
North: Tītīraupenga Street (north)														
7	L2	9	0	9	0.0	0.392	8.2	LOS A	0.7	4.8	0.10	0.03	0.12	47.8
8	T1	652	8	686	1.2	0.392	0.4	LOS A	0.7	4.8	0.10	0.03	0.12	49.1
9	R2	29	0	31	0.0	0.392	8.7	LOS A	0.7	4.8	0.10	0.03	0.12	38.0
Approach		690	8	726	1.2	0.392	0.8	NA	0.7	4.8	0.10	0.03	0.12	48.6
West: Pāora Hapi Street (west)														
10	L2	38	0	40	0.0	1.413	398.1	LOS F	52.8	372.6	1.00	6.30	12.60	3.7
11	T1	19	0	20	0.0	1.413	411.3	LOS F	52.8	372.6	1.00	6.30	12.60	3.5
12	R2	182	2	192	1.1	1.413	417.3	LOS F	52.8	372.6	1.00	6.30	12.60	4.5
Approach		239	2	252	0.8	1.413	413.8	LOS F	52.8	372.6	1.00	6.30	12.60	4.3
All Vehicles		1574	14	1657	0.9	1.413	65.6	NA	52.8	372.6	0.26	1.11	2.05	18.9

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.

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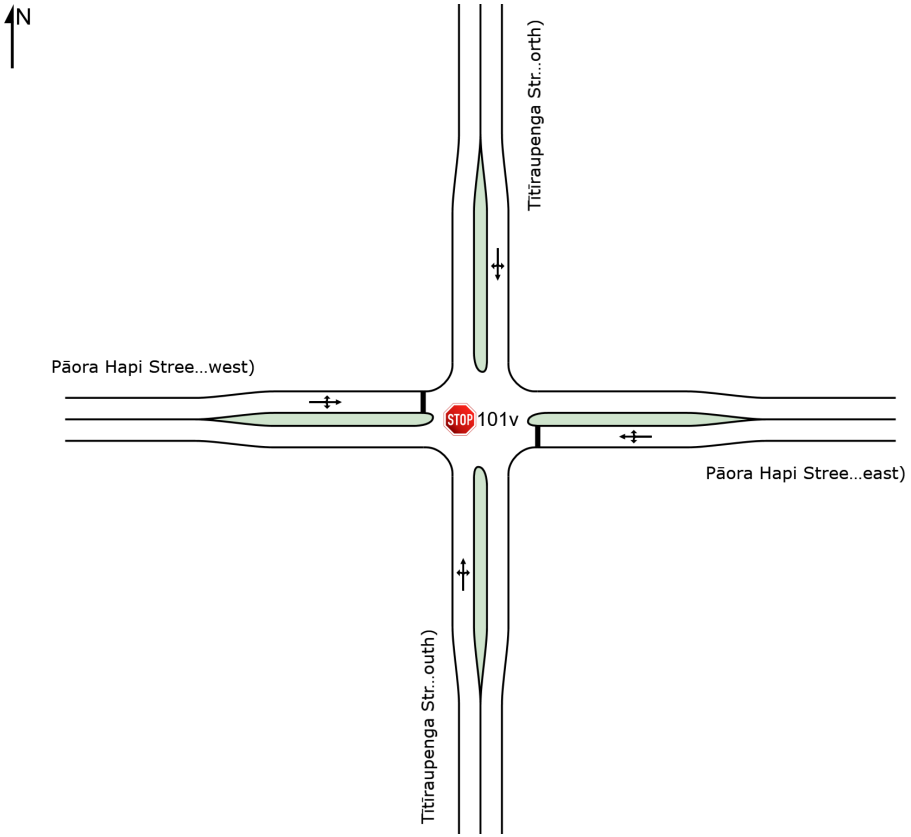
SITE LAYOUT

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2053 PM Base Option B1 (Site Folder: 2053 Option B1)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2053 PM Base Option B1 (Site Folder: 2053 Option B1)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street (south)														
1	L2	35	1	37	2.9	0.373	6.4	LOS A	0.4	2.5	0.05	0.04	0.07	40.6
2	T1	627	4	660	0.6	0.373	0.2	LOS A	0.4	2.5	0.05	0.04	0.07	49.3
3	R2	10	0	11	0.0	0.373	10.1	LOS B	0.4	2.5	0.05	0.04	0.07	47.6
Approach		672	5	707	0.7	0.373	0.7	NA	0.4	2.5	0.05	0.04	0.07	48.7
East: Pāora Hapi Street (east)														
4	L2	15	0	16	0.0	0.279	14.1	LOS B	0.9	6.3	0.87	1.04	0.99	30.1
5	T1	22	0	23	0.0	0.279	34.0	LOS D	0.9	6.3	0.87	1.04	0.99	23.4
6	R2	10	0	11	0.0	0.279	41.4	LOS E	0.9	6.3	0.87	1.04	0.99	27.2
Approach		47	0	49	0.0	0.279	29.2	LOS D	0.9	6.3	0.87	1.04	0.99	26.3
North: Tītīraupenga Street (north)														
7	L2	15	0	16	0.0	0.385	8.7	LOS A	0.6	4.1	0.09	0.03	0.11	47.8
8	T1	648	4	682	0.6	0.385	0.4	LOS A	0.6	4.1	0.09	0.03	0.11	49.1
9	R2	19	0	20	0.0	0.385	10.2	LOS B	0.6	4.1	0.09	0.03	0.11	38.0
Approach		682	4	718	0.6	0.385	0.8	NA	0.6	4.1	0.09	0.03	0.11	48.7
West: Pāora Hapi Street (west)														
10	L2	45	0	47	0.0	1.483	465.5	LOS F	49.2	344.7	1.00	5.95	12.26	3.2
11	T1	18	0	19	0.0	1.483	481.2	LOS F	49.2	344.7	1.00	5.95	12.26	3.0
12	R2	138	0	145	0.0	1.483	486.4	LOS F	49.2	344.7	1.00	5.95	12.26	3.9
Approach		201	0	212	0.0	1.483	481.3	LOS F	49.2	344.7	1.00	5.95	12.26	3.7
All Vehicles		1602	9	1686	0.6	1.483	61.9	NA	49.2	344.7	0.21	0.80	1.64	19.9

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.

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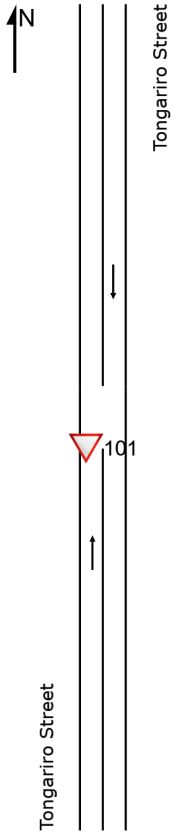
SITE LAYOUT

Site: 101 [TCG Bridge 2053 AM (Site Folder: 2053 Option B1)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [TCG Bridge 2053 AM (Site Folder: 2053 Option B1)]

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: Tongariro Street														
2	T1	759	5.0	799	5.0	0.423	4.3	LOS A	0.0	0.0	0.00	0.53	0.00	54.5
Approach		759	5.0	799	5.0	0.423	4.3	NA	0.0	0.0	0.00	0.53	0.00	54.5
North: Tongariro Street														
8	T1	1755	5.0	1847	5.0	0.978	9.2	LOS A	0.0	0.0	0.00	0.46	0.00	47.6
Approach		1755	5.0	1847	5.0	0.978	9.2	NA	0.0	0.0	0.00	0.46	0.00	47.6
All Vehicles		2514	5.0	2646	5.0	0.978	7.7	NA	0.0	0.0	0.00	0.48	0.00	49.5

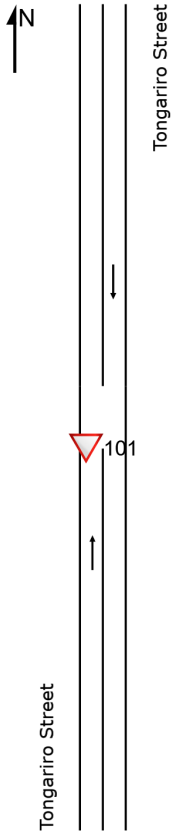
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and 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.

SITE LAYOUT

Site: 101 [TCG Bridge 2053 PM (Site Folder: 2053 Option B1)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [TCG Bridge 2053 PM (Site Folder: 2053 Option B1)]

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: Tongariro Street														
2	T1	1785	5.0	1879	5.0	0.995	11.6	LOS B	0.0	0.0	0.00	0.43	0.00	44.8
Approach		1785	5.0	1879	5.0	0.995	11.6	NA	0.0	0.0	0.00	0.43	0.00	44.8
North: Tongariro Street														
8	T1	912	5.0	960	5.0	0.508	4.4	LOS A	0.0	0.0	0.00	0.53	0.00	54.4
Approach		912	5.0	960	5.0	0.508	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.4
All Vehicles		2697	5.0	2839	5.0	0.995	9.2	NA	0.0	0.0	0.00	0.47	0.00	47.7

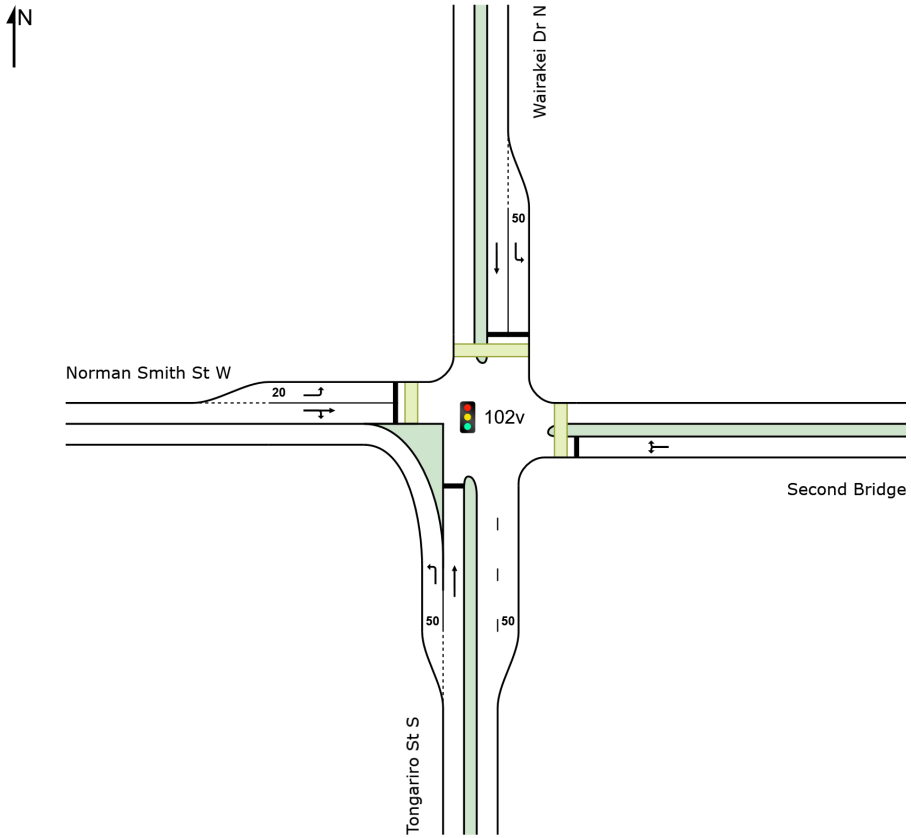
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and 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.

SITE LAYOUT

Site: 102v [Norman / Wairakei 2053 AM Base Option B2 (Site Folder: 2053 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 102v [Norman / Wairakei 2053 AM Base Option B2 (Site Folder: 2053 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 140 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tongariro St S														
1	L2	471	31	496	6.6	0.279	4.5	LOS A	0.0	0.0	0.00	0.46	0.00	48.1
2	T1	131	11	138	8.4	0.227	36.3	LOS D	6.8	50.7	0.77	0.63	0.77	46.9
Approach		602	42	634	7.0	0.279	11.4	LOS B	6.8	50.7	0.17	0.50	0.17	47.3
East: Second Bridge														
4	L2	1	0	1	0.0	1.877	844.4	LOS F	81.7	600.7	1.00	2.25	4.16	3.9
6	R2	291	17	306	5.8	*1.877	844.4	LOS F	81.7	600.7	1.00	2.25	4.16	19.0
Approach		292	17	307	5.8	1.877	844.4	LOS F	81.7	600.7	1.00	2.25	4.16	19.0
North: Wairakei Dr N														
7	L2	481	15	506	3.1	1.871	845.5	LOS F	135.4	973.4	1.00	2.35	4.14	19.1
8	T1	947	20	997	2.1	*2.103	1047.7	LOS F	291.2	2075.5	1.00	3.67	4.47	16.8
Approach		1428	35	1503	2.5	2.103	979.6	LOS F	291.2	2075.5	1.00	3.22	4.36	17.5
West: Norman Smith St W														
10	L2	20	1	21	5.0	0.034	36.8	LOS D	0.9	6.8	0.69	0.67	0.69	46.8
11	T1	933	17	982	1.8	*2.146	1085.5	LOS F	535.8	3805.4	1.00	3.21	4.51	3.7
12	R2	777	12	818	1.5	2.146	1090.2	LOS F	535.8	3805.4	1.00	3.21	4.51	3.8
Approach		1730	30	1821	1.7	2.146	1075.5	LOS F	535.8	3805.4	1.00	3.18	4.47	4.0
All Vehicles		4052	124	4265	3.1	2.146	867.0	LOS F	535.8	3805.4	0.87	2.73	3.77	12.6

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.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Second Bridge												
P2	Full	50	53	64.3	LOS F	0.2	0.2	0.96	0.96	226.3	210.6	0.93
North: Wairakei Dr N												
P3	Full	50	53	64.3	LOS F	0.2	0.2	0.96	0.96	90.3	33.9	0.38
West: Norman Smith St W												
P4	Full	50	53	64.3	LOS F	0.2	0.2	0.96	0.96	88.8	31.9	0.36
All Pedestrians		50	158	64.3	LOS F	0.2	0.2	0.96	0.96	135.1	92.1	0.68

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 102v [Norman / Wairakei 2053 AM Base Option B2 (Site Folder: 2053 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 140 seconds (Site Practical Cycle Time)

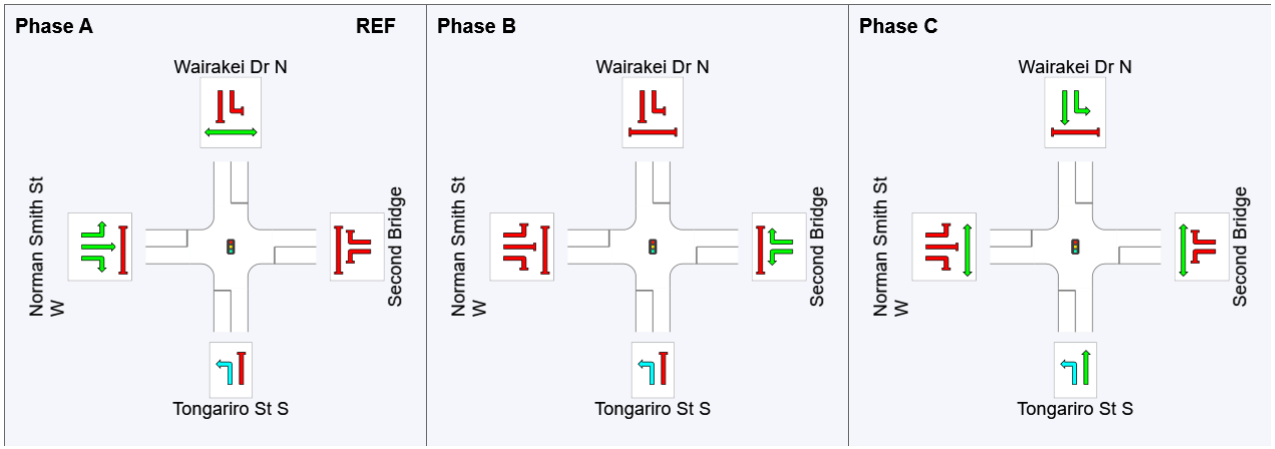
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

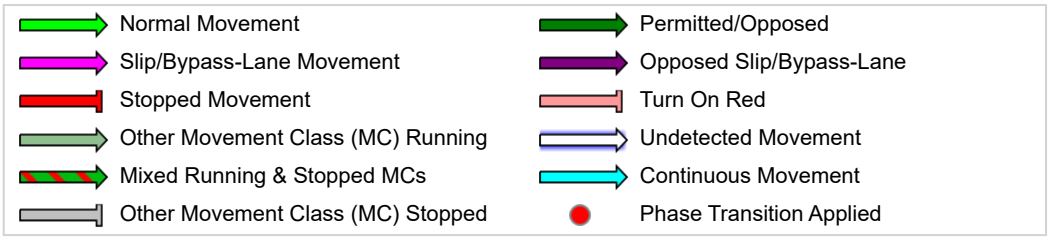
Phase	A	B	C
Phase Change Time (sec)	0	69	88
Green Time (sec)	63	13	46
Phase Time (sec)	69	19	52
Phase Split	49%	14%	37%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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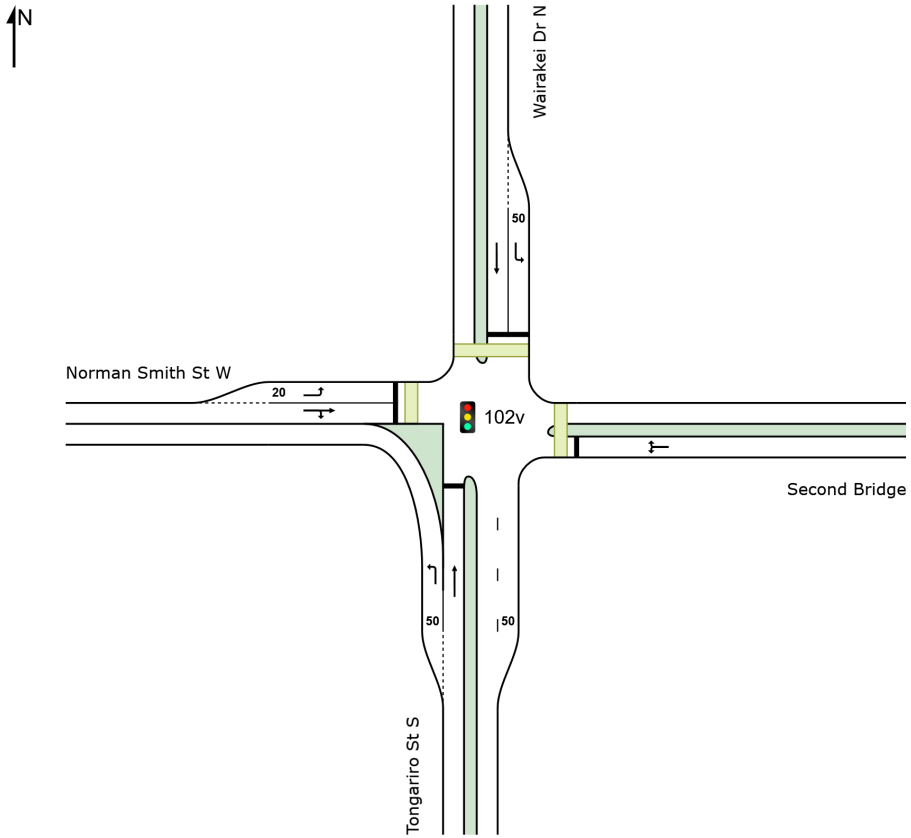
SITE LAYOUT

Site: 102v [Norman / Wairakei 2053 PM Base Option B2 (Site Folder: 2053 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 102v [Norman / Wairakei 2053 PM Base Option B2 (Site Folder: 2053 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tongariro St S														
1	L2	1601	26	1685	1.6	0.918	6.8	LOS A	0.0	0.0	0.00	0.44	0.00	45.5
2	T1	105	1	111	1.0	0.360	49.3	LOS D	5.9	41.4	0.94	0.74	0.94	45.8
Approach		1706	27	1796	1.6	0.918	9.4	LOS A	5.9	41.4	0.06	0.46	0.06	45.6
East: Second Bridge														
4	L2	1	0	1	0.0	1.835	804.6	LOS F	329.2	2330.1	1.00	2.51	4.52	4.1
6	R2	1228	16	1293	1.3	*1.835	804.6	LOS F	329.2	2330.1	1.00	2.51	4.52	19.8
Approach		1229	16	1294	1.3	1.835	804.6	LOS F	329.2	2330.1	1.00	2.51	4.52	19.8
North: Wairakei Dr N														
7	L2	173	8	182	4.6	*1.736	713.1	LOS F	43.5	316.3	1.00	2.36	4.39	21.1
8	T1	286	7	301	2.4	1.127	186.9	LOS F	35.6	254.3	1.00	1.70	2.27	36.9
Approach		459	15	483	3.3	1.736	385.2	LOS F	43.5	316.3	1.00	1.95	3.07	28.8
West: Norman Smith St W														
10	L2	5	0	5	0.0	0.015	47.3	LOS D	0.2	1.7	0.84	0.64	0.84	46.0
11	T1	574	22	604	3.8	*1.832	796.7	LOS F	266.7	1911.9	1.00	3.21	4.52	4.9
12	R2	428	6	451	1.4	1.832	801.4	LOS F	266.7	1911.9	1.00	3.21	4.52	5.0
Approach		1007	28	1060	2.8	1.832	795.0	LOS F	266.7	1911.9	1.00	3.20	4.50	5.1
All Vehicles		4401	86	4633	2.0	1.835	450.4	LOS F	329.2	2330.1	0.63	1.81	2.64	18.6

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.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Second Bridge												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	216.3	210.6	0.97
North: Wairakei Dr N												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	80.3	33.9	0.42
West: Norman Smith St W												
P4	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	78.8	31.9	0.40
All Pedestrians		50	158	54.3	LOS E	0.2	0.2	0.95	0.95	125.1	92.1	0.74

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 102v [Norman / Wairakei 2053 PM Base Option B2 (Site Folder: 2053 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

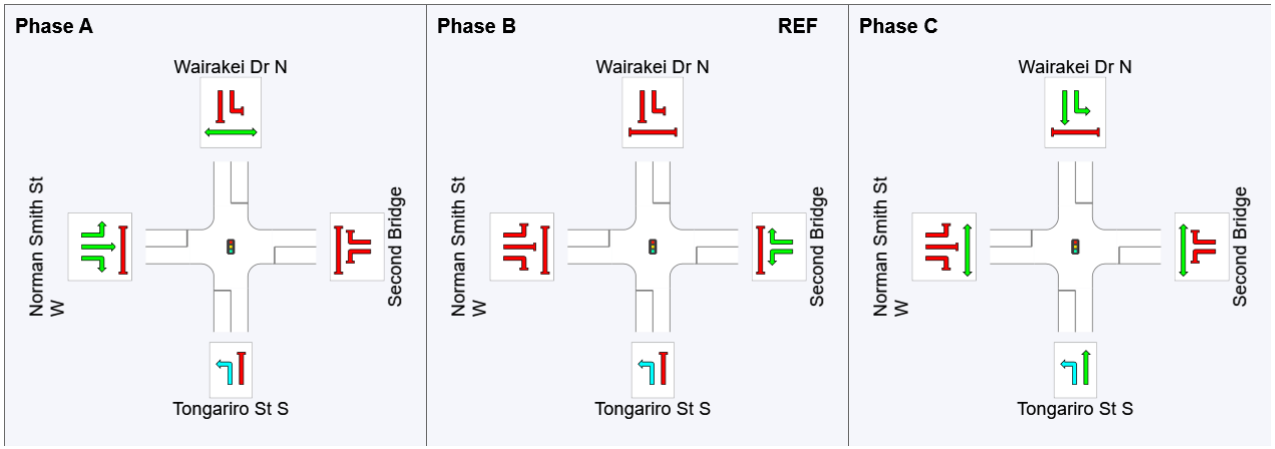
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase B
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

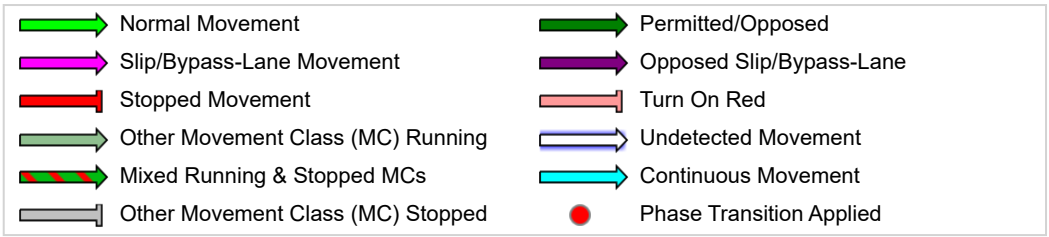
Phase	A	B	C
Phase Change Time (sec)	77	0	52
Green Time (sec)	37	46	19
Phase Time (sec)	43	52	25
Phase Split	36%	43%	21%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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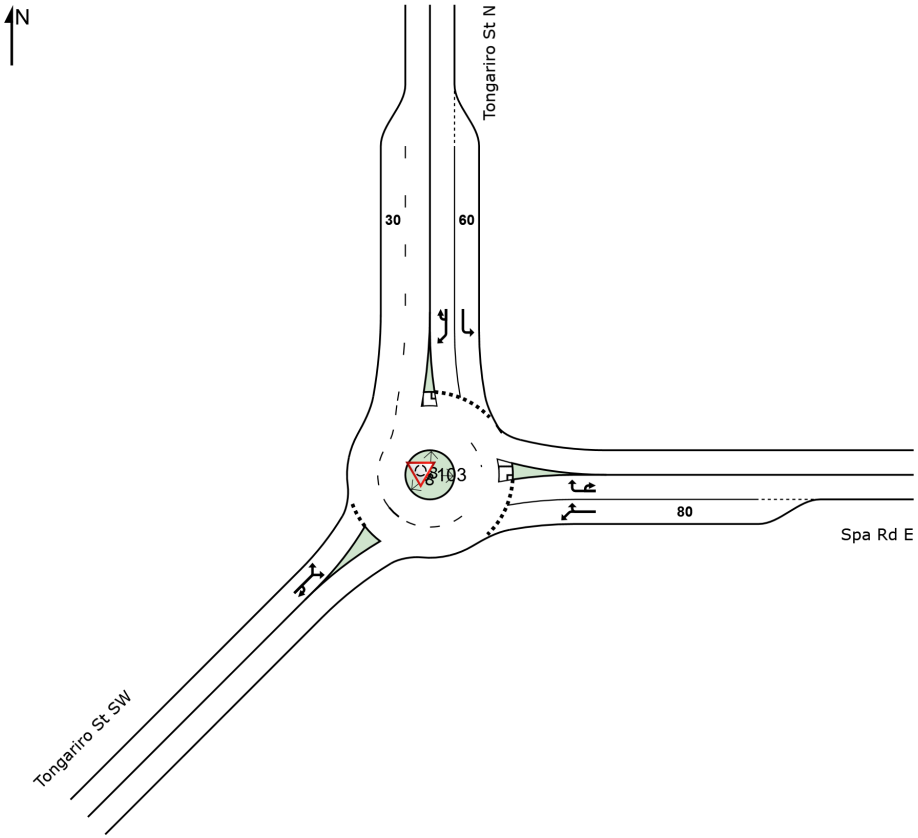
SITE LAYOUT

Site: 103 [Spa / Tongariro 2053 AM Base Option B2 (Site Folder: 2053 Option B2)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 103 [Spa / Tongariro 2053 AM Base Option B2 (Site Folder: 2053 Option B2)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
East: Spa Rd E														
4a	L1	42	0	44	0.0	0.165	11.7	LOS B	1.0	7.0	0.82	0.88	0.82	41.8
6	R2	384	23	404	6.0	0.541	17.2	LOS B	5.3	39.2	0.96	1.06	1.19	41.2
6u	U	1	1	1	100.0	0.541	24.2	LOS C	5.3	39.2	0.97	1.07	1.22	40.0
Approach		427	24	449	5.6	0.541	16.7	LOS B	5.3	39.2	0.94	1.04	1.16	41.2
North: Tongariro St N														
7	L2	839	15	883	1.8	0.644	5.2	LOS A	7.6	53.9	0.47	0.51	0.47	45.5
9a	R1	784	17	825	2.2	0.592	6.6	LOS A	6.4	45.8	0.41	0.56	0.41	44.7
9u	U	80	0	84	0.0	0.592	9.0	LOS A	6.4	45.8	0.41	0.56	0.41	46.1
Approach		1703	32	1793	1.9	0.644	6.0	LOS A	7.6	53.9	0.44	0.54	0.44	45.2
SouthWest: Tongariro St SW														
30a	L1	305	18	321	5.9	0.531	5.0	LOS A	3.7	27.1	0.74	0.83	0.84	29.2
32a	R1	68	0	72	0.0	0.531	7.3	LOS A	3.7	27.1	0.74	0.83	0.84	29.2
32u	U	1	0	1	0.0	0.531	8.7	LOS A	3.7	27.1	0.74	0.83	0.84	29.8
Approach		374	18	394	4.8	0.531	5.4	LOS A	3.7	27.1	0.74	0.83	0.84	29.2
All Vehicles		2504	74	2636	3.0	0.644	7.7	LOS A	7.6	53.9	0.57	0.66	0.62	41.3

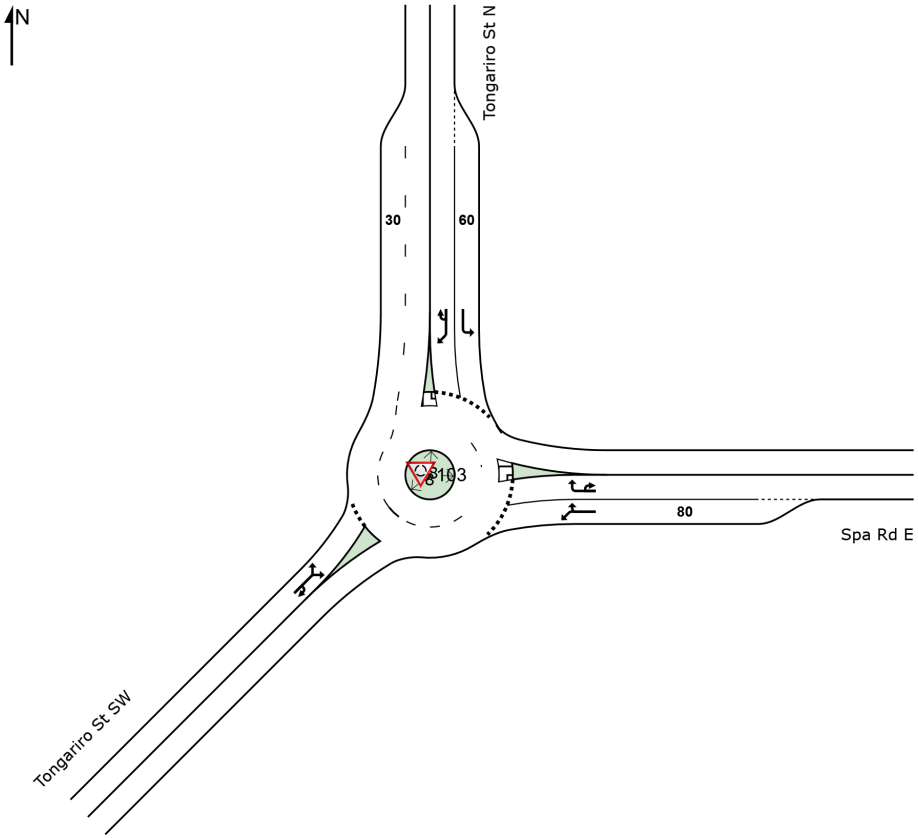
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 103 [Spa / Tongariro 2053 PM Base Option B2 (Site Folder: 2053 Option B2)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 103 [Spa / Tongariro 2053 PM Base Option B2 (Site Folder: 2053 Option B2)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
East: Spa Rd E														
4a	L1	19	0	20	0.0	0.272	8.2	LOS A	1.5	10.7	0.69	0.83	0.69	42.8
6	R2	1007	18	1060	1.8	0.889	22.8	LOS C	20.5	145.6	0.96	1.27	1.79	39.0
6u	U	1	1	1	100.0	0.889	31.4	LOS C	20.5	145.6	1.00	1.35	1.98	37.3
Approach		1027	19	1081	1.9	0.889	22.5	LOS C	20.5	145.6	0.95	1.27	1.77	39.1
North: Tongariro St N														
7	L2	209	7	220	3.3	0.190	4.7	LOS A	1.3	9.0	0.23	0.51	0.23	46.0
9a	R1	446	6	469	1.3	0.358	6.3	LOS A	3.1	21.6	0.24	0.56	0.24	45.0
9u	U	90	0	95	0.0	0.358	8.9	LOS A	3.1	21.6	0.24	0.56	0.24	46.4
Approach		745	13	784	1.7	0.358	6.2	LOS A	3.1	21.6	0.24	0.55	0.24	45.5
SouthWest: Tongariro St SW														
30a	L1	586	9	617	1.5	1.670	617.6	LOS F	185.7	1315.1	1.00	11.31	18.61	4.7
32a	R1	67	0	71	0.0	1.670	618.8	LOS F	185.7	1315.1	1.00	11.31	18.61	4.6
32u	U	1	0	1	0.0	1.670	620.2	LOS F	185.7	1315.1	1.00	11.31	18.61	4.1
Approach		654	9	688	1.4	1.670	617.7	LOS F	185.7	1315.1	1.00	11.31	18.61	4.7
All Vehicles		2426	41	2554	1.7	1.670	178.0	LOS F	185.7	1315.1	0.75	3.75	5.84	14.0

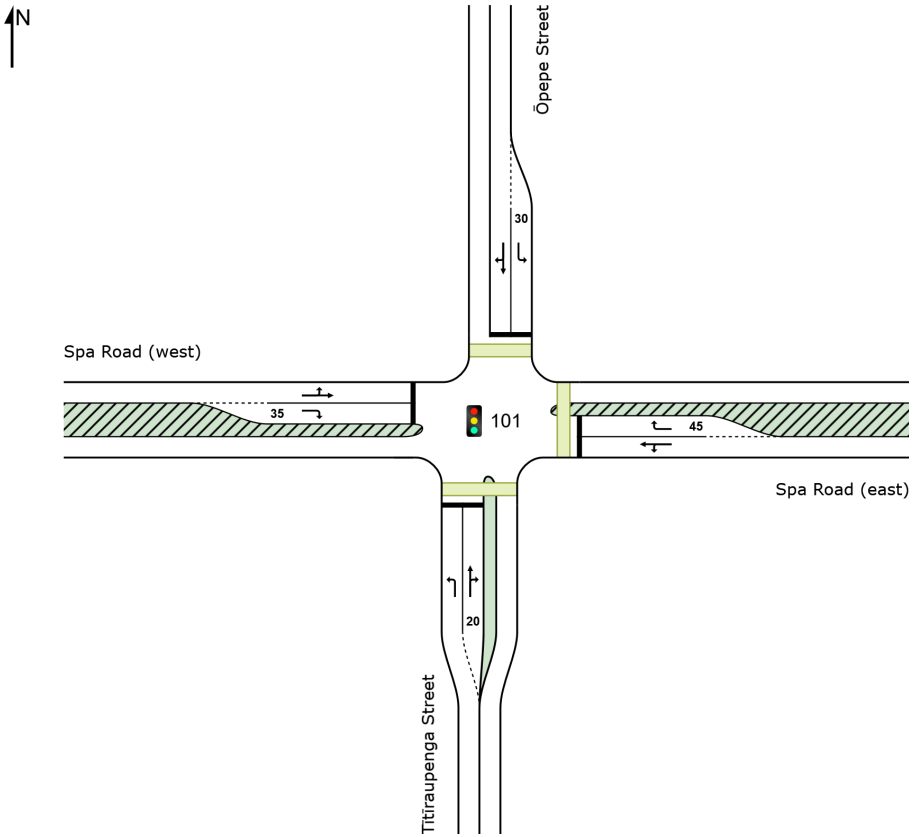
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 AM Base Option B2 (Site Folder: 2053 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 AM Base Option B2 (Site Folder: 2053 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street														
1	L2	198	1	208	0.5	0.645	46.7	LOS D	10.5	73.8	0.91	0.80	0.91	31.7
2	T1	96	1	101	1.0	*1.276	309.2	LOS F	17.5	124.4	1.00	1.63	3.02	15.2
3	R2	11	1	12	9.1	1.276	313.8	LOS F	17.5	124.4	1.00	1.63	3.02	30.7
Approach		305	3	321	1.0	1.276	139.0	LOS F	17.5	124.4	0.94	1.09	1.65	22.3
East: Spa Road (east)														
4	L2	120	2	126	1.7	1.536	540.4	LOS F	165.5	1208.1	1.00	2.97	3.77	24.1
5	T1	624	35	657	5.6	1.536	534.2	LOS F	165.5	1208.1	1.00	2.97	3.77	23.9
6	R2	165	1	174	0.6	0.663	59.1	LOS E	10.0	70.3	1.00	0.83	1.03	45.2
Approach		909	38	957	4.2	1.536	448.8	LOS F	165.5	1208.1	1.00	2.58	3.28	26.4
North: Ōpepe Street														
7	L2	47	1	49	2.1	0.216	36.2	LOS D	1.9	13.8	0.93	0.73	0.93	46.9
8	T1	72	1	76	1.4	0.199	42.4	LOS D	3.9	27.5	0.87	0.68	0.87	38.4
9	R2	4	0	4	0.0	0.199	46.9	LOS D	3.9	27.5	0.87	0.68	0.87	37.6
Approach		123	2	129	1.6	0.216	40.1	LOS D	3.9	27.5	0.89	0.70	0.89	44.1
West: Spa Road (west)														
10	L2	1	0	1	0.0	*1.476	487.9	LOS F	185.6	1345.3	1.00	2.96	3.58	10.5
11	T1	869	36	915	4.1	1.476	481.5	LOS F	185.6	1345.3	1.00	2.96	3.58	25.3
12	R2	251	2	264	0.8	*1.516	522.5	LOS F	54.2	382.3	1.00	2.07	3.79	6.6
Approach		1121	38	1180	3.4	1.516	490.7	LOS F	185.6	1345.3	1.00	2.76	3.63	22.4
All Vehicles		2458	81	2587	3.3	1.536	409.0	LOS F	185.6	1345.3	0.99	2.38	3.11	24.6

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.

Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Tītīraupenga Street												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	230.3	228.8	0.99
East: Spa Road (east)												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.0	216.8	0.98
North: Ōpepe Street												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	218.8	213.9	0.98
All Pedestrians		150	158	54.3	LOS E	0.2	0.2	0.95	0.95	223.4	219.8	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 AM Base Option B2 (Site Folder: 2053 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

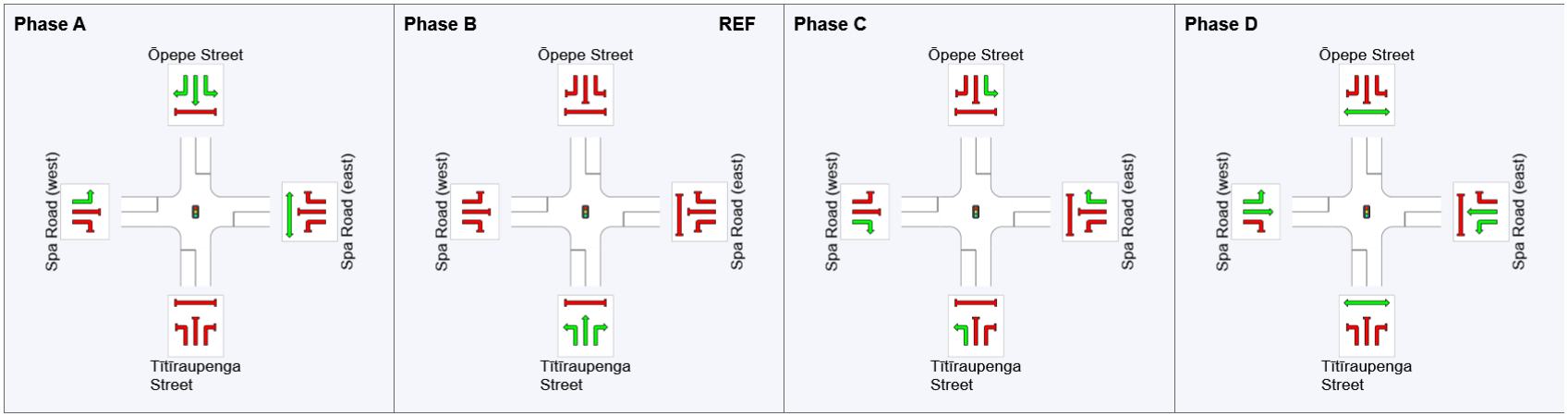
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase B
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Phase Timing Summary

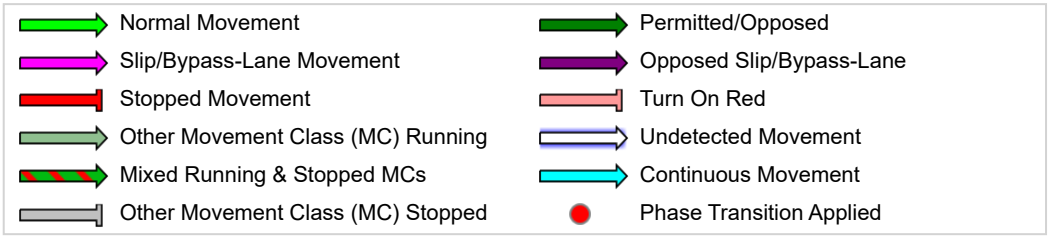
Phase	A	B	C	D
Phase Change Time (sec)	89	0	12	35
Green Time (sec)	25	6	17	48
Phase Time (sec)	31	12	23	54
Phase Split	26%	10%	19%	45%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

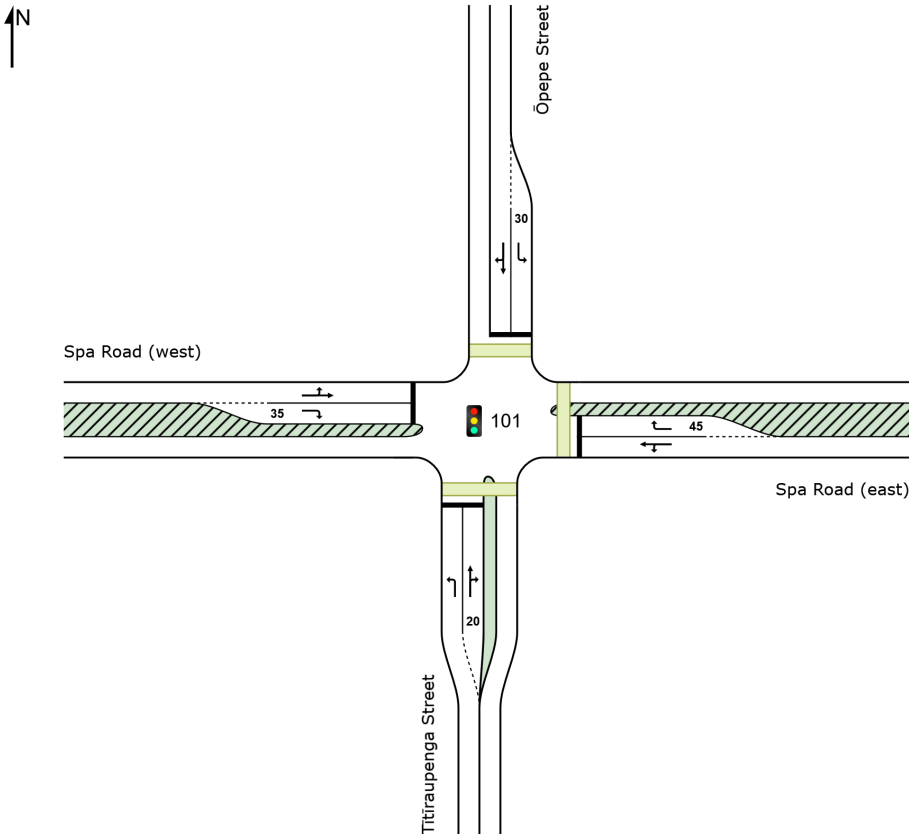


SITE LAYOUT

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 PM Base Option B2 (Site Folder: 2053 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 PM Base Option B2 (Site Folder: 2053 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street														
1	L2	177	1	186	0.6	0.480	45.1	LOS D	9.1	64.3	0.88	0.79	0.88	32.1
2	T1	42	1	44	2.4	*0.574	64.7	LOS E	3.4	24.1	1.00	0.77	1.05	34.1
3	R2	10	0	11	0.0	0.574	69.3	LOS E	3.4	24.1	1.00	0.77	1.05	44.3
Approach		229	2	241	0.9	0.574	49.8	LOS D	9.1	64.3	0.91	0.79	0.92	34.5
East: Spa Road (east)														
4	L2	74	1	78	1.4	1.512	518.3	LOS F	195.2	1404.4	1.00	2.98	3.69	24.7
5	T1	820	28	863	3.4	*1.512	512.1	LOS F	195.2	1404.4	1.00	2.98	3.69	24.5
6	R2	29	1	31	3.4	0.112	52.6	LOS D	1.6	11.3	0.90	0.72	0.90	45.6
Approach		923	30	972	3.3	1.512	498.1	LOS F	195.2	1404.4	1.00	2.91	3.60	24.9
North: Ōpepe Street														
7	L2	51	1	54	2.0	*0.220	35.5	LOS D	2.1	14.9	0.93	0.73	0.93	47.0
8	T1	109	1	115	0.9	0.292	43.3	LOS D	5.9	41.3	0.89	0.71	0.89	38.2
9	R2	3	0	3	0.0	0.292	47.9	LOS D	5.9	41.3	0.89	0.71	0.89	37.5
Approach		163	2	172	1.2	0.292	41.0	LOS D	5.9	41.3	0.90	0.72	0.90	43.4
West: Spa Road (west)														
10	L2	7	0	7	0.0	1.005	102.5	LOS F	56.0	408.3	1.00	1.34	1.57	28.9
11	T1	579	29	609	5.0	1.005	96.1	LOS F	56.0	408.3	1.00	1.34	1.57	42.0
12	R2	150	1	158	0.7	0.569	56.8	LOS E	8.8	62.0	0.98	0.81	0.98	29.4
Approach		736	30	775	4.1	1.005	88.2	LOS F	56.0	408.3	1.00	1.23	1.45	41.2
All Vehicles		2051	64	2159	3.1	1.512	264.6	LOS F	195.2	1404.4	0.98	1.90	2.31	30.2

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.

Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Tītīraupenga Street												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	230.3	228.8	0.99
East: Spa Road (east)												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.0	216.8	0.98
North: Ōpepe Street												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	218.8	213.9	0.98
All Pedestrians		150	158	54.3	LOS E	0.2	0.2	0.95	0.95	223.4	219.8	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Spa / Ōpepe/ Tītīraupenga Base 2053 PM Base Option B2 (Site Folder: 2053 Option B2)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

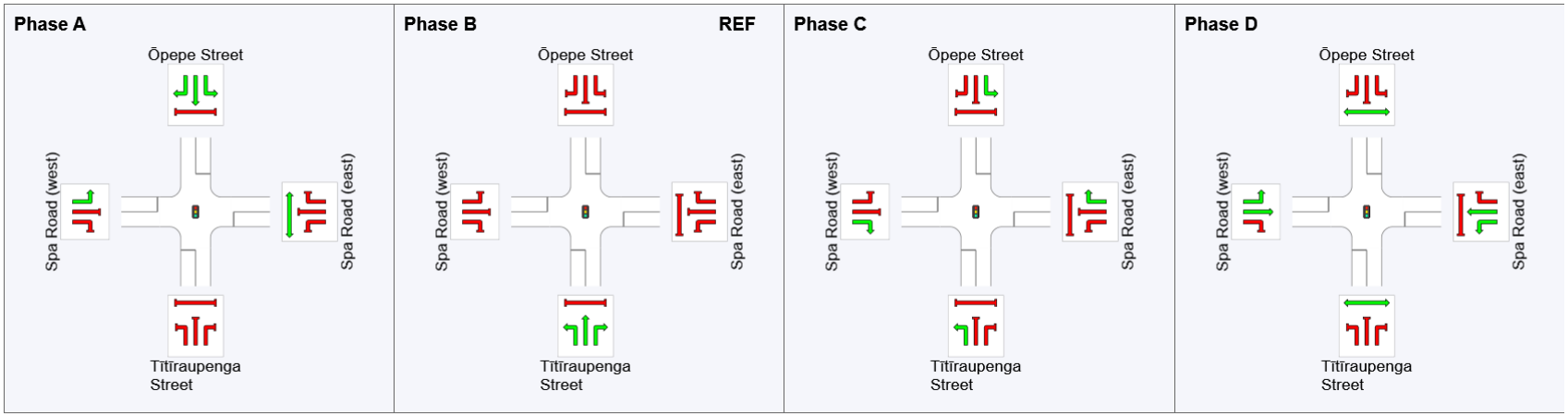
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase B
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Phase Timing Summary

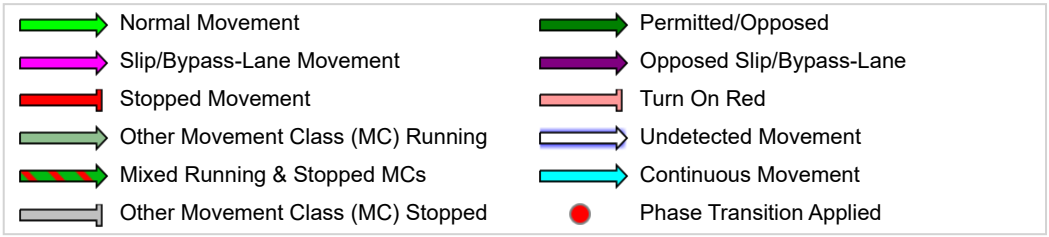
Phase	A	B	C	D
Phase Change Time (sec)	89	0	12	36
Green Time (sec)	25	6	18	47
Phase Time (sec)	31	12	24	53
Phase Split	26%	10%	20%	44%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

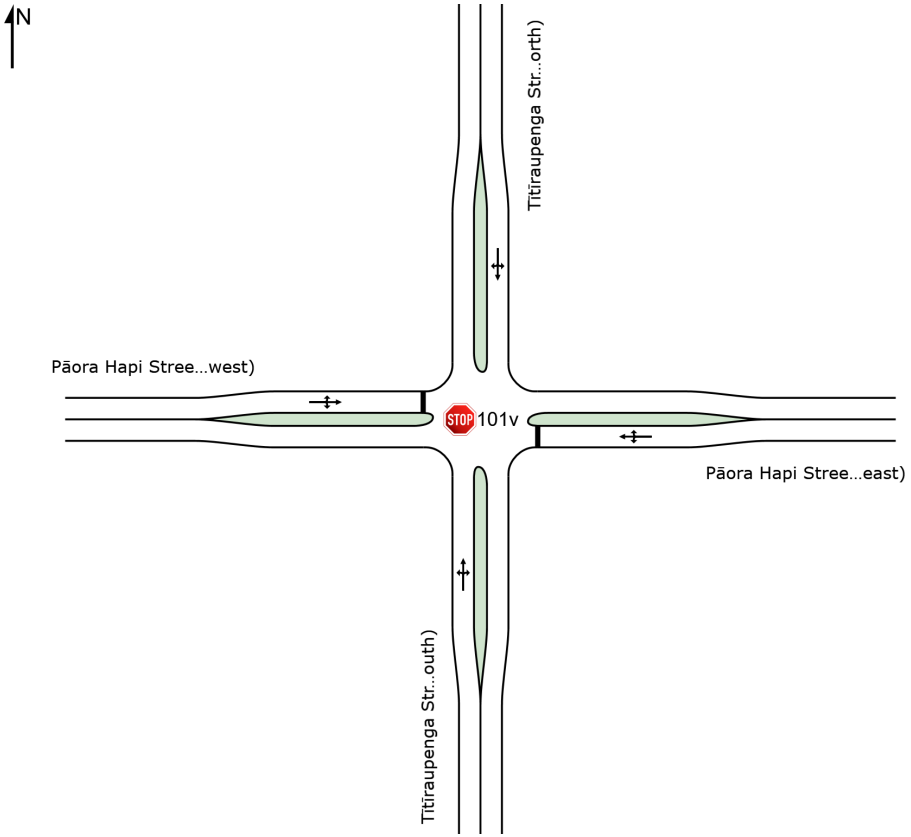


SITE LAYOUT

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2053 AM Base Option B2 (Site Folder: 2053 Option B2)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2053 AM Base Option B2 (Site Folder: 2053 Option B2)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street (south)														
1	L2	186	3	196	1.6	0.321	4.7	LOS A	0.2	1.1	0.03	0.18	0.03	39.9
2	T1	381	2	401	0.5	0.321	0.1	LOS A	0.2	1.1	0.03	0.18	0.03	48.2
3	R2	9	0	9	0.0	0.321	6.7	LOS A	0.2	1.1	0.03	0.18	0.03	46.6
Approach		576	5	606	0.9	0.321	1.7	NA	0.2	1.1	0.03	0.18	0.03	45.2
East: Pāora Hapi Street (east)														
4	L2	22	0	23	0.0	0.146	9.3	LOS A	0.5	3.4	0.64	0.97	0.64	37.6
5	T1	30	0	32	0.0	0.146	18.3	LOS C	0.5	3.4	0.64	0.97	0.64	29.3
6	R2	5	0	5	0.0	0.146	16.6	LOS C	0.5	3.4	0.64	0.97	0.64	35.0
Approach		57	0	60	0.0	0.146	14.7	LOS B	0.5	3.4	0.64	0.97	0.64	33.0
North: Tītīraupenga Street (north)														
7	L2	4	0	4	0.0	0.234	7.8	LOS A	0.4	3.0	0.13	0.05	0.13	47.6
8	T1	368	4	387	1.1	0.234	0.4	LOS A	0.4	3.0	0.13	0.05	0.13	48.8
9	R2	28	0	29	0.0	0.234	7.9	LOS A	0.4	3.0	0.13	0.05	0.13	37.9
Approach		400	4	421	1.0	0.234	1.0	NA	0.4	3.0	0.13	0.05	0.13	48.1
West: Pāora Hapi Street (west)														
10	L2	38	0	40	0.0	1.199	205.2	LOS F	45.1	322.1	1.00	5.82	10.97	6.5
11	T1	23	0	24	0.0	1.199	213.4	LOS F	45.1	322.1	1.00	5.82	10.97	6.2
12	R2	268	8	282	3.0	1.199	217.6	LOS F	45.1	322.1	1.00	5.82	10.97	7.8
Approach		329	8	346	2.4	1.199	215.9	LOS F	45.1	322.1	1.00	5.82	10.97	7.5
All Vehicles		1362	17	1434	1.2	1.199	53.8	NA	45.1	322.1	0.32	1.54	2.73	21.0

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.

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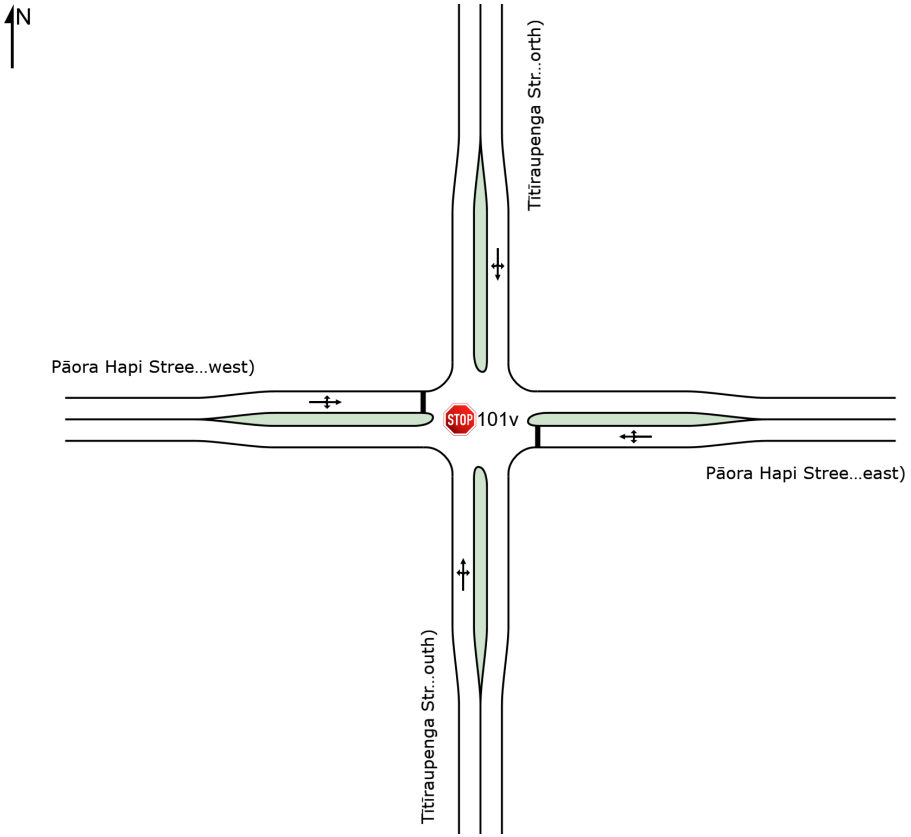
SITE LAYOUT

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2053 PM Base Option B2 (Site Folder: 2053 Option B2)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101v [Pāora Hapi/ Tītīraupenga Base 2053 PM Base Option B2 (Site Folder: 2053 Option B2)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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: Tītīraupenga Street (south)														
1	L2	125	2	132	1.6	0.193	4.7	LOS A	0.1	1.0	0.05	0.20	0.05	39.6
2	T1	208	1	219	0.5	0.193	0.1	LOS A	0.1	1.0	0.05	0.20	0.05	47.8
3	R2	10	0	11	0.0	0.193	6.3	LOS A	0.1	1.0	0.05	0.20	0.05	46.2
Approach		343	3	361	0.9	0.193	2.0	NA	0.1	1.0	0.05	0.20	0.05	44.5
East: Pāora Hapi Street (east)														
4	L2	11	0	12	0.0	0.110	9.2	LOS A	0.4	2.6	0.59	1.00	0.59	38.9
5	T1	33	0	35	0.0	0.110	13.6	LOS B	0.4	2.6	0.59	1.00	0.59	30.3
6	R2	8	0	8	0.0	0.110	13.7	LOS B	0.4	2.6	0.59	1.00	0.59	36.4
Approach		52	0	55	0.0	0.110	12.7	LOS B	0.4	2.6	0.59	1.00	0.59	33.0
North: Tītīraupenga Street (north)														
7	L2	8	0	8	0.0	0.238	6.0	LOS A	0.5	3.5	0.14	0.08	0.14	47.4
8	T1	361	1	380	0.3	0.238	0.3	LOS A	0.5	3.5	0.14	0.08	0.14	48.7
9	R2	46	0	48	0.0	0.238	6.2	LOS A	0.5	3.5	0.14	0.08	0.14	37.7
Approach		415	1	437	0.2	0.238	1.0	NA	0.5	3.5	0.14	0.08	0.14	47.4
West: Pāora Hapi Street (west)														
10	L2	34	0	36	0.0	0.857	20.7	LOS C	8.7	61.7	0.86	1.92	2.67	23.1
11	T1	23	0	24	0.0	0.857	27.9	LOS D	8.7	61.7	0.86	1.92	2.67	22.3
12	R2	272	7	286	2.6	0.857	30.9	LOS D	8.7	61.7	0.86	1.92	2.67	25.5
Approach		329	7	346	2.1	0.857	29.7	LOS D	8.7	61.7	0.86	1.92	2.67	25.1
All Vehicles		1139	11	1199	1.0	0.857	10.1	NA	8.7	61.7	0.34	0.69	0.87	36.9

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.

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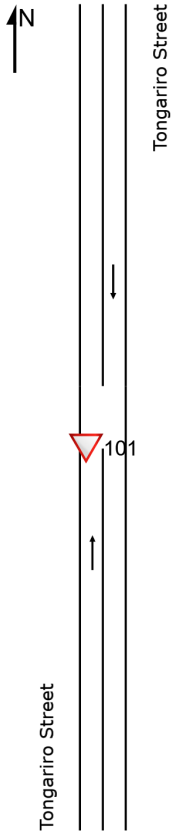
SITE LAYOUT

Site: 101 [TCG Bridge 2053 AM (Site Folder: 2053 Option B2)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [TCG Bridge 2053 AM (Site Folder: 2053 Option B2)]

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: Tongariro Street														
2	T1	602	5.0	634	5.0	0.336	4.3	LOS A	0.0	0.0	0.00	0.53	0.00	54.6
Approach		602	5.0	634	5.0	0.336	4.3	NA	0.0	0.0	0.00	0.53	0.00	54.6
North: Tongariro Street														
8	T1	1724	5.0	1815	5.0	0.961	7.7	LOS A	0.0	0.0	0.00	0.48	0.00	49.5
Approach		1724	5.0	1815	5.0	0.961	7.7	NA	0.0	0.0	0.00	0.48	0.00	49.5
All Vehicles		2326	5.0	2448	5.0	0.961	6.8	NA	0.0	0.0	0.00	0.50	0.00	50.7

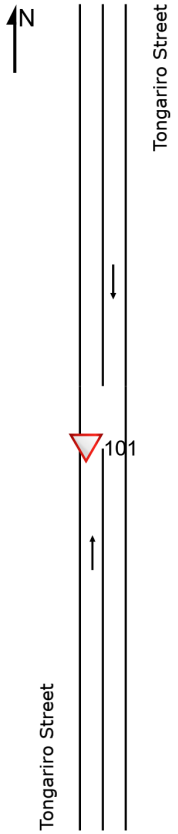
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and 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.

SITE LAYOUT

Site: 101 [TCG Bridge 2053 PM (Site Folder: 2053 Option B2)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [TCG Bridge 2053 PM (Site Folder: 2053 Option B2)]

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: Tongariro Street														
2	T1	1706	5.0	1796	5.0	0.951	7.1	LOS A	0.0	0.0	0.00	0.49	0.00	50.3
Approach		1706	5.0	1796	5.0	0.951	7.1	NA	0.0	0.0	0.00	0.49	0.00	50.3
North: Tongariro Street														
8	T1	714	5.0	752	5.0	0.398	4.3	LOS A	0.0	0.0	0.00	0.53	0.00	54.5
Approach		714	5.0	752	5.0	0.398	4.3	NA	0.0	0.0	0.00	0.53	0.00	54.5
All Vehicles		2420	5.0	2547	5.0	0.951	6.3	NA	0.0	0.0	0.00	0.50	0.00	51.5

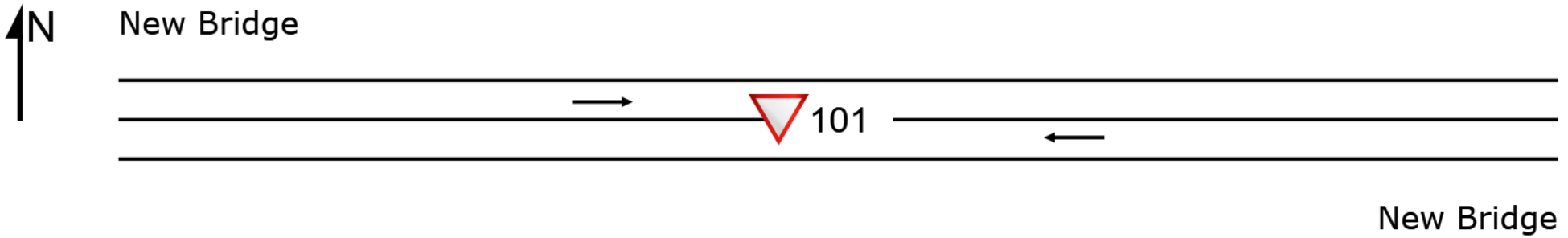
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and 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.

SITE LAYOUT

Site: 101 [New Bridge 2053 AM (Site Folder: 2053 Option B2)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 101 [New Bridge 2053 AM (Site Folder: 2053 Option B2)]

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
East: New Bridge														
8	T1	291	5.0	306	5.0	0.162	4.2	LOS A	0.0	0.0	0.00	0.53	0.00	54.7
Approach		291	5.0	306	5.0	0.162	4.2	NA	0.0	0.0	0.00	0.53	0.00	54.7
West: New Bridge														
2	T1	1414	5.0	1488	5.0	0.788	4.8	LOS A	0.0	0.0	0.00	0.52	0.00	53.7
Approach		1414	5.0	1488	5.0	0.788	4.8	NA	0.0	0.0	0.00	0.52	0.00	53.7
All Vehicles		1705	5.0	1795	5.0	0.788	4.7	NA	0.0	0.0	0.00	0.52	0.00	53.9

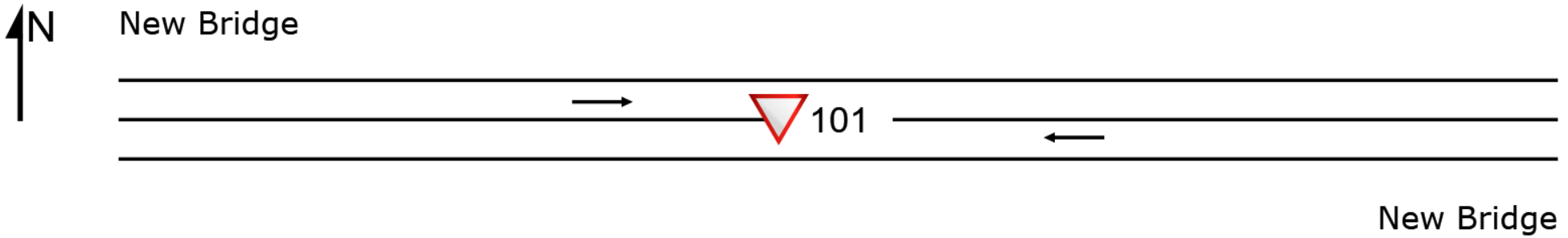
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and 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.

SITE LAYOUT

Site: 101 [New Bridge 2053 PM (Site Folder: 2053 Option B2)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 101 [New Bridge 2053 PM (Site Folder: 2053 Option B2)]

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
East: New Bridge														
8	T1	1228	5.0	1293	5.0	0.684	4.6	LOS A	0.0	0.0	0.00	0.52	0.00	54.1
Approach		1228	5.0	1293	5.0	0.684	4.6	NA	0.0	0.0	0.00	0.52	0.00	54.1
West: New Bridge														
2	T1	747	5.0	786	5.0	0.416	4.3	LOS A	0.0	0.0	0.00	0.53	0.00	54.5
Approach		747	5.0	786	5.0	0.416	4.3	NA	0.0	0.0	0.00	0.53	0.00	54.5
All Vehicles		1975	5.0	2079	5.0	0.684	4.5	NA	0.0	0.0	0.00	0.53	0.00	54.3

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.

APPENDIX E

DETAILED MCA TABLE

Note: Where it says 2053, this references 2053+ (Full Development Scenario).

Multi Criteria Analysis		A1 - Four lane bridge at existing location	B1 - Retain the existing two lane bridge + new two lane bridge at Ōpepe Street	B2 - Retain the existing two lane bridge + new two lane bridge at Waikato Street	D1 - Three lane (tidal flow) bridge at existing location
Criteria	**Consideration**				
Project Objectives	Support Growth to the North of Taupō & Improve Efficiency of the Road Network	Increasing the number of vehicle lanes from two to four will increase the vehicle capacity over the Waikato River. This will improve the bottleneck issue and reduce the congestion for vehicles. Based on the Taupo Model Update, this will improve the Level of Service (LOS) for the Bridge, from LOS F (Present) to LOS C/D in 2033 in both the morning and evening peak hours. However, in 2053, it is expected that there will still be some widespread congestion issues throughout the network due to significant growth in the northern parts of Taupo, particularly on the bridge and along Norman Smith Road and Acacia Bay Road. Travel times in the peak direction in AM and PM Peak in 2033 and in 2053 will reduce in comparison to the base option. In 2053, travel times are expected to reduce by approximately 4 minutes in the peak direction during the morning peak, when travelling into the CBD using the TCG bridge from Huka Falls when compared against the base scenario. Similarly, travel times will reduce by approximately 6 minutes when travelling to the CBD using the TCG bridge from Acacia Bay when compared against the base scenario. Both Option A1 and D1, have similar travel times but is higher compared to Option B1 and B2 in the 2053 scenario. All vehicles will still utilise the one route at the TCG Bridge, which does not ease the pressure off the existing traffic network, particularly at the Spa Road / Tongariro Roundabout. This has also lead to Redoubt Road being used as an alternative route for the Northbound Traffic on Tongariro St.	The new bridge diverts some traffic away from the existing bridge, separating traffic into two routes. This improvement increases overall capacity and alleviates congestion. Based on the Taupo Model update, this will improve the LOS for the TCG bridge to LOS D (morning peak) and E (evening peak) from F (present) in 2033. The second connection will also alleviate congestion at the Spa Road / Tongariro St Roundabout and the western end of Spa Road diverting some traffic away from the CBD. However, in 2053, it is expected that there will still be some widespread congestion issues throughout the network due to significant growth in the northern parts of Taupo, particularly on the TCG bridge and along Norman Smith Road and Acacia Bay Road. Option B1 and B2 have the lowest travel time when travelling in Peak direction in both AM and PM peak compared to Option A1 and D1 when travelling from either: Huka Falls to the CBD via the TCG bridge (and vice versa) and Acacia Bay to the CBD via the TCG Bridge (and vice versa). Overall, Option B1 and B2 perform the best against Option A1 and D1 in terms of improving the efficiency of the road network and supporting growth north of Taupo.	Similar to Option B1, the new bridge diverts some traffic away from the existing bridge, separating the flow into two routes. This improvement increases overall capacity and alleviates congestion. Based on the Taupo Model update, this will improve the LOS for the TCG bridge to LOS D (morning and evening peak) from F (present) in 2033. The second connection will also alleviate congestion at the Spa Road / Tongariro St Roundabout and the western end of Spa Road, diverting some traffic away from the CBD. However, in 2053, it is expected that there will still be some widespread congestion issues throughout the network due to significant growth in the northern parts of Taupo, particularly on the TCG bridge and along Norman Smith Road and Acacia Bay Road. Option B1 and B2 have the lowest travel time when travelling in Peak direction in both AM and PM peak compared to Option A1 and D1 when travelling from either: Huka Falls to the CBD via the TCG bridge (and vice versa) and Acacia Bay to the CBD via the TCG Bridge (and vice versa). Overall, Option B1 and B2 performs the best against Option A1 and D1 in terms of improving the efficiency of the road network and supporting growth north of Taupo.	Increasing the number of vehicle lanes from two to three will increase vehicle capacity over the Waikato River. Similar to Option A1, based on the Taupo Model Update, this will improve the Level of Service for the Bridge, from LOS F (Present) to LOS C/D in 2033 in both the morning and evening peak hours. However, in 2053, it is expected that there will still be some widespread congestion issues throughout the network due to significant growth in the northern parts of Taupo. All vehicles will still be utilising the one route, which does not ease pressure off the existing traffic network. This is scored very similar to Option A1.
	Resilience of the Road Network	This option does not provide an alternative route, but increasing the number of lanes means the bridge will be less prone to disruption in the event of roadworks/ accidents/ natural events, thereore improving resilience.	This option provides another alternative north-south connection between the north of Taupo and the Town Centre, crossing the harbour. This offers drivers a choice for travel and improves the resilience of the network, as one route can still be utilised in the event that the other route needs to be closed.	This option provides another alternative north-south connection between the north of Taupo and the Town Centre, crossing the harbour. This offers drivers a choice for travel and improves the resilience of the network, as one route can still be utilised in the event that the other route needs to be closed.	This option does not provide an alternative route, but increasing the number of lanes means the bridge will be less prone to disruption in the event of roadworks/ accidents/ natural events, improving resilience.
	Mode Share on Alternative Transport Uses	The existing Control Gates Bridge has a shared path/ footpath along either side, but there are opportunities to improve this. As part of this study, up to standard walking/ cycling facilities will be implemented to provide a connected facility for active mode users between the north and the Town Centre. Several intersections will be analysed to understand the local impacts of an option. During this process, safety aspects which were not identified as major concerns, could be considered for future mitigation. Increased capacity across the bridge means that it is less likely for the queues to extend to the intersections north/ south. This improves safety both across the bridge and at those locations.	The existing Control Gates Bridge has a shared path/ footpath along either side, but there are opportunities to improve this. As part of this study, up to standard walking/ cycling facilities will be implemented to provide a connected facility for active mode users between the north and the Town Centre. Several intersections will be analysed to understand the local impacts of the option. During this process, safety aspects which were not identified as major concerns, could be considered for future mitigation. This option will divert traffic away from the residential area. A reduction in traffic volume utilising Tongariro Street will likely improve safety for active mode users.	The existing Control Gates Bridge has a shared path/ footpath along either side, but there are opportunities to improve this. As part of this study, up to standard walking/ cycling facilities will be implemented to provide a connected facility for active mode users between the north and the Town Centre. Several intersections will be analysed to understand the local impacts of an option. During this process, safety aspects which were not identified as major concerns, could be considered for future mitigation. This option will divert traffic away from the residential area. A reduction in traffic volume utilising Tongariro Street will likely improve safety for active mode users.	The existing Control Gates Bridge has a shared path/ footpath along either side, but there are opportunities to improve this. As part of this study, up to standard walking/ cycling facilities will be implemented to provide a connected facility for active mode users between the north and the Town Centre. Several intersections will be analysed to understand the local impacts of an option. During this process, safety aspects which were not identified as major concerns, could be considered for future mitigation. Increased capacity across the bridge means that it is less likely for the queues to extend to the intersections north/ south. This improves safety both across the bridge and at those locations.
Development (Technical Complexity/ Achievability)	Design, Site Characteristics & Constructability	Expanding the bridge in this location may not have the same construction complexity as Option B1 and B2 as it will, comparatively, require very little ground improvements. There is available land for use immediately adjacent to the existing structure where existing abutments can be made larger, or new abutments constructed to allow for the increase in lanes. This available land area will also allow for easier site access and insitu construction. Expanding the existing structure will require various geotechnical design considerations and hydraulic modelling. Scour protection may be required due to the proximity of the river to the current bridge substructure. The widened bridge may not be able to meet the latest standards in terms of freeboard, seismic or barrier containment. The road layout to the north/ south will need to be investigated to allow for the expansion to tie into the existing road layout. However these upgrades will likely be less complex than what is required for Options B1/ B2. Available land use, for any type of bridge enlargement, may be limited to the East by the Taupo Control Gates. Road closure and diversions will have to be considered for this option, however construction methodologies can be altered to optimise.	Building a new bridge to connect to Ōpepe Street will be technically complex due to the large elevation difference over the Waikato River at that location. This requires a flyover or a long bridge, which will involve various geotechnical and hydraulic design considerations. Consideration also needs to be given to whether a pier support can be placed in Waikato River, and if not this will result in a long span (>100m) structure, making the detailed design significantly more complex. A number of powerlines that run across Ōpepe Street need to be relocated. The alignment severs Ōpepe Street which means solutions will need to be generated to mitigate the effects of the new alignment. In addition, vegetation removal, access roads, major cut/ fill earthworks and regrading will be required for the construction of this option. This option will not disturb the existing structure throughout construction so should not affect existing traffic flows along Wairakei Drive.	Building a new bridge to connect to Oruanui Street will be technically complex due to the large elevation difference over the Waikato River at that location. This requires a flyover or a long bridge, which will involve various geotechnical and hydraulic design considerations. Consideration also needs to be given to whether a pier support can be placed in Waikato River, and if not this will result in a long span (>100m) structure, making the detailed design significantly more complex. There is a powerline that runs near the end of Oruanui Street that may need to be relocated. The alignment severs Oruanui Street which means solutions will need to be generated to mitigate the effects of the new alignment. In addition, vegetation removal, access roads, major cut/ fill earthworks and regrading will be required for the construction of this option. This option will not disturb the existing structure throughout construction so should not affect existing traffic flows along Wairakei Drive.	This option has probably the least design complexity when considering site characteristics and constructability. There is available land for use immediately adjacent to the existing structure where existing abutments can be made larger, or new abutments constructed to allow for the increase in lanes. This available land area will also allow for easier site access and in-situ construction. Expanding the existing structure will require various geotechnical design considerations and hydraulic modelling. Scour protection may be required due to the proximity of the river to the current bridge substructure. The widened bridge may not be able to meet the latest standards in terms of freeboard, seismic or barrier containment. The road layout to the north/south will need to be investigated to allow for the expansion to tie into the existing road layout. However these upgrades will likely be less complex than what is required for Options B1/ B2. Available land use, for any type of bridge enlargement, may be limited to the East by the Taupo Control Gates. Road closure and diversions will have to be considered for this option. however construction methodologies can be altered to optimise.
	Consentability	As per Environment Waikato guidance, various consents may be required for altering a bridge	As per Environment Waikato guidance, various consents may be required for building a new bridge i.e building consent, resource consent for constructing a bridge over water and also for creating a new road connection.	As per Environment Waikato guidance, various consents may be required for building a new bridge i.e building consent, resource consent for constructing a bridge over water and also for creating a new road connection.	As per Environment Waikato guidance, various consents may be required for altering a bridge
Environmental and Cultural Impacts	Environmental Impacts	TBC	TBC	TBC	TBC
	Cultural Value	TBC	TBC	TBC	TBC
Social and Land Impacts	Social Impacts	A reduction in congestion/ travel time will likely have positive impacts on the well-being of drivers (i.e, reducing driver frustration from sitting in congestion). This option will have minor negative impacts on property owners (in particular, Mercury) and community facilities (i.e. Gates Park and the Waikato River) given it is only expanding by two lanes adjacent to the existing bridge. Access to Gates Park is unlikely to be compromised with the additional two lanes to the TCG Bridge and thus is a positive. Constructing two additional lanes adjacent to the existing TCG bridge may have negative social impacts on the residential development and commercial facilities nearby, however, the extent of impacts may not be as the same level as Option B1 and B2.	Option B1 will reduce congestion/ travel time, which will likely have positive impacts on the well-being of drivers, (i.e, reducing driver frustration from sitting in congestion). The new alignment may have negative social impacts at Gates Park, Te Puawaitanga Kohanga REO School and the Taupo Community Playgroup, given the landing point of the new alignment is near these facilities. These negative impacts include potentially severing Gates Park and the potential impact on the schools/early childcare facilities (Te Puawaitanga Kohanga REO School and the Taupo Community Playgroup) due to increased traffic. Additionally, due to the change in grade around the Waikato River, this means that the road may need to be raised to meet the bridge. This could potentially impact Taupo Community Group and other facilities nearby. The new connection will increase traffic onto Opepe Street, which may lead to community severance in the CBD. Construction of the new bridge may have negative impacts on the existing residential and educational/community facilities in vicinity in terms of noise, vibration and air-quality.	Option B2 will reduce congestion/ travel time, which will likely have positive impacts on the well-being of drivers (i.e, reducing driver frustration from sitting in congestion). The new alignment may have negative impacts on the Taupo Kids Community (especially the outdoor play area to the west) as it is perpendicular to Oruanui St North, however, design considerations could be investigated to avoid these negative impacts (i.e going around the Community Centre). This follows the design done previously done in 1998 provided by TDC. Similar to Option B1, Gates Park may potentially get severed due to the new alignment, but not to the same degree. Additionally, due to the change in grade around the Waikato River, this means that the road may need to be raised to meet the bridge. This could potentially impact Taupo Kids Community. Another bridge over the Waikato River may have negative impacts on the natural landscape views. The new connection will increase traffic onto Oraunui St, which may lead to community severance in the CBD. Construction of the new bridge may impact negatively on existing residential, educational/community and commercial facilities in vicinity in terms of noise, vibration and air quality. Overall, this has been scored as a low negative	A reduction in congestion/ travel time will likely have positive impacts on the well-being of drivers, (i.e, reducing driver frustration from sitting in congestion). This option will have very minor negative impacts on property owners (in particular, Mercury) and community facilities (i.e. Gates Park and the Waikato River) given it is only expanding by one lane adjacent to the existing bridge. Constructing two additional lanes adjacent to the existing TCG bridge may have negative social impacts on the residential development and commercial facilities nearby however, the extent of impacts may not be as the same level as Option B1 and B2.
	Land Considerations	This option will require some land requirements as the bridge expansion will require building a new structure. The land neighbouring east-west of the bridge is also owned by Mercury so land acquisition is most likely required (i.e Gates Park). However, the land requirements will not be to the same extent as required by Option B1 and B2.	This option will have more land requirements compared to Option A1 and D1 due to the new bridge being proposed across Waikato River, connecting at Opepe Street. Land at Gates Park and land south of the Waikato River will likely be required.	This option will have more land requirements compared to Option A1 and D1, and would require less land compared to Option B1. This is because a new bridge is required across Waikato River, connecting to Oruanui St. Land at Gates Park and land south of the Waikato River will likely required.	This option will require some land requirements as the bridge expansion will require building a new structure. The land neighbouring east-west of the bridge is also owned by Mercury so land acquisition is most likely required (i.e Gates Park). However, land requirements will not be to the same extent as required by Option B1 and B2.

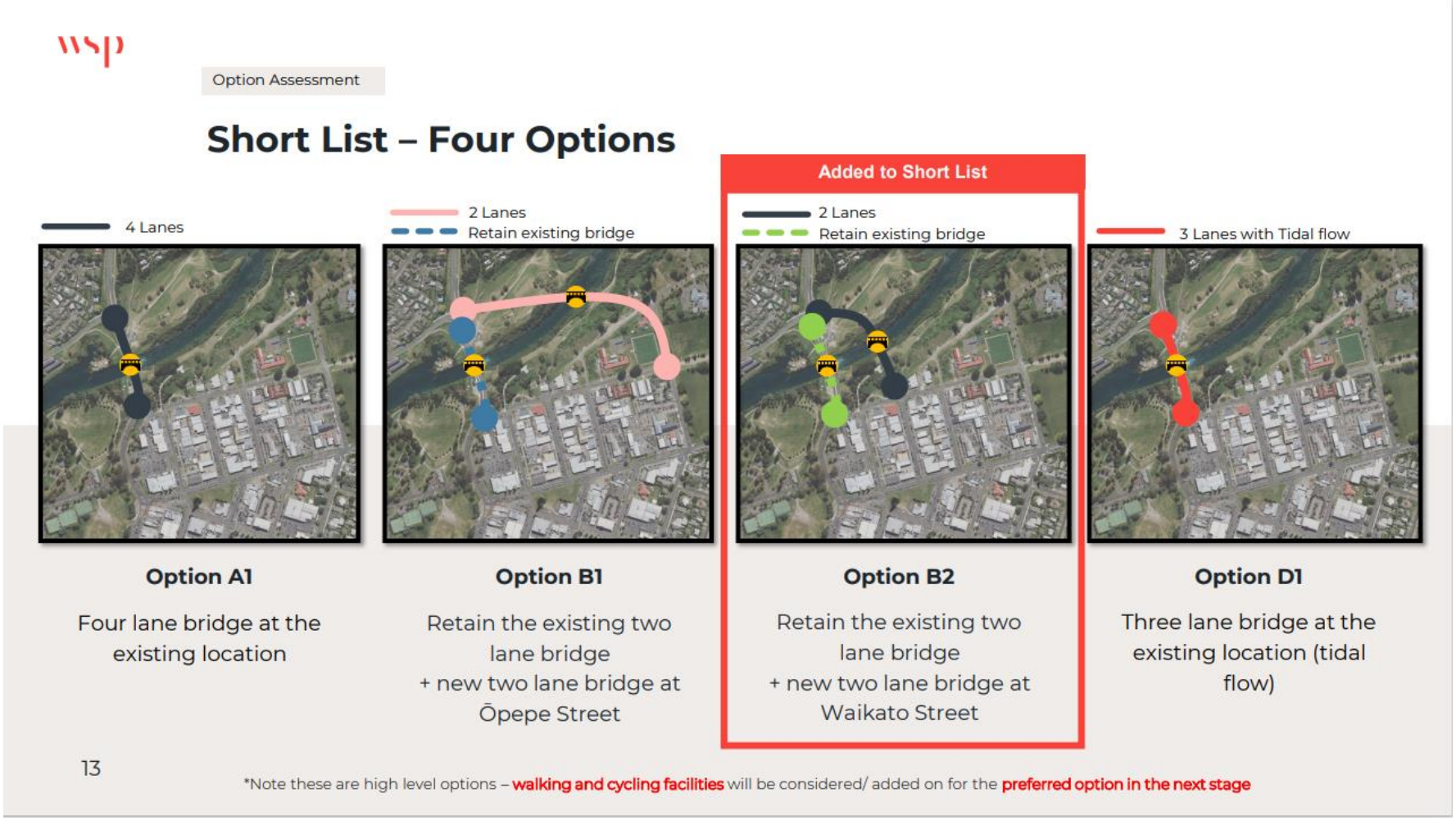
APPENDIX F

TAUPŌ TRANSPORT MODEL: SENSITIVITY TESTS

DRAFT

1. Option Descriptions

This set of model outputs gives results for sensitivity tests for the 2033 Base Option, 2033 Option B2 and 2053 Option B2



2. Volume Plots

Figure 2.1 2033 Base Sensitivity Test Morning Peak Hour Volume Plot

Figure 2.2 2033 Base Sensitivity Test Evening Peak Hour Volume Plot

Figure 2.3 2033 Option B2 Sensitivity Test Morning Peak Hour Volume Plot

Figure 2.4 2033 Option B2 Sensitivity Test Evening Peak Hour Volume Plot

Figure 2.5 2053 Option B2 Sensitivity Test Morning Peak Hour Volume Plot

Figure 2.6 2053 Option B2 Sensitivity Test Evening Peak Hour Volume Plot

3. Volume Change to Baseline Plots

Figure 3.1 2033 Base Sensitivity Test Morning Peak Hour Volume Change Plot

Figure 3.2 2033 Base Sensitivity Test Evening Peak Hour Volume Change Plot

Figure 3.3 2033 Option B2 Sensitivity Test Morning Peak Hour Volume Change Plot

Figure 3.4 2033 Option B2 Sensitivity Test Evening Peak Hour Volume Change Plot

Figure 3.5 2053 Option B2 Sensitivity Test Morning Peak Hour Volume Change Plot

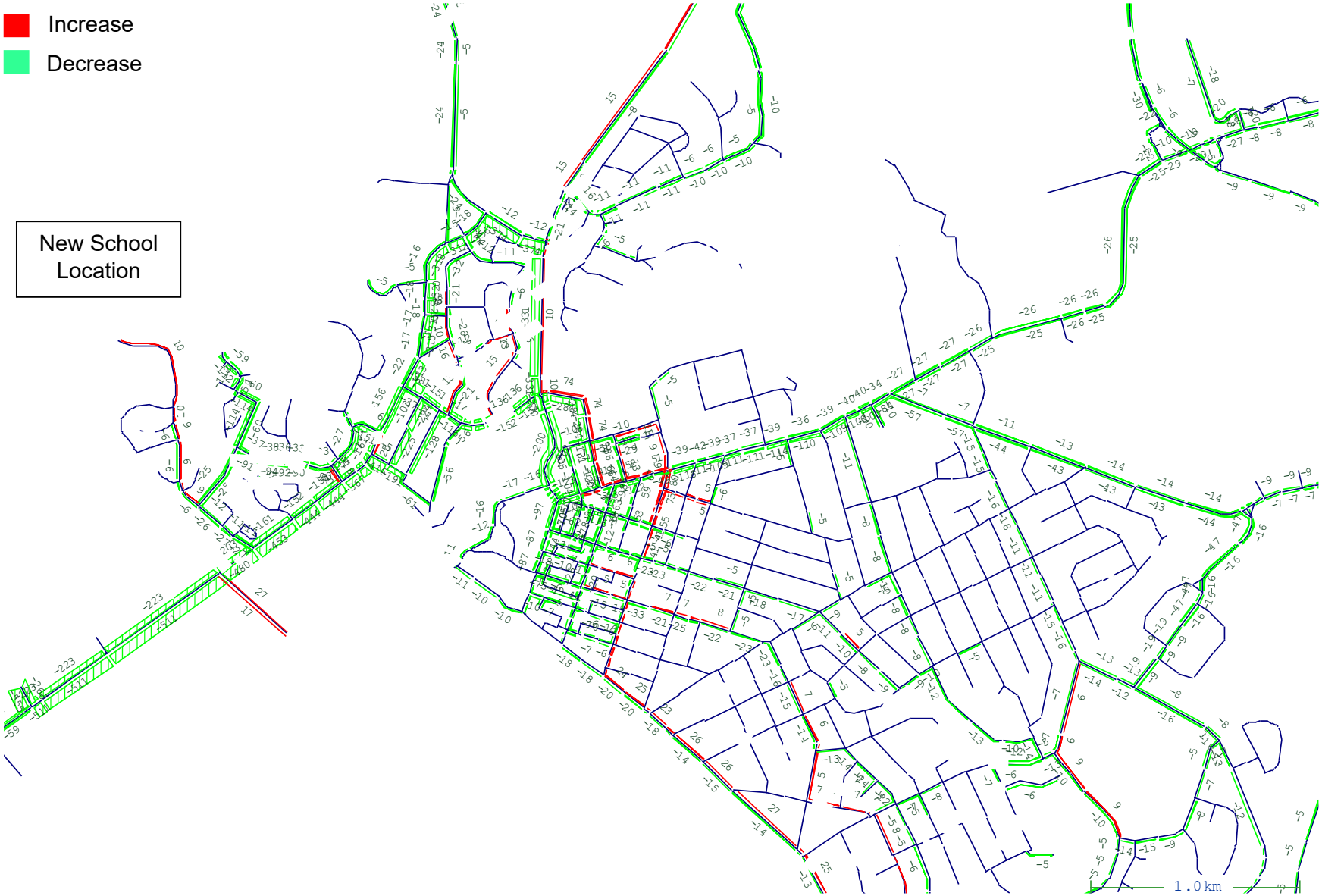


Figure 3.6 2053 Option B2 Sensitivity Test Evening Peak Hour Volume Change Plot

4. Level of Service Plots

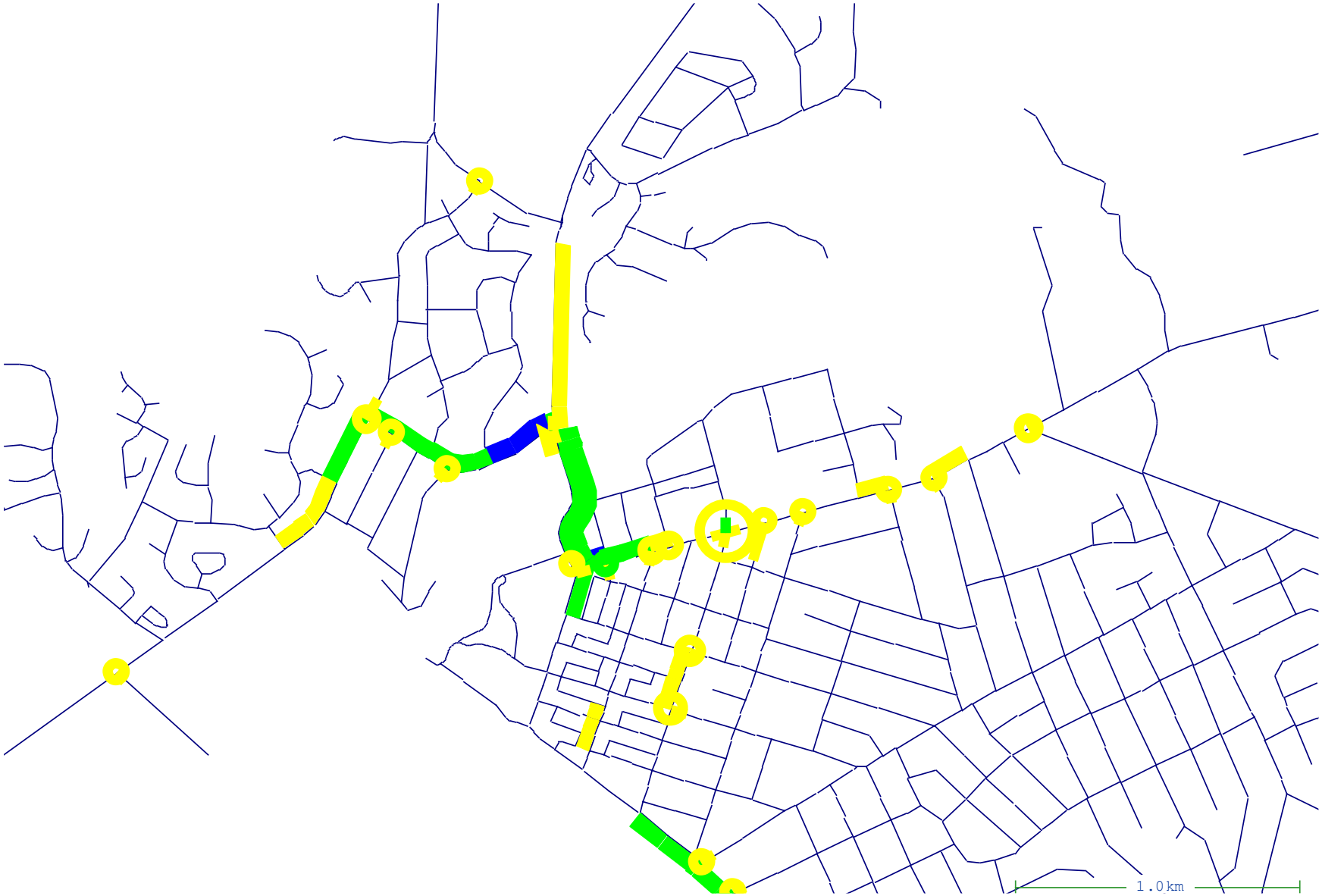


Figure 4.1 2033 Base Sensitivity Test Morning Peak Hour Level of Service Plot

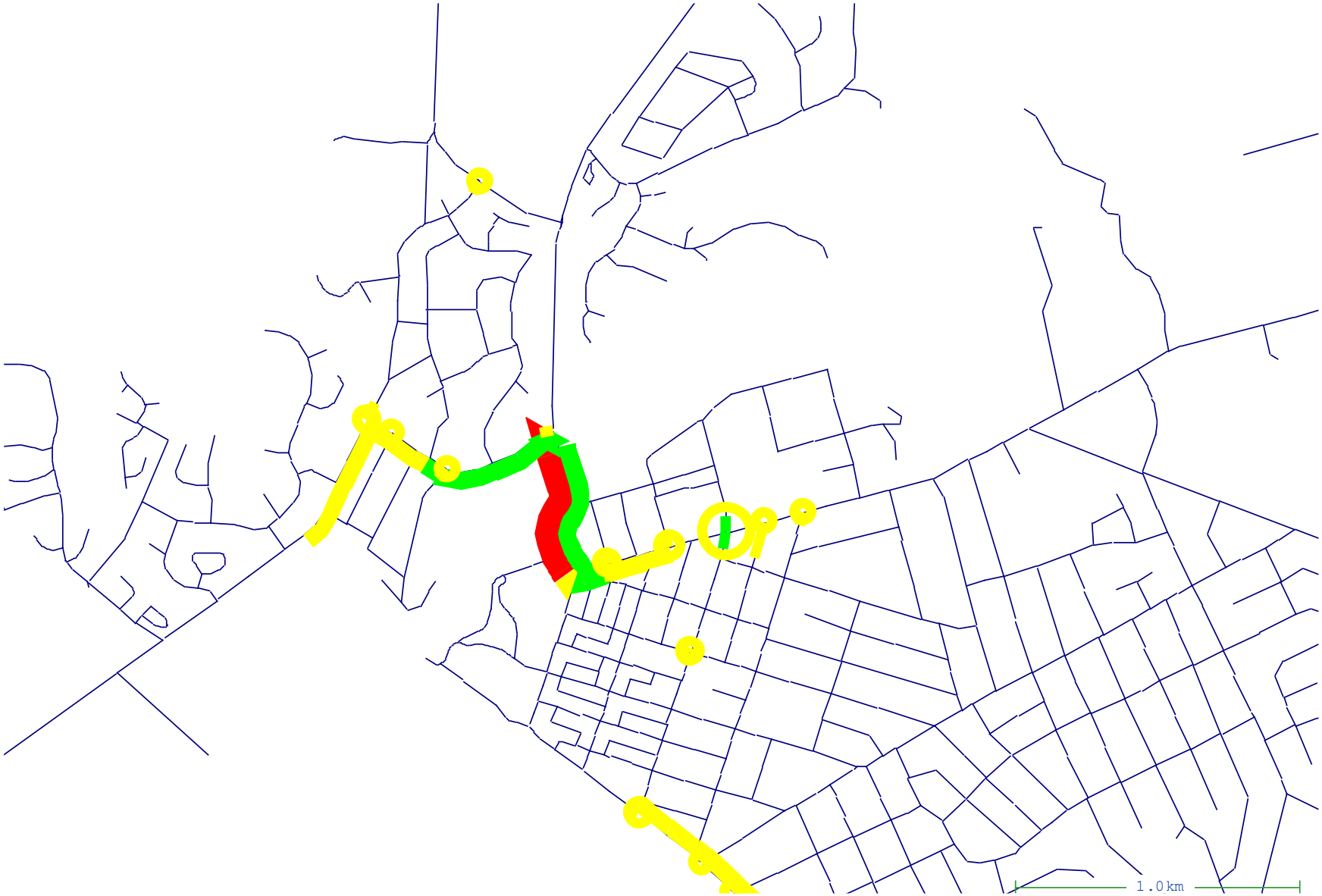


Figure 4.2 2033 Base Sensitivity Test Evening Peak Hour Level of Service Plot

Figure 4.3 2033 Option B2 Sensitivity Test Morning Peak Hour Level of Service Plot

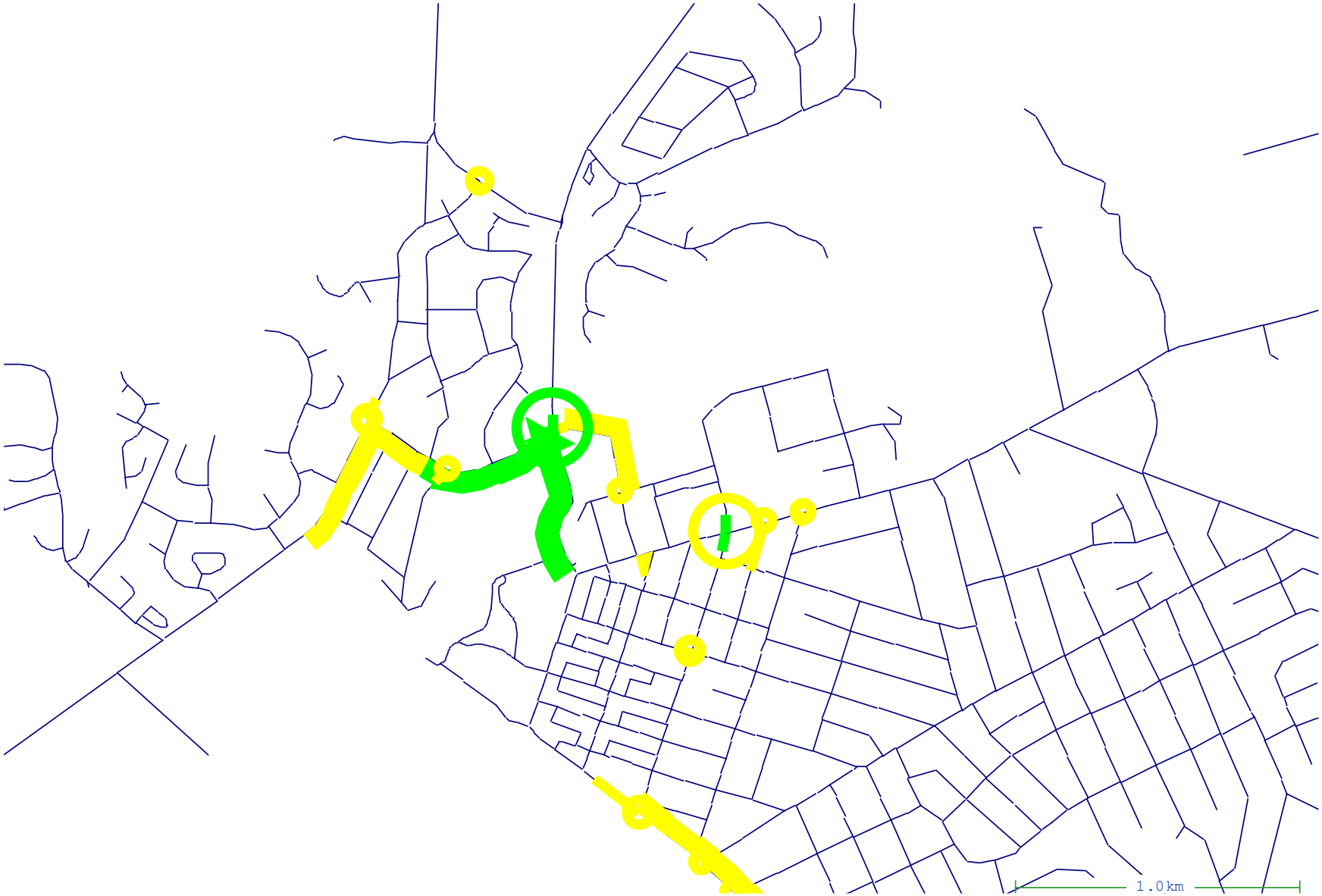


Figure 4.4 2033 Option B2 Sensitivity Test Evening Peak Hour Level of Service Plot

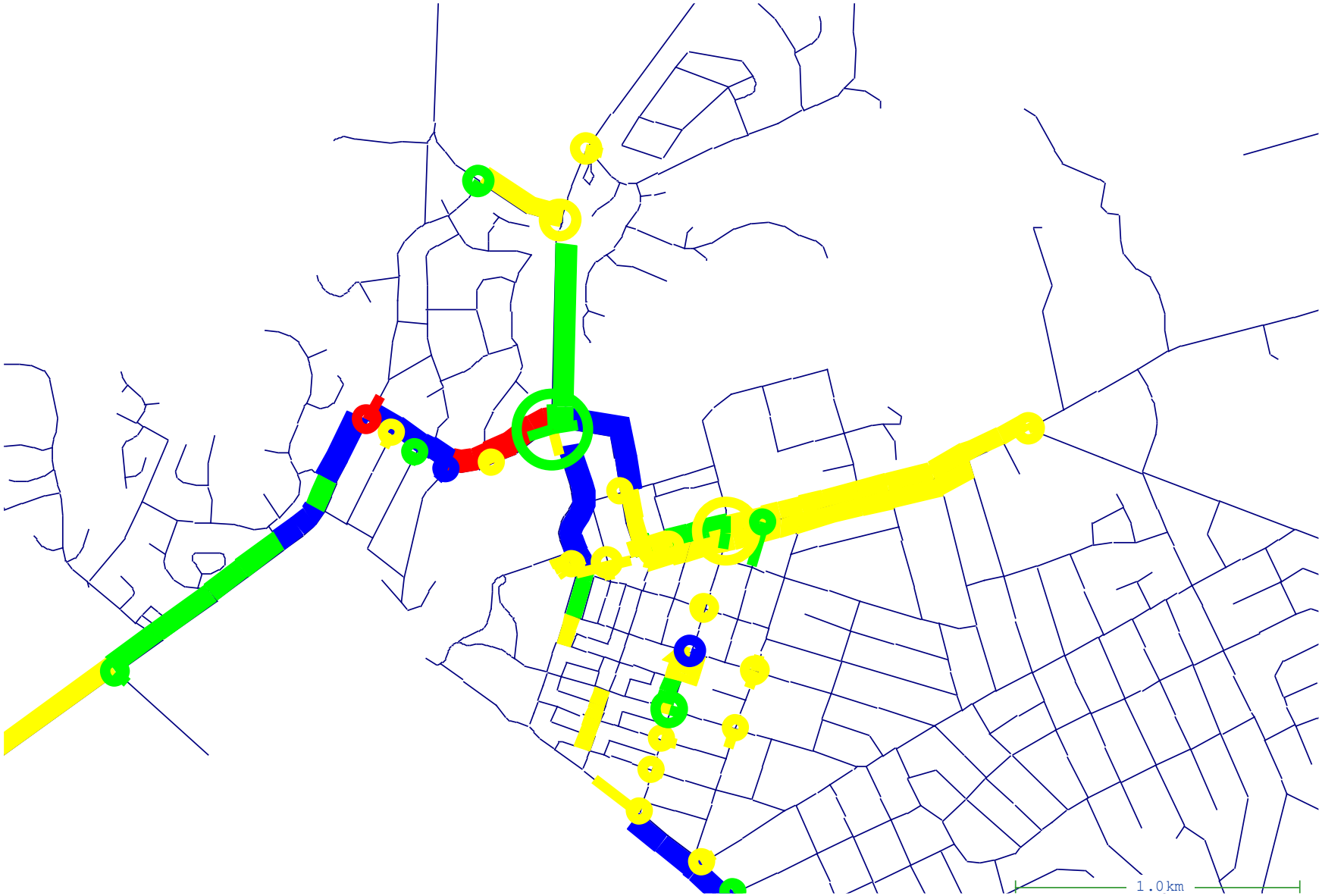


Figure 4.5 2053 Option B2 Sensitivity Test Morning Peak Hour Level of Service Plot

Figure 4.6 2053 Option B2 Sensitivity Test Evening Peak Hour Level of Service Plot

5. Level of Service Summary

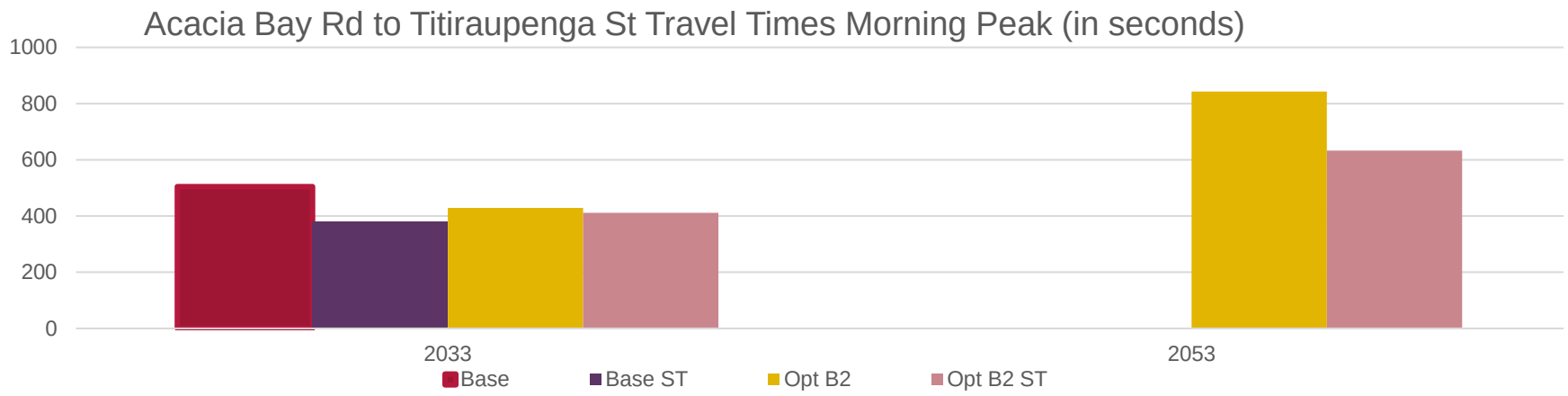
Table 5.1 Number of Intersections at given LoS

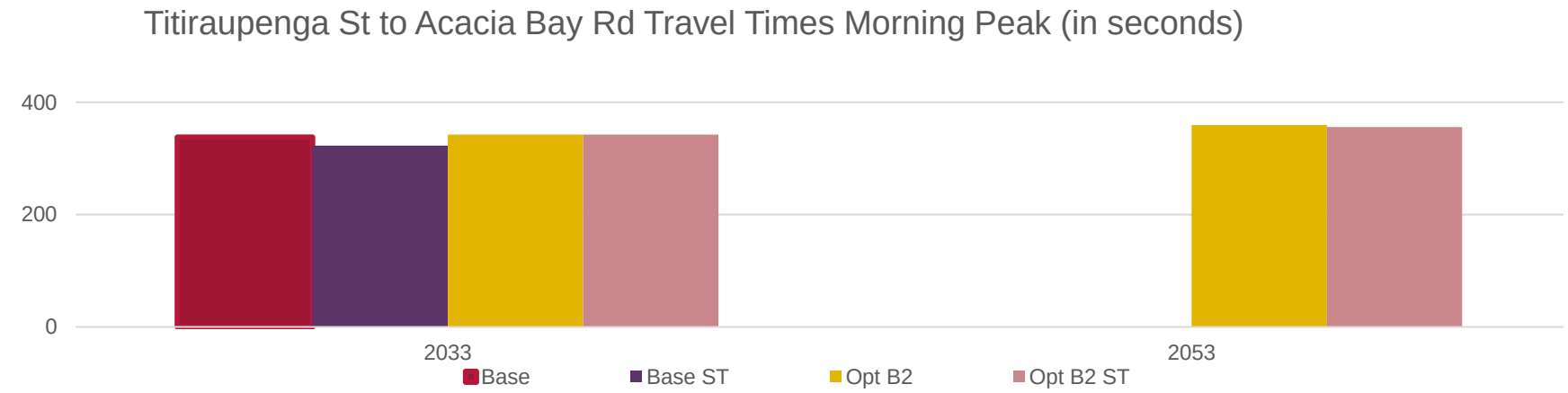
		33 Base	33 Base ST	33 Opt B2	33 Opt B2 ST	53 Opt B2	53 Opt B2 ST
AM	LoS C	44	43	46	41	48	44
	LoS D	0	1	1	1	14	10
	LoS E	4	1	2	1	5	4
	LoS F	2	3	2	3	6	2
PM	LoS C	38	34	38	32	45	38
	LoS D	1	1	2	1	13	9
	LoS E	1	1	1	1	3	1
	LoS F	1	1	1	1	3	2

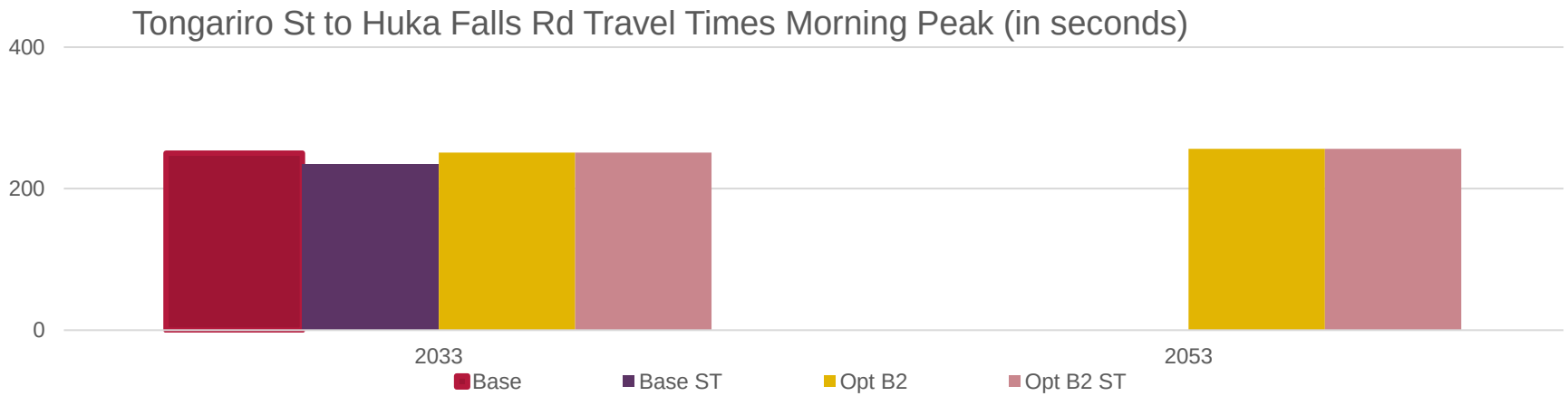
Table 5.2 Lane Kilometres at given LoS

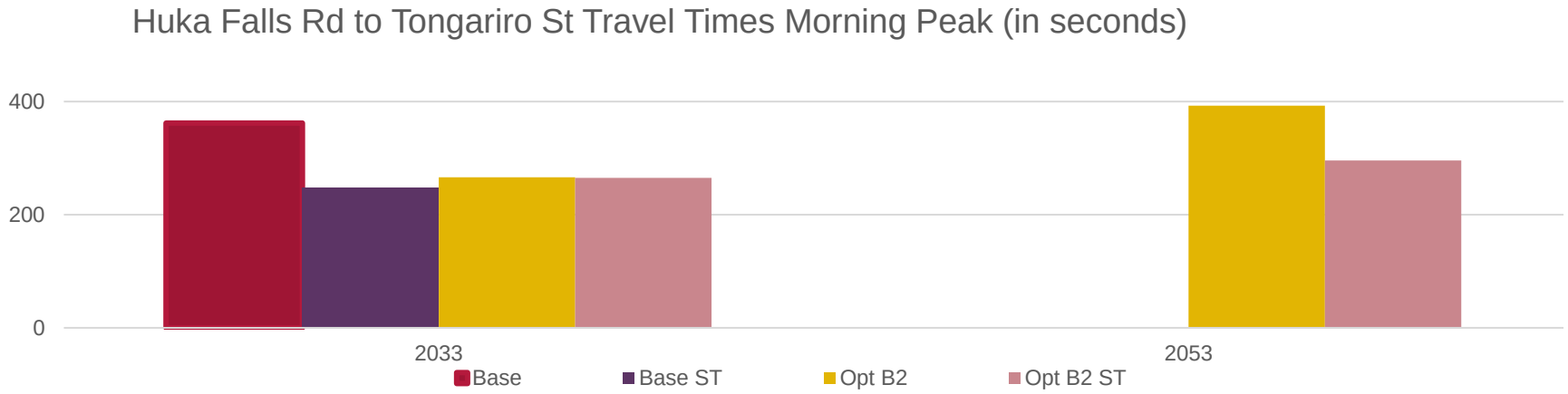
		33 Base	33 Base ST	33 Opt B2	33 Opt B2 ST	53 Opt B2	53 Opt B2 ST
AM	LoS C	2	2.4	3.4	3.0	5.3	6.2
	LoS D	3.2	4.4	3.3	3.5	3.5	3.9
	LoS E	0.5	0.4	0.5	0.2	4.9	3.6
	LoS F	0.5	0	0	0	1.7	0.4
PM	LoS C	2.8	2.9	3.4	3.1	6	8.1
	LoS D	2	2.1	2	2	3.9	3.4
	LoS E	0.4	0	0.2	0	4.7	2.5
	LoS F	0.5	0.5	0	0	1.2	0.9

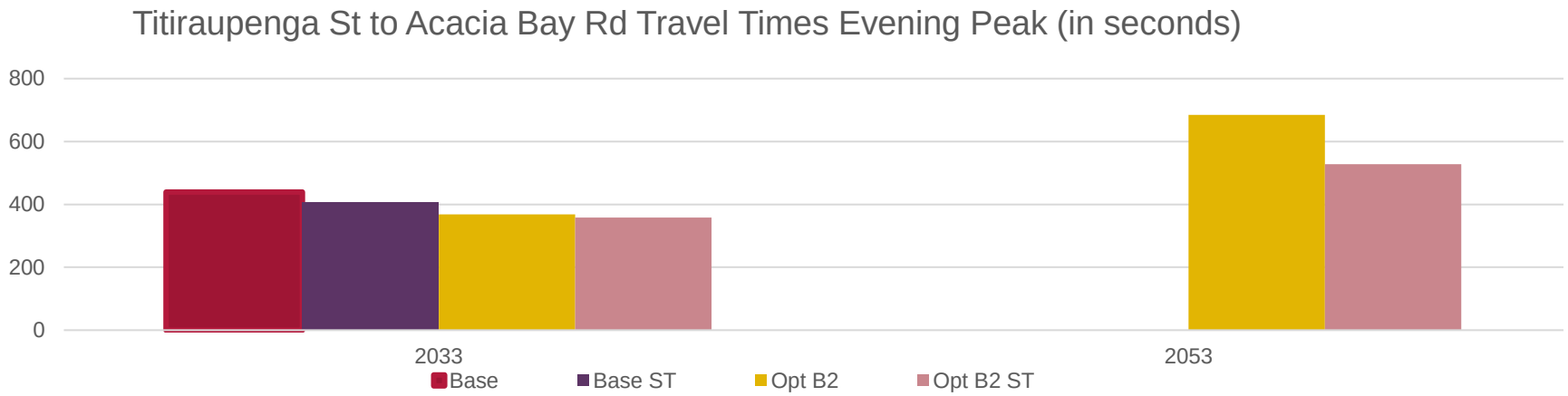
6. Travel Times

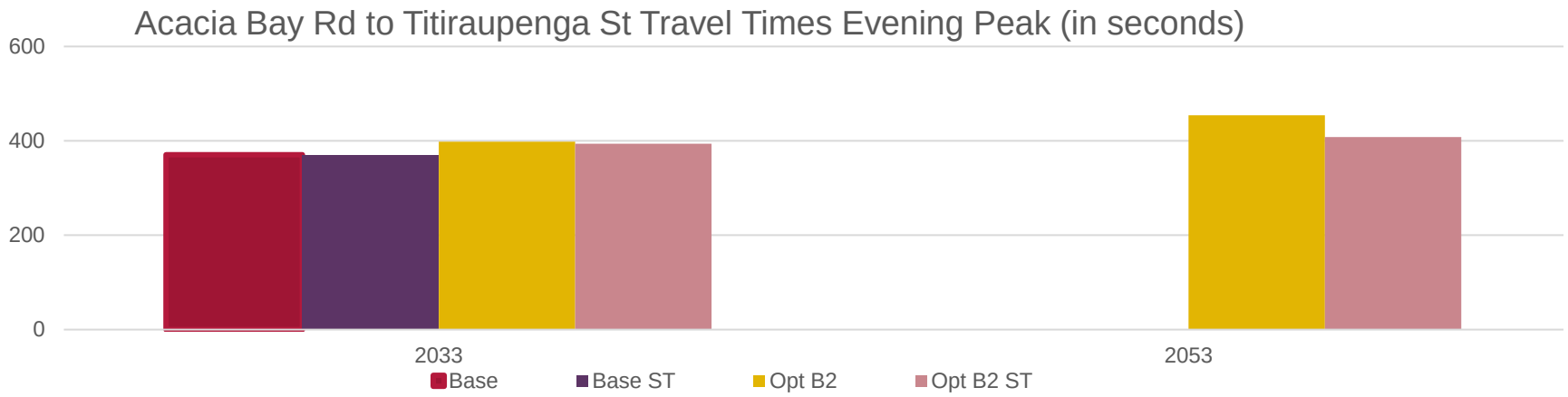


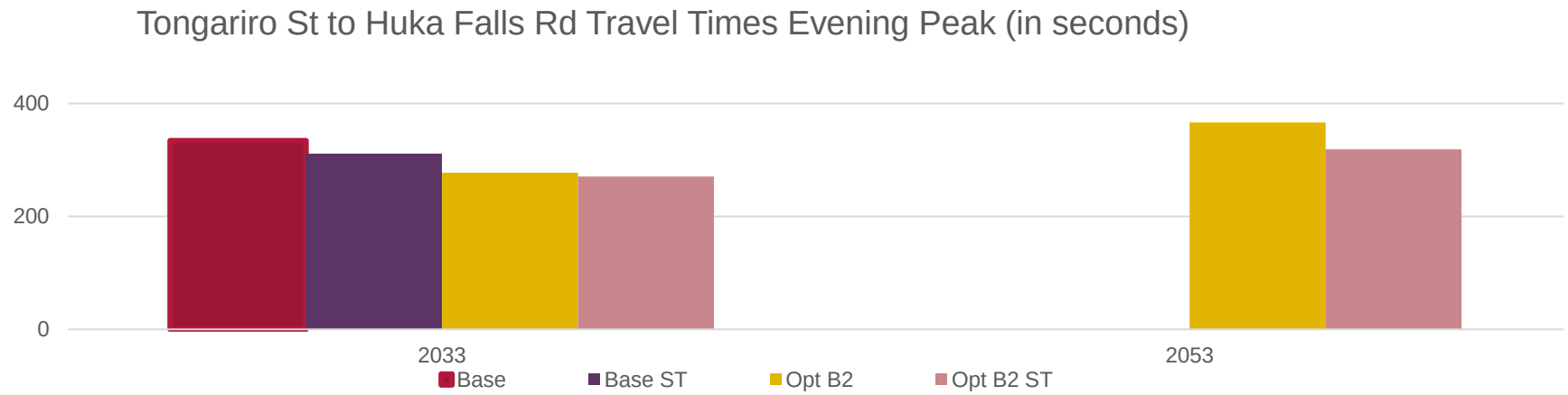


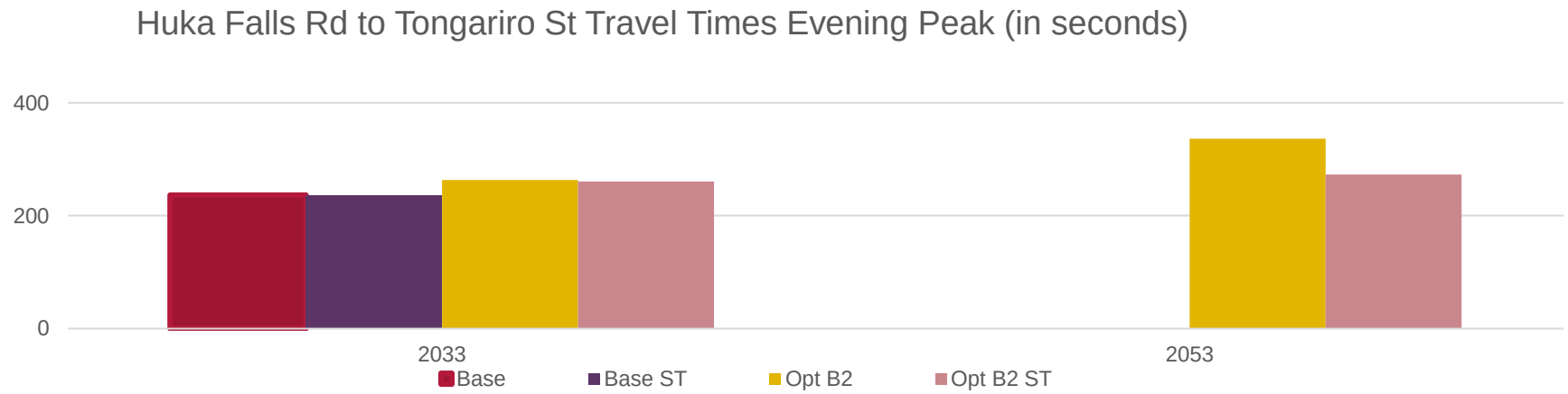

Tongariro St to Huka Falls Rd Travel Times Morning Peak (in seconds)
400
200
0
2033
2053
Base
Base ST
Opt B2
Opt B2 ST


Huka Falls Rd to Tongariro St Travel Times Morning Peak (in seconds)
400
200
0
2033
2053
Base
Base ST
Opt B2
Opt B2 ST


Titiraupenga St to Acacia Bay Rd Travel Times Evening Peak (in seconds)
800
600
400
200
0
2033
2053
Base
Base ST
Opt B2
Opt B2 ST


Acacia Bay Rd to Titiraupenga St Travel Times Evening Peak (in seconds)
600
400
200
0
2033
2053
Base
Base ST
Opt B2
Opt B2 ST


Tongariro St to Huka Falls Rd Travel Times Evening Peak (in seconds)
400
200
0
2033
2053
Base
Base ST
Opt B2
Opt B2 ST


Huka Falls Rd to Tongariro St Travel Times Evening Peak (in seconds)
400
200
0
2033
2053
Base
Base ST
Opt B2
Opt B2 ST

7. Travel Totals

		2033	2033 ST	2033 Opt B2	2033 Opt B2 ST	2053 Opt B2	2053 Opt B2 ST
Morning Peak Hour	Trips Total	15011	14603	15011	14603	20233	18986
	Vehicle Minutes	109418	105327	109731	105789	179611	154432
	Vehicle Kilometres	94507	91693	94224	91444	127423	121762
	Ave Trip Length (min)	7.29	7.21	7.31	7.24	8.88	8.13
	Ave Trip Length (km)	6.30	6.28	6.28	6.26	6.3	6.41
Evening Peak Hour	Trips Total	13784	13351	13784	13351	18599	17307
	Vehicle Minutes	85841	81501	83779	80091	139399	120022
	Vehicle Kilometres	68103	65276	68355	65449	95738	89632
	Ave Trip Length (min)	6.23	6.1	6.08	6	7.49	6.94
	Ave Trip Length (km)	4.94	4.89	4.96	4.9	5.15	5.18

Level of Service Methodology

Level of Service (LoS) gives an indicator for the degree of amenity to vehicle users on a network. In the context of this report, LoS is used as an indicator of network performance.

Figure 7.1 shows how Link LoS varies depending on link type. It shows that the higher the vehicle volume and the lower the free speed the worse the LoS becomes. Link types are defined as follows:

- Link type 1 equates to road speeds of 10km/hr
- Link type 2 and 12 equate to road speeds of 20km/hr and 25km/hr
- Link type 3 and 13 equate to road speeds of 30km/hr and 35km/hr
- Link type 4 and 14 equate to road speeds of 40km/hr and 45km/hr
- Link type 5 and 15 equate to road speeds of 50km/hr and 55km/hr
- Link type 6 and 16 equate to road speeds of 60km/hr and 65km/hr
- Link type 7 and 17 equate to road speeds of 70km/hr and 75km/hr
- Link type 8 and 18 equate to road speeds of 80km/hr and 85km/hr
- Link type 9 and 19 equate to road speeds of 90km/hr and 95km/hr
- Link type 10 and 11 equate to road speeds of 100km/hr and 110km/hr
- Link type 20 equates to road speeds of 105km/hr

Intersection LoS is based on the delay values as given in Table 7.1. The colour coding in the table and figure corresponds to the colours applied in the LoS plots in section 3.4 of this report.

Table 7.1 Level of Service definitions and criteria

Definitions Of LoS				
LoS	**Description**	**Taupō Transportation Model LoS criteria**		
		Link (vehicles per hour)	**Intersection (delay/veh)**	
			Priority	**Signal/Rotary**
LoS F	Forced flow. The amount of traffic approaching a point exceeds that which can pass it. Flow break-downs occur, and queuing and delays occur.	In excess of **900-1700** depending on link type	50 sec	80 sec
LoS E	Traffic volumes are at or close to *capacity and there is virtually no freedom* to select desired speed and to manoeuvre within the traffic stream. Flow is unstable and *minor disturbances within the traffic stream will cause break-downs in operation*.	Between **720-1360** depending on link type	35 sec	55 sec
LoS D	Approaching unstable flow where *all drivers are severely restricted* in their freedom to select desired speed and to manoeuvre within the traffic stream. The general level of *comfort and convenience is poor* and small increases in traffic flow will cause operational problems.	Between **585-1105** depending on link type	25 sec	35 sec
LoS C	Stable flow but most drivers *are restricted to some extent* in their freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of *comfort and convenience has declined noticeably*.	Between **450-850** depending on link type	15 sec	20 sec
LoS B	Stable flow where drivers still *have reasonable freedom* to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience is less than LoS A.	Not Applicable	Not Applicable	

Definitions Of LoS				
LoS	**Description**	**Taupō Transportation Model LoS criteria**		
		Link (vehicles per hour)	**Intersection (delay/veh)**	
			Priority	**Signal/Rotary**
LoS A	Free flow in which drivers are *virtually unaffected* by the presence of others in the traffic stream. Freedom to select desired speeds and to manoeuvre within the traffic stream is extremely high and the general level of *comfort and convenience is excellent*.			

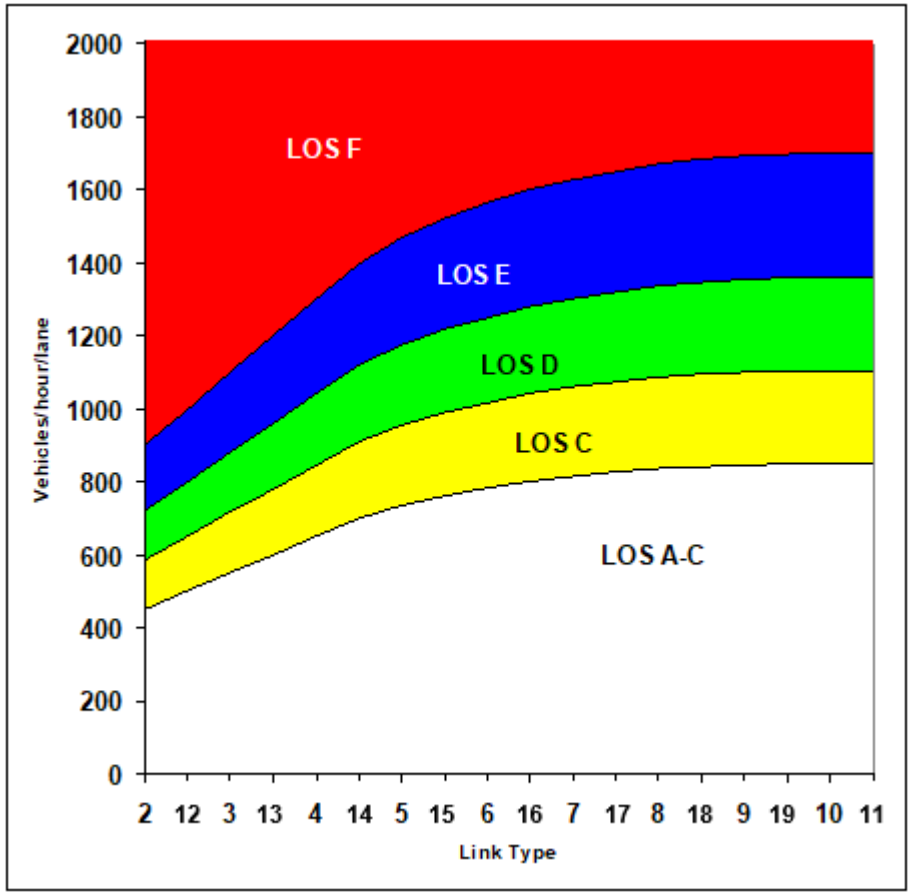
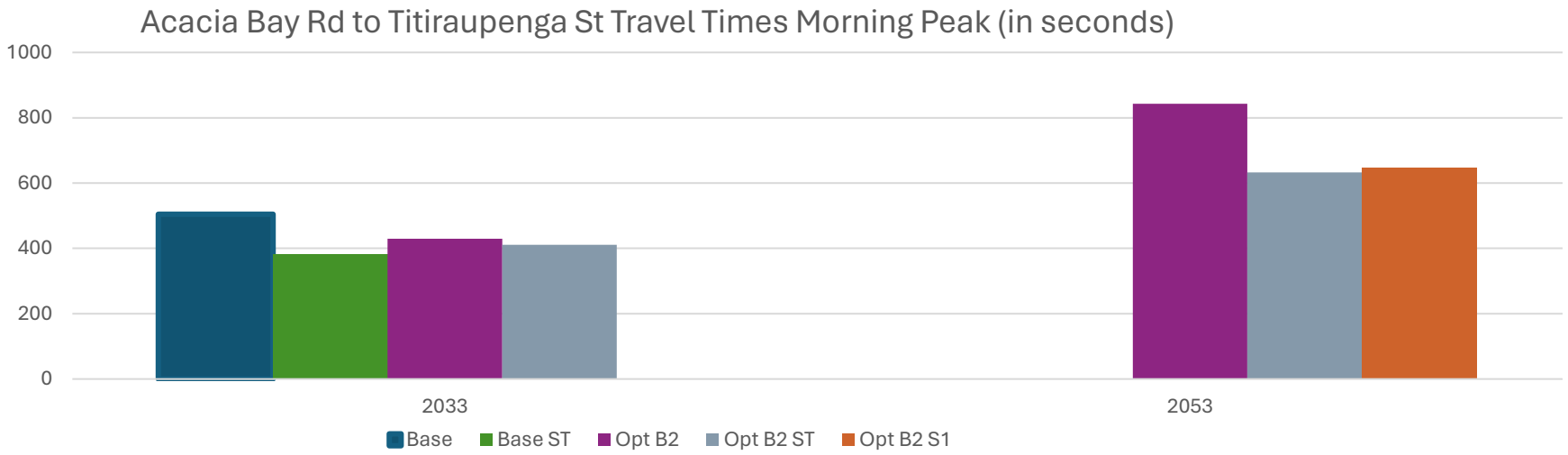
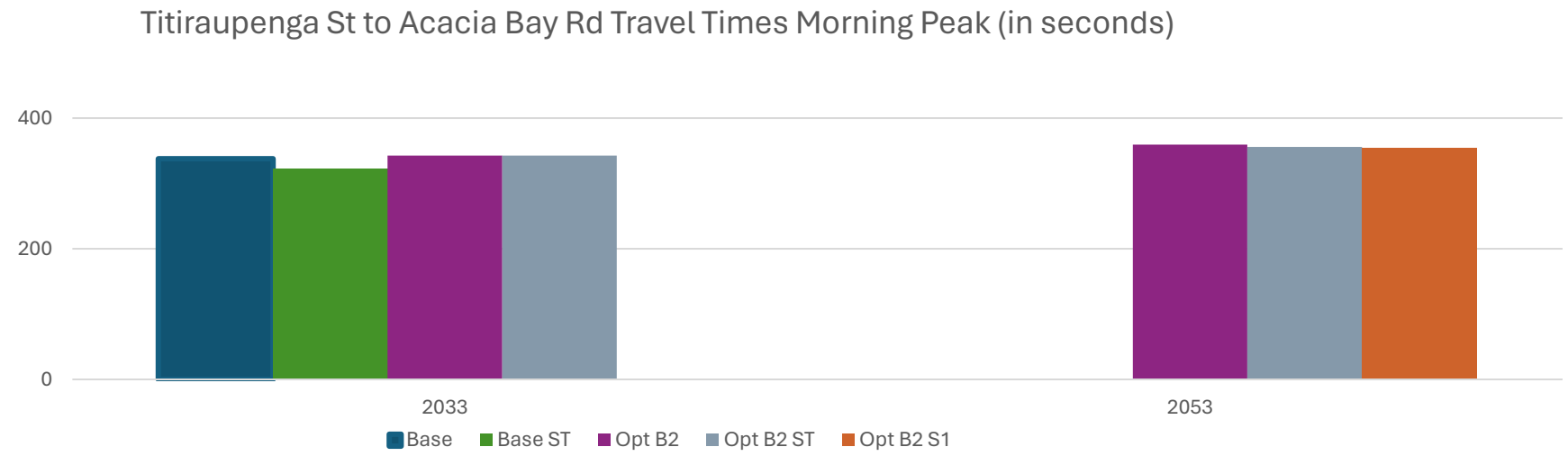


Figure 7.1 Taupō Transportation Model Link LoS Criteria (Vehicles per Lane per Hour)

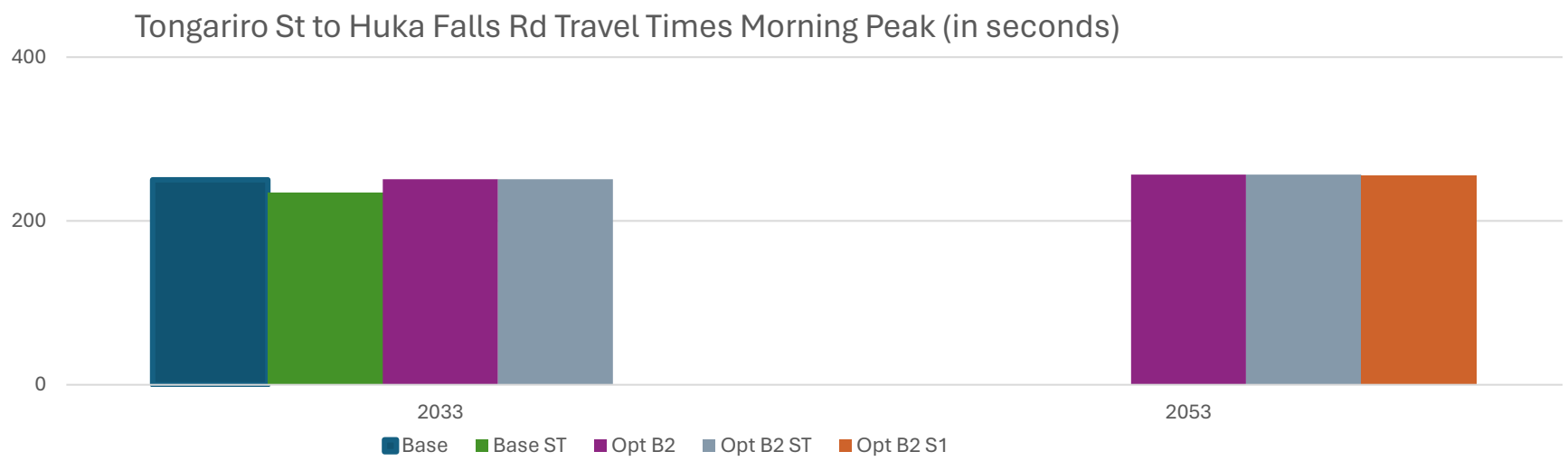
This set of model outputs gives results for the sensitivity tests for 2053 Option B2 without the school.

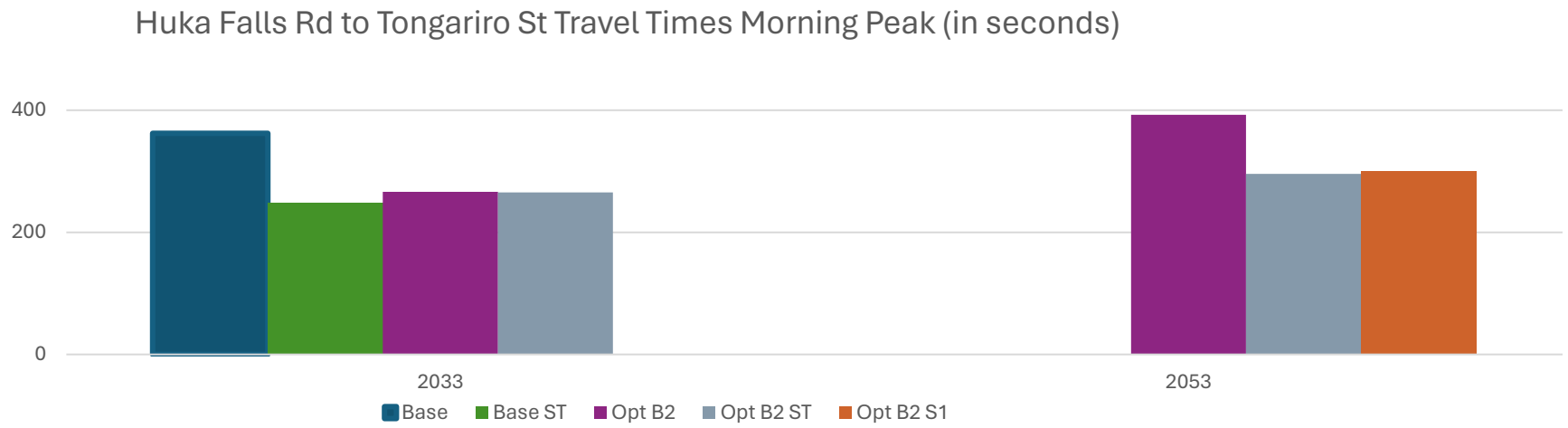
2053 Morning Peak Option B2 – Hourly volume change when school removed from sensitivity test





2053 Morning Peak Travel Times - Option B2 (Orange) Bar Added for Sensitivity Test with School Removed





2053 Morning Peak Travel Times - Option B2 (Orange) Bar Added for Sensitivity Test with School Removed

APPENDIX G

HIGH LEVEL COST ESTIMATIONS: OPTION A1, OPTION B1, OPTION B2

DRAFT

Project Estimate

Option A1

Taupo Northern Access Bridge Construction - Bridge Costs

IBE

Indicative Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk
A	**Nett Project Property Cost**	**0**	**0**	**0**
	Project Development Phase			
	- Consultancy Fees	0		
	- Client Managed Costs	0		
B	**Total Project Development**	-	-	-
	Pre-Implementation Phase			
	- Consultancy Fees	0		
	- Client Managed Costs	0		
C	**Total Pre-implementation**	**0**	**0**	**0**
	Implementation Phase			
	Implementation Fees			
1.1	**- Consultancy Fees**	0		
1.2	**- Client Managed Costs**	0		
1.3	**- Consent Monitoring Fees**	0		
	Sub Total Base Implementation Fees	**0**	**0**	**0**
	Physical Works			
1	Environmental Compliance	250,000		
2	Earthworks	0		
3	Ground Improvements	0		
4	Drainage	0		
5	Pavement and Surfacing	0		
6	Bridges	8,190,000		
7	Retaining Walls	528,000		
8	Traffic Services	0		
9	Service Relocations	300,000		
10	Landscaping	0		
11	Traffic Management and Temporary Works	450,000		
12	Preliminary and General	2,916,000		
13	Extraordinary Construction Costs	0		
	Sub Total Base Physical Works	**12,634,000**	**2,268,000**	**2,829,000**
D	**Total construction**	**12,634,000**	**2,268,000**	**2,829,000**
E	**Project base estimate** (A+C+D)	**12,634,000**		
F	**Contingency** (Assessed/Analysed)	**(A+C+D)**	**2,268,000**	
G	**Project expected estimate**	**(E+F)**	**14,902,000**	
Nett Project Property Cost Expected Estimate			0	
Project Development Phase Expected Estimate			0	
Pre-implementation Phase Expected Estimate			0	
Implentation Phase Expected Estimate			14,902,000	
H	**Funding risk** (Assessed/Analysed)		**(A+C+D)**	**2,829,000**
I	**95th percentile Project Estimate**		**(G+H)**	**17,731,000**
Project property cost 95th percentile estimate				0
Investigation and reporting 95th percentile estimate				0
Design and project documentation 95th percentile estimate				0
Construction 95th percentile estimate				17,731,000
Date of estimate	**02/2024**	**Cost Index (Qtr/Year)**	**12/2023**	
Estimate prepared by	**Bob Burrows**	**Signed**		
Estimate internal peer review by	**Juancho Diaz**	**Signed**		
Estimate external peer review by		**Signed**		
Estimate accepted by the NZTA		**Signed**		

Option A1

Taupo Northern Access Bridge Construction - Bridge Costs						
Working Schedule of Construction Costs						
Item	**Description**	**Unit**	**Quantity**	**Rate**	**Item Total**	**Element Total**
1	**Environmental Compliance**					$ 250,000.00
1.1	**Compliance**					
1.1.1	Environmental Compliance - Complete	LS	1	$ 50,000.00	$ 50,000.00	
1.1.2	Contactor's Environmental Management Plan	LS	1	$ 25,000.00	$ 25,000.00	
1.1.3	Implementation and Management of the EMP	LS	1	$ 50,000.00	$ 50,000.00	
1.2	**Environmental Controls**					
1.2.1	Enviromental Controls	No.	1	$ 125,000.00	$ 125,000.00	
2	**Earthworks and Clearing**					$ -
	Not Applicable					
3	**Ground Improvements**					$ -
	Not Applicable					
4	**Drainage**					$ -
	Not Applicable					
5	**Pavement**					$ -
	Not Applicable					
6	**Structures**					$ 8,190,000.00
6.1	**Bridges**					
6.1.1	**Taupo Bridge**					
6.1.1.1	**Superstructure**					
6.1.1.1.1.1	Bridge	m2	630	$ 13,000.00	$ 8,190,000.00	
7	**Retaining Walls**					$ 528,000.00
7.1	**MSE Walls**					
7.1.1	MSE Reinforced Backfill Placement	m2	176	$ 3,000.00	$ 528,000.00	
8	**Traffic Services**					$ -
	Not Applicable					
9	**Service Relocations**					$ 300,000.00
9.1	**Relocations**					
9.1.1	Relocate Existing services	PS	3.0	$ 100,000.00	$ 300,000.00	
10	**Landscaping & Entrances**					$ -
	Not Applicable					
11	**Traffic Management and Temporary Works**					$ 450,000.00
11.1	**Traffic Management**					
11.1.1	Establish and Maintain Temporary Traffic Mana	LS	3	$ 150,000.00	$ 450,000.00	
12	**Preliminary and General**					$ 2,915,400.00
12.1	**Preliminary and General**					
12.1.1	Preliminary and General	LS	30%	$ 9,718,000.00	$ 2,915,400.00	
13	**Extraordinary Construction Costs**					$ -
	Not Applicable					
						$ 12,633,400.00

Project Estimate

Option A1

Taupo Northern Access Bridge Construction - Road Approach

IBE

Indicative Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk
A	**Nett Project Property Cost**	**0**	**0**	**0**
	Project Development Phase			
	- Consultancy Fees	0		
	- Client Managed Costs	0		
B	**Total Project Development**	-	-	-
	Pre-Implementation Phase			
	- Consultancy Fees	0		
	- Client Managed Costs	0		
C	**Total Pre-implementation**	**0**	**0**	**0**
	Implementation Phase			
	Implementation Fees			
1.1	**- Consultancy Fees**	0		
1.2	**- Client Managed Costs**	0		
1.3	**- Consent Monitoring Fees**	0		
	Sub Total Base Implementation Fees	**0**	**0**	**0**
	Physical Works			
1	Environmental Compliance	250,000		
2	Earthworks	268,000		
3	Ground Improvements	0		
4	Drainage	0		
5	Pavement and Surfacing	9,000,000		
6	Bridges	0		
7	Retaining Walls	1,250,000		
8	Traffic Services	500,000		
9	Service Relocations	300,000		
10	Landscaping	0		
11	Traffic Management and Temporary Works	1,050,000		
12	Preliminary and General	3,786,000		
13	Extraordinary Construction Costs	0		
	Sub Total Base Physical Works	**16,404,000**	**2,910,000**	**2,833,000**
D	**Total construction**	**16,404,000**	**2,910,000**	**2,833,000**
E	**Project base estimate (A+C+D)**	**16,404,000**		
F	**Contingency** (Assessed/Analysed)	**(A+C+D)**	**2,910,000**	
G	**Project expected estimate**	**(E+F)**	**19,314,000**	
Nett Project Property Cost Expected Estimate			0	
Project Development Phase Expected Estimate			0	
Pre-implementation Phase Expected Estimate			0	
Implentation Phase Expected Estimate			19,314,000	
H	**Funding risk** (Assessed/Analysed)		**(A+C+D)**	**2,833,000**
I	**95th percentile Project Estimate**		**(G+H)**	**22,147,000**
Project property cost 95th percentile estimate				0
Investigation and reporting 95th percentile estimate				0
Design and project documentation 95th percentile estimate				0
Construction 95th percentile estimate				22,147,000

Date of estimate	**02/2024**	**Cost Index (Qtr/Year)**	**12/2023**
Estimate prepared by	**Bob Burrows**	**Signed**	
Estimate internal peer review by	**Juancho Diaz**	**Signed**	
Estimate external peer review by		**Signed**	
Estimate accepted by the NZTA		**Signed**	

Option A1

Taupo Northern Access Bridge Construction - Road Approach						
Working Schedule of Construction Costs						
Item	**Description**	**Unit**	**Quantity**	**Rate**	**Item Total**	**Element Total**
1	**Environmental Compliance**					$ 250,000.00
1.1	**Compliance**					
1.1.1	Environmental Compliance - Complete	LS	1	$ 50,000.00	$ 50,000.00	
1.1.2	Contactor's Environmental Management Plan	LS	1	$ 25,000.00	$ 25,000.00	
1.1.3	Implementation and Management of the EMP	LS	1	$ 50,000.00	$ 50,000.00	
1.2	**Environmental Controls**					
1.2.1	Enviromental Controls	No.	1	$ 125,000.00	$ 125,000.00	
2	**Earthworks and Clearing**					$ 268,000.00
2.1	**Clearing**					
2.1.1	Clearing vegetation, General Site Clearance	LS	1	$ 25,000.00	$ 25,000.00	
2.2	**Earthworks - Primary**					
2.2.1	Cut to Waste Off-site	m3	3,600	$ 35.00	$ 126,000.00	
2.2.2	Import fill	m3	1,800	$ 65.00	$ 117,000.00	
3	**Ground Improvements**					$ -
	Not Applicable					
4	**Drainage**					$ -
	Not Applicable					
5	**Pavement**					$ 9,000,000.00
5.1	**Works**					
5.1.1	Construct Approach roading works	m2	3,600	$ 2,500.00	$ 9,000,000.00	
6	**Structures**					$ -
	Not Applicable					
7	**Retaining Walls**					$ 1,250,000.00
7.1	**MSE Walls**					
7.1.1	MSE Wall Installation	m2	500	$ 2,500.00	$ 1,250,000.00	
8	**Traffic Services**					$ 500,000.00
8.1	**Signals**					
8.1.1	**Structure**					
8.1.1.1	Alter Existing Traffic Signals	No.	1	$ 500,000.00	$ 500,000.00	
9	**Service Relocations**					$ 300,000.00
9.1	**Relocations**					
9.1.1	Relocate Existing services	PS	3	$ 100,000.00	$ 300,000.00	
10	**Landscaping & Entrances**					$ -
	Not Applicable					
11	**Traffic Management and Temporary Works**					$ 1,050,000.00
11.1	**Traffic Management**					
11.1.1	Establish and Maintain Temporary Traffic Mana	LS	7	$ 150,000.00	$ 1,050,000.00	
12	**Preliminary and General**					$ 3,785,400.00
12.1	**Preliminary and General**					
12.1.1	Preliminary and General	LS	30%	$ 12,618,000.00	$ 3,785,400.00	
13	**Extraordinary Construction Costs**					$ -
	Not Applicable					
						$ 16,403,400.00

Project Estimate

Taupo Northern Access Bridge
Construction - Option B1 - Roading Cost

IBE

Indicative Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk
A	**Nett Project Property Cost**	**0**	**0**	**0**
	Project Development Phase			
	- Consultancy Fees	0		
	- Client Managed Costs	0		
B	**Total Project Development**	-	-	-
	Pre-Implementation Phase			
	- Consultancy Fees	0		
	- Client Managed Costs	0		
C	**Total Pre-implementation**	**0**	**0**	**0**
	Implementation Phase			
	Implementation Fees			
1.1	**- Consultancy Fees**	0		
1.2	**- Client Managed Costs**	0		
1.3	**- Consent Monitoring Fees**	0		
	Sub Total Base Implementation Fees	**0**	**0**	**0**
	Physical Works			
1	Environmental Compliance	500,000		
2	Earthworks	3,150,000		
3	Ground Improvements	0		
4	Drainage	975,000		
5	Pavement and Surfacing	18,725,000		
6	Bridges	0		
7	Retaining Walls	0		
8	Traffic Services	1,831,000		
9	Service Relocations	1,000,000		
10	Landscaping	1,000,000		
11	Traffic Management and Temporary Works	1,200,000		
12	Preliminary and General	8,515,000		
13	Extraordinary Construction Costs	0		
	Sub Total Base Physical Works	**36,896,000**	**11,068,800**	**11,068,800**
D	**Total construction**	**36,896,000**	**11,068,800**	**11,068,800**
E	**Project base estimate (A+C+D)**	**36,896,000**		
F	**Contingency** (Assessed/Analysed)	**(A+C+D)**	**11,068,800**	
G	**Project expected estimate**	**(E+F)**	**47,964,800**	
Nett Project Property Cost Expected Estimate			0	
Project Development Phase Expected Estimate			0	
Pre-implementation Phase Expected Estimate			0	
Implentation Phase Expected Estimate			47,964,800	
H	**Funding risk** (Assessed/Analysed)		**(A+C+D)**	**11,068,800**
I	**95th percentile Project Estimate**		**(G+H)**	**59,033,600**
Project property cost 95th percentile estimate				0
Investigation and reporting 95th percentile estimate				0
Design and project documentation 95th percentile estimate				0
Construction 95th percentile estimate				59,033,600

Date of estimate	**02/2024**	**Cost Index (Qtr/Year)**	**12/2023**
Estimate prepared by	**Bob Burrows**	**Signed**	
Estimate internal peer review by	**Juancho Diaz**	**Signed**	
Estimate external peer review by		**Signed**	
Estimate accepted by the NZTA		**Signed**	

Taupo Northern Access Bridge Construction - Option B1 - Roading						
Working Schedule of Construction Costs						
Item	**Description**	**Unit**	**Quantity**	**Rate**	**Item Total**	**Element Total**
1	**Environmental Compliance**					$ 500,000.00
1.1	**Compliance**					
1.1.1	Environmental Compliance - Complete	LS	2	$ 50,000.00	$ 100,000.00	
1.1.2	Contactor's Environmental Management Plan	LS	2	$ 25,000.00	$ 50,000.00	
1.1.3	Implementation and Management of the EMP	LS	2	$ 50,000.00	$ 100,000.00	
1.2	**Environmental Controls**					
1.2.1	Enviromental Controls	No.	2	$ 125,000.00	$ 250,000.00	
2	**Earthworks and Clearing**					$ 3,150,000.00
2.1	**Clearing**					
2.1.1	Clearing vegetation, General Site Clearance	LS	15	$ 25,000.00	$ 375,000.00	
2.2	**Earthworks - Primary**					
2.2.1	Cut to Waste Off-site	m3	5,000	$ 35.00	$ 175,000.00	
2.2.2	Import fill	m3	40,000	$ 65.00	$ 2,600,000.00	
3	**Ground Improvements**					$ -
	Not Applicable					
4	**Drainage**					$ 974,700.00
4.1	**Kerbs**					
4.1.1	Supply and install kerb and channel	m	1,070	$ 120.00	$ 128,400.00	
4.2	**Pipes and Culverts**					
4.2.1	**Pipes**					
4.2.1.1	General Drainage	m	500	$ 1,500.00	$ 750,000.00	
4.3	**Drains**					
4.3.1	**Drains**					
4.3.1.1	110mm HDPE Perforated Subsoil Drain	m	1,070	$ 90.00	$ 96,300.00	
5	**Pavement**					$ 18,725,000.00
5.1	**Works**					
5.1.1	Construct Approach roading works	m2	7,490	$ 2,500.00	$ 18,725,000.00	
6	**Structures**					$ -
	Not Applicable					
7	**Retaining Walls**					$ -
	Not Applicable					
8	**Traffic Services**					$ 1,830,500.00
8.1	**Barriers**					
8.1.1	**W Section**					
8.1.1.1	Supply and Install W Section Guardrail	m	1,070	$ 150.00	$ 160,500.00	
8.1.1.2	W Section Entry Terminal End Treatment	No.	2	$ 6,500.00	$ 13,000.00	
8.1.1.3	W Section Exit Terminal End Treatment	No.	2	$ 3,500.00	$ 7,000.00	
8.2	**Pavement Markings**					
8.2.1	**Solid Lines**					
8.2.1.1	Linemark general	LS	1	$ 15,000.00	$ 15,000.00	
8.3	**Signs**					
8.3.1	**Misc**					
8.3.1.1	General Sign supply and Installation	LS	1	$ 100,000.00	$ 100,000.00	
8.4	**Lighting**					
8.4.1	**Single Outreach**					
8.4.1.1	Supply and Install 10m high Column Complete,	No.	30	$ 9,500.00	$ 285,000.00	
8.4.2	**Misc**					
8.4.2.1	Undergroung cabling, controls etc	LS	1	$ 250,000.00	$ 250,000.00	
8.5	**Signals**					
8.5.1	**Structure**					
8.5.1.1	Alter Existing Traffic Signals	No.	2	$ 500,000.00	$ 1,000,000.00	
9	**Service Relocations**					$ 1,000,000.00
9.1	**Relocations**					
9.1.1	Relocate Existing services	PS	10	$ 100,000.00	$ 1,000,000.00	
10	**Landscaping & Entrances**					$ 1,000,000.00
10.1	**General Insert**					
10.1.1	Landscaping general	LS	1	$ 1,000,000.00	$ 1,000,000.00	
11	**Traffic Management and Temporary Works**					$ 1,200,000.00
11.1	**Traffic Management**					
11.1.1	Establish and Maintain Temporary Traffic Mana	LS	8	$ 150,000.00	$ 1,200,000.00	
12	**Preliminary and General**					$ 8,514,060.00
12.1	**Preliminary and General**					
12.1.1	Preliminary and General	LS	30%	$ 28,380,200.00	$ 8,514,060.00	
13	**Extraordinary Construction Costs**					$ -
	Not Applicable					
						$ 36,894,260.00

Project Estimate

Taupo Northern Access Bridge
Construction - Option B1 - Bridging Cost

IBE

Indicative Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk
A	**Nett Project Property Cost**	**0**	**0**	**0**
	Project Development Phase			
	- **Consultancy Fees**	0		
	- **Client Managed Costs**	0		
B	**Total Project Development**	-	-	-
	Pre-Implementation Phase			
	- **Consultancy Fees**	0		
	- **Client Managed Costs**	0		
C	**Total Pre-implementation**	**0**	**0**	**0**
	Implementation Phase			
	Implementation Fees			
1.1	- **Consultancy Fees**	0		
1.2	- **Client Managed Costs**	0		
1.3	- **Consent Monitoring Fees**	0		
	Sub Total Base Implementation Fees	**0**	**0**	**0**
	Physical Works			
1	Environmental Compliance	500,000		
2	Earthworks	439,000		
3	Ground Improvements	0		
4	Drainage	53,000		
5	Pavement and Surfacing	0		
6	Bridges	25,480,000		
7	Retaining Walls	1,488,000		
8	Traffic Services	0		
9	Service Relocations	0		
10	Landscaping	0		
11	Traffic Management and Temporary Works	300,000		
12	Preliminary and General	8,478,000		
13	Extraordinary Construction Costs	0		
	Sub Total Base Physical Works	**36,738,000**	**11,021,400**	**11,021,400**
D	**Total construction**	**36,738,000**	**11,021,400**	**11,021,400**
E	**Project base estimate** (A+C+D)	**36,738,000**		
F	**Contingency** (Assessed/Analysed)	(A+C+D)	**11,021,400**	
G	**Project expected estimate**	(E+F)	**47,759,400**	
Nett Project Property Cost Expected Estimate			0	
Project Development Phase Expected Estimate			0	
Pre-implementation Phase Expected Estimate			0	
Implentation Phase Expected Estimate			47,759,400	
H	**Funding risk** (Assessed/Analysed)		(A+C+D)	**11,021,400**
I	**95th percentile Project Estimate**		(G+H)	**58,780,800**
Project property cost 95th percentile estimate				0
Investigation and reporting 95th percentile estimate				0
Design and project documentation 95th percentile estimate				0
Construction 95th percentile estimate				58,780,800

Date of estimate	02/2024	**Cost Index (Qtr/Year)**	12/2023
Estimate prepared by	Bob Burrows	**Signed**	
Estimate internal peer review by	Juancho Diaz	**Signed**	
Estimate external peer review by		**Signed**	
Estimate accepted by the NZTA		**Signed**	

Taupo Northern Access Bridge Construction - Option B1 - Bridging						
Working Schedule of Construction Costs						
Item	**Description**	**Unit**	**Quantity**	**Rate**	**Item Total**	**Element Total**
1	**Environmental Compliance**					$ 500,000.00
1.1	**Compliance**					
1.1.1	Environmental Compliance - Complete	LS	2	$ 50,000.00	$ 100,000.00	
1.1.2	Contactor's Environmental Management Plan	LS	2	$ 25,000.00	$ 50,000.00	
1.1.3	Implementation and Management of the EMP	LS	2	$ 50,000.00	$ 100,000.00	
1.2	**Environmental Controls**					
1.2.1	Enviromental Controls	No.	2	$ 125,000.00	$ 250,000.00	
2	**Earthworks and Clearing**					$ 438,850.00
2.1	**Clearing**					
2.1.1	Clearing vegetation, General Site Clearance	LS	5	$ 25,000.00	$ 125,000.00	
2.2	**Earthworks - Primary**					
2.2.1	Cut to Waste Off-site	m3	1,000	$ 35.00	$ 35,000.00	
2.2.2	Import fill	m3	4,290	$ 65.00	$ 278,850.00	
3	**Ground Improvements**					$ -
	Not Applicable					
4	**Drainage**					$ 52,500.00
4.1	**Pipes and Culverts**					
4.1.1	**Pipes**					
4.1.1.1	General Drainage	m	35	$ 1,500.00	$ 52,500.00	
5	**Pavement**					$ -
	Not Applicable					
6	**Structures**					$ 25,480,000.00
6.1	**Bridges**					
6.1.1	**Option B1 Bridge over Waikato River**					
6.1.1.1	**Superstructure**					
6.1.1.1.1.1	Bridge	m2	1,960	$ 13,000.00	$ 25,480,000.00	
7	**Retaining Walls**					$ 1,488,000.00
7.1	**MSE Walls**					
7.1.1	MSE Reinforced Backfill Placement	m2	496	$ 3,000.00	$ 1,488,000.00	
8	**Traffic Services**					$ -
	Not Applicable					
9	**Service Relocations**					$ -
	Not Applicable					
10	**Landscaping & Entrances**					$ -
	Not Applicable					
11	**Traffic Management and Temporary Works**					$ 300,000.00
11.1	**Traffic Management**					
11.1.1	Establish and Maintain Temporary Traffic Mana	LS	2	$ 150,000.00	$ 300,000.00	
12	**Preliminary and General**					$ 8,477,805.00
12.1	**Preliminary and General**					
12.1.1	Preliminary and General	LS	30%	$ 28,259,350.00	$ 8,477,805.00	
13	**Extraordinary Construction Costs**					$ -
	Not Applicable					
						$ 36,737,155.00

Project Estimate

Taupo Northern Access Bridge
Construction - Option B2 - Roading Cost

IBE

Indicative Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk
A	**Nett Project Property Cost**	**0**	**0**	**0**
	Project Development Phase			
	- **Consultancy Fees**	0		
	- **Client Managed Costs**	0		
B	**Total Project Development**	-	-	-
	Pre-Implementation Phase			
	- **Consultancy Fees**	0		
	- **Client Managed Costs**	0		
C	**Total Pre-implementation**	**0**	**0**	**0**
	Implementation Phase			
	Implementation Fees			
1.1	- **Consultancy Fees**	0		
1.2	- **Client Managed Costs**	0		
1.3	- **Consent Monitoring Fees**	0		
	Sub Total Base Implementation Fees	**0**	**0**	**0**
	Physical Works			
1	Environmental Compliance	500,000		
2	Earthworks	4,819,000		
3	Ground Improvements	0		
4	Drainage	375,000		
5	Pavement and Surfacing	9,800,000		
6	Bridges	0		
7	Retaining Walls	0		
8	Traffic Services	1,659,000		
9	Service Relocations	1,000,000		
10	Landscaping	1,000,000		
11	Traffic Management and Temporary Works	1,050,000		
12	Preliminary and General	6,061,000		
13	Extraordinary Construction Costs	0		
	Sub Total Base Physical Works	**26,264,000**	**7,879,200**	**7,879,200**
D	**Total construction**	**26,264,000**	**7,879,200**	**7,879,200**
E	**Project base estimate** (A+C+D)	**26,264,000**		
F	**Contingency** (Assessed/Analysed)	(A+C+D)	**7,879,200**	
G	**Project expected estimate**	(E+F)	**34,143,200**	
Nett Project Property Cost Expected Estimate			0	
Project Development Phase Expected Estimate			0	
Pre-implementation Phase Expected Estimate			0	
Implentation Phase Expected Estimate			34,143,200	
H	**Funding risk** (Assessed/Analysed)		(A+C+D)	**7,879,200**
I	**95th percentile Project Estimate**		(G+H)	**42,022,400**
Project property cost 95th percentile estimate				0
Investigation and reporting 95th percentile estimate				0
Design and project documentation 95th percentile estimate				0
Construction 95th percentile estimate				42,022,400

Date of estimate	02/2024	**Cost Index (Qtr/Year)**	12/2023
Estimate prepared by	**Bob Burrows**	**Signed**	
Estimate internal peer review by	**Juancho Diaz**	**Signed**	
Estimate external peer review by		**Signed**	
Estimate accepted by the NZTA		**Signed**	

Taupo Northern Access Bridge Construction - Option B2 - Roading						
Working Schedule of Construction Costs						
Item	**Description**	**Unit**	**Quantity**	**Rate**	**Item Total**	**Element Total**
1	**Environmental Compliance**					$ 500,000.00
1.1	**Compliance**					
1.1.1	Environmental Compliance - Complete	LS	2	$ 50,000.00	$ 100,000.00	
1.1.2	Contactor's Environmental Management Plan	LS	2	$ 25,000.00	$ 50,000.00	
1.1.3	Implementation and Management of the EMP	LS	2	$ 50,000.00	$ 100,000.00	
1.2	**Environmental Controls**					
1.2.1	Enviromental Controls	No.	2	$ 125,000.00	$ 250,000.00	
2	**Earthworks and Clearing**					$ 4,818,200.00
2.1	**Clearing**					
2.1.1	Clearing vegetation, General Site Clearance	LS	12	$ 25,000.00	$ 300,000.00	
2.1.2	Remove Existing Buildings	LS	1	$ 2,500,000.00	$ 2,500,000.00	
2.2	**Earthworks - Primary**					
2.2.1	Cut to Waste Off-site	m3	4,400	$ 35.00	$ 154,000.00	
2.2.2	Import fill	m3	28,680	$ 65.00	$ 1,864,200.00	
3	**Ground Improvements**					$ -
	Not Applicable					
4	**Drainage**					$ 375,000.00
4.1	**Pipes and Culverts**					
4.1.1	**Pipes**					
4.1.1.1	General Drainage	m	250	$ 1,500.00	$ 375,000.00	
5	**Pavement**					$ 9,800,000.00
5.1	**Works**					
5.1.1	Construct Approach roading works	m2	3,920	$ 2,500.00	$ 9,800,000.00	
6	**Structures**					$ -
	Not Applicable					
7	**Retaining Walls**					$ -
	Not Applicable					
8	**Traffic Services**					$ 1,659,000.00
8.1	**Barriers**					
8.1.1	**W Section**					
8.1.1.1	Supply and Install W Section Guardrail	m	560	$ 150.00	$ 84,000.00	
8.1.1.2	W Section Entry Terminal End Treatment	No.	2	$ 6,500.00	$ 13,000.00	
8.1.1.3	W Section Exit Terminal End Treatment	No.	2	$ 3,500.00	$ 7,000.00	
8.2	**Pavement Markings**					
8.2.1	**Solid Lines**					
8.2.1.1	Linemark general	LS	1	$ 15,000.00	$ 15,000.00	
8.3	**Signs**					
8.3.1	**Misc**					
8.3.1.1	General Sign supply and Installation	LS	1	$ 100,000.00	$ 100,000.00	
8.4	**Lighting**					
8.4.1	**Single Outreach**					
8.4.1.1	Supply and Install 10m high Column Complete,	No.	20	$ 9,500.00	$ 190,000.00	
8.4.2	**Misc**					
8.4.2.1	Undergroung cabling, controls etc	LS	1	$ 250,000.00	$ 250,000.00	
8.5	**Signals**					
8.5.1	**Structure**					
8.5.1.1	Alter Existing Traffic Signals	No.	2	$ 500,000.00	$ 1,000,000.00	
9	**Service Relocations**					$ 1,000,000.00
9.1	**Relocations**					
9.1.1	Relocate Existing services	PS	10	$ 100,000.00	$ 1,000,000.00	
10	**Landscaping & Entrances**					$ 1,000,000.00
10.1	**General Insert**					
10.1.1	Landscaping general	LS	1	$ 1,000,000.00	$ 1,000,000.00	
11	**Traffic Management and Temporary Works**					$ 1,050,000.00
11.1	**Traffic Management**					
11.1.1	Establish and Maintain Temporary Traffic Mana	LS	7	$ 150,000.00	$ 1,050,000.00	
12	**Preliminary and General**					$ 6,060,660.00
12.1	**Preliminary and General**					
12.1.1	Preliminary and General	LS	30%	$ 20,202,200.00	$ 6,060,660.00	
13	**Extraordinary Construction Costs**					$ -
	Not Applicable					
						$ 26,262,860.00

Project Estimate

Taupo Northern Access Bridge
Construction - Option B2 - Bridging Cost

IBE

Indicative Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk
A	**Nett Project Property Cost**	**0**	**0**	**0**
	Project Development Phase			
	- Consultancy Fees	0		
	- Client Managed Costs	0		
B	**Total Project Development**	-	-	-
	Pre-Implementation Phase			
	- Consultancy Fees	0		
	- Client Managed Costs	0		
C	**Total Pre-implementation**	**0**	**0**	**0**
	Implementation Phase			
	Implementation Fees			
1.1	**- Consultancy Fees**	0		
1.2	**- Client Managed Costs**	0		
1.3	**- Consent Monitoring Fees**	0		
	Sub Total Base Implementation Fees	**0**	**0**	**0**
	Physical Works			
1	Environmental Compliance	500,000		
2	Earthworks	370,000		
3	Ground Improvements	0		
4	Drainage	45,000		
5	Pavement and Surfacing	0		
6	Bridges	21,840,000		
7	Retaining Walls	1,488,000		
8	Traffic Services	0		
9	Service Relocations	0		
10	Landscaping	0		
11	Traffic Management and Temporary Works	300,000		
12	Preliminary and General	7,363,000		
13	Extraordinary Construction Costs	0		
	Sub Total Base Physical Works	**31,906,000**	**9,571,800**	**9,571,800**
D	**Total construction**	**31,906,000**	**9,571,800**	**9,571,800**
E	**Project base estimate** (A+C+D)	**31,906,000**		
F	**Contingency** (Assessed/Analysed)	**(A+C+D)**	**9,571,800**	
G	**Project expected estimate**	**(E+F)**	**41,477,800**	
Nett Project Property Cost Expected Estimate			0	
Project Development Phase Expected Estimate			0	
Pre-implementation Phase Expected Estimate			0	
Implentation Phase Expected Estimate			41,477,800	
H	**Funding risk** (Assessed/Analysed)		**(A+C+D)**	**9,571,800**
I	**95th percentile Project Estimate**		**(G+H)**	**51,049,600**
Project property cost 95th percentile estimate				0
Investigation and reporting 95th percentile estimate				0
Design and project documentation 95th percentile estimate				0
Construction 95th percentile estimate				51,049,600

Date of estimate	02/2024	**Cost Index (Qtr/Year)**	12/2023
Estimate prepared by	Bob Burrows	**Signed**	
Estimate internal peer review by	Juancho Diaz	**Signed**	
Estimate external peer review by		**Signed**	
Estimate accepted by the NZTA		**Signed**	

Taupo Northern Access Bridge Construction - Option B2 - Bridging						
Working Schedule of Construction Costs						
Item	**Description**	**Unit**	**Quantity**	**Rate**	**Item Total**	**Element Total**
1	**Environmental Compliance**					$ 500,000.00
1.1	**Compliance**					
1.1.1	Environmental Compliance - Complete	LS	2	$ 50,000.00	$ 100,000.00	
1.1.2	Contactor's Environmental Management Plan	LS	2	$ 25,000.00	$ 50,000.00	
1.1.3	Implementation and Management of the EMP	LS	2	$ 50,000.00	$ 100,000.00	
1.2	**Environmental Controls**					
1.2.1	Enviromental Controls	No.	2	$ 125,000.00	$ 250,000.00	
2	**Earthworks and Clearing**					$ 370,000.00
2.1	**Clearing**					
2.1.1	Clearing vegetation, General Site Clearance	LS	3	$ 25,000.00	$ 75,000.00	
2.2	**Earthworks - Primary**					
2.2.1	Cut to Waste Off-site	m3	1,000	$ 35.00	$ 35,000.00	
2.2.2	Import fill	m3	4,000	$ 65.00	$ 260,000.00	
3	**Ground Improvements**					$ -
	Not Applicable					
4	**Drainage**					$ 45,000.00
4.1	**Pipes and Culverts**					
4.1.1	**Pipes**					
4.1.1.1	General Drainage	m	30	$ 1,500.00	$ 45,000.00	
5	**Pavement**					$ -
	Not Applicable					
6	**Structures**					$ 21,840,000.00
6.1	**Bridges**					
6.1.1	**Option B2 Bridge over Waikato River**					
6.1.1.1	**Superstructure**					
6.1.1.1.1.1	Bridge	m2	1,680	$ 13,000.00	$ 21,840,000.00	
7	**Retaining Walls**					$ 1,488,000.00
7.1	**MSE Walls**					
7.1.1	MSE Reinforced Backfill Placement	m2	496	$ 3,000.00	$ 1,488,000.00	
8	**Traffic Services**					$ -
	Not Applicable					
9	**Service Relocations**					$ -
	Not Applicable					
10	**Landscaping & Entrances**					$ -
	Not Applicable					
11	**Traffic Management and Temporary Works**					$ 300,000.00
11.1	**Traffic Management**					
11.1.1	Establish and Maintain Temporary Traffic Mana	LS	2	$ 150,000.00	$ 300,000.00	
12	**Preliminary and General**					$ 7,362,900.00
12.1	**Preliminary and General**					
12.1.1	Preliminary and General	LS	30%	$ 24,543,000.00	$ 7,362,900.00	
13	**Extraordinary Construction Costs**					$ -
	Not Applicable					
						$ 31,905,900.00