# Appendix P

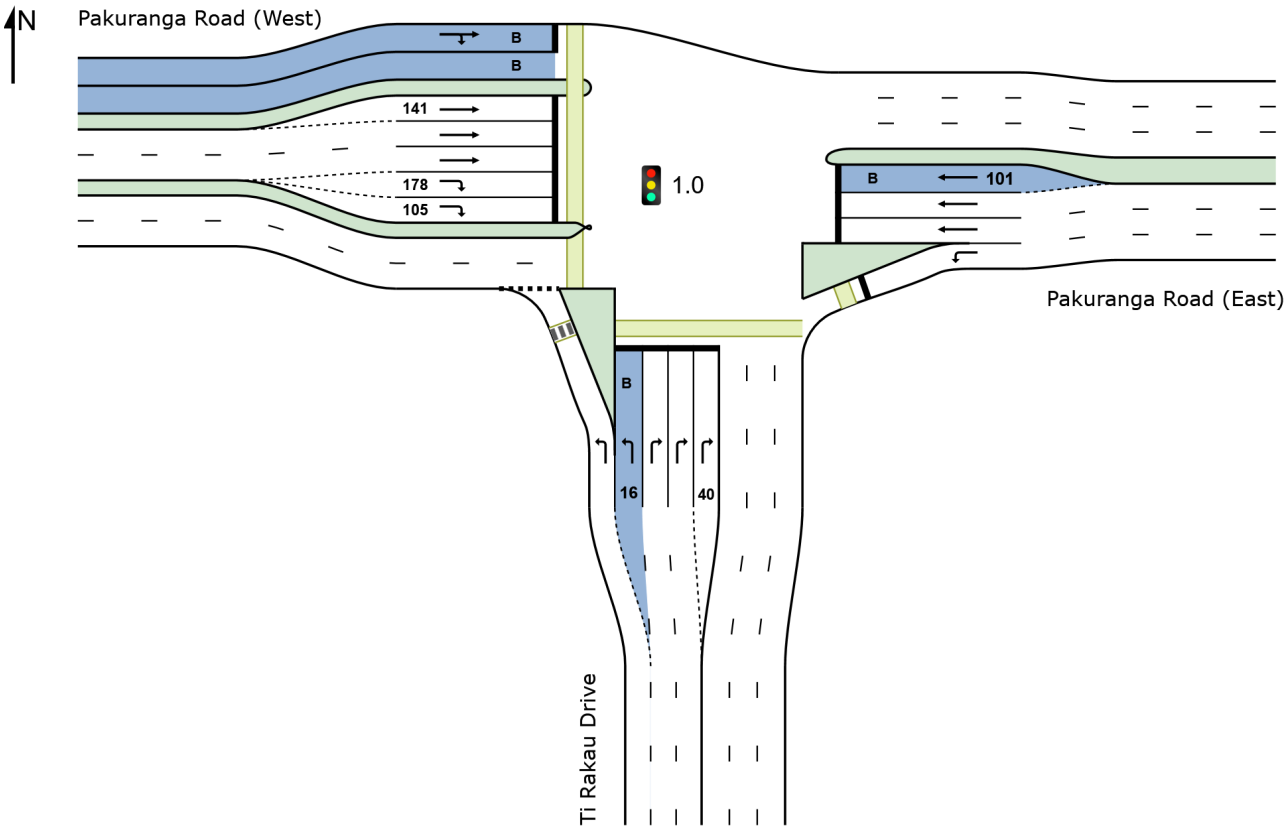
**Construction Scenario 1.3 – Lane Performance Summaries**

# SITE LAYOUT

## Site: 1.0 [1.0 Pakuranga Rd / Ti Rakau Rd (Site Folder: General)]

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

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





Organisation: AECOM AUSTRALIA PTY LTD | Licence: NETWORK / Enterprise | Created: Wednesday, 15 February 2023 9:47:59 am
Project: C:\Users\jacques.vandenheever\Eastern Busway Alliance\PAA - 05 DESIGN MGMNT\12 Transport\3-3. Integrated Transport Assessment\ITA 2 - EB2,3R\Version 9 (Addendum)\AIMSUN and SIDRA\CS 1.3\CS 1.3 AM.sip9

# LANE SUMMARY

## Site: 1.0 [1.0 Pakuranga Rd / Ti Rakau Rd (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated  Cycle Time = 84 seconds (Site Practical Cycle Time)

### Lane Use and Performance

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ti Rakau Drive | | | | | | | | | | | | | | | |
| Lane 1 | 579 | 8.6 | 566 | 8.5 | 896[1] | 0.632 | 100 | 13.7 | LOS B | 13.8 | 103.5 | Full | 174 | 0.0 | 0.0 |
| Lane 2 (B) | 17 | 100.0 | 17 | 100.0 | 121 | 0.141 | 100 | 47.3 | LOS D | 0.7 | 9.1 | Short | 16 | 0.0 | NA |
| Lane 3 | 191 | 4.0 | 186 | 4.0 | 342 | 0.545 | 100 | 38.7 | LOS D | 7.1 | 51.7 | Full | 174 | 0.0 | 0.0 |
| Lane 4 | 191 | 4.0 | 186 | 4.0 | 342 | 0.545 | 100 | 38.7 | LOS D | 7.1 | 51.7 | Full | 174 | 0.0 | 0.0 |
| Lane 5 | 191 | 4.0 | 186 | 4.0 | 342 | 0.545 | 100 | 38.7 | LOS D | 7.1 | 51.7 | Short | 40 | 0.0 | NA |
| Approach | 1168 | 7.7 | 1142[N] [1] | 7.7 | | 0.632 | | 26.4 | LOS C | 13.8 | 103.5 | | | | |
| East: Pakuranga Road (East) | | | | | | | | | | | | | | | |
| Lane 1 | 832 | 4.8 | 812 | 4.8 | 1062 | 0.764 | 100 | 17.7 | LOS B | 23.8 | 173.6 | Full | 113 | -5.8[N3] | 44.4 |
| Lane 2 | 626 | 6.1 | 611 | 6.0 | 689 | 0.887 | 100 | 38.5 | LOS D | 25.0[N4] | 184.4[N4] | Full | 113 | 0.0 | 50.0 |
| Lane 3 | 626 | 6.1 | 611 | 6.0 | 689 | 0.887 | 100 | 38.5 | LOS D | 25.0[N4] | 184.4[N4] | Full | 113 | 0.0 | 50.0 |
| Lane 4 (B) | 25 | 100.0 | 25 | 100.0 | 85 | 0.293 | 100 | 45.6 | LOS D | 1.1 | 14.0 | Short | 101 | 0.0 | NA |
| Approach | 2109 | 6.7 | 2059[N] [1] | 6.7 | | 0.887 | | 30.4 | LOS C | 25.0 | 184.4 | | | | |
| West: Pakuranga Road (West) | | | | | | | | | | | | | | | |
| Lane 1 (B) | 24 | 100.0 | 24 | 100.0 | 78 | 0.309 | 100 | 44.3 | LOS D | 1.0 | 12.8 | Full | 388 | -3.7[N3] | 0.0 |
| Lane 2 | 318 | 9.6 | 318 | 9.6 | 695 | 0.458 | 100 | 21.1 | LOS C | 9.8 | 74.6 | Short | 141 | 0.0 | NA |
| Lane 3 | 318 | 9.6 | 318 | 9.6 | 695 | 0.458 | 100 | 21.1 | LOS C | 9.8 | 74.6 | Full | 388 | 0.0 | 0.0 |
| Lane 4 | 318 | 9.6 | 318 | 9.6 | 695 | 0.458 | 100 | 21.1 | LOS C | 9.8 | 74.6 | Full | 388 | 0.0 | 0.0 |
| Lane 5 | 131 | 11.5 | 131 | 11.5 | 142 | 0.920 | 100 | 62.1 | LOS E | 6.7 | 51.3 | Short | 178 | 0.0 | NA |
| Lane 6 | 131 | 11.5 | 131 | 11.5 | 142 | 0.920 | 100 | 62.1 | LOS E | 6.7 | 51.3 | Short | 105 | 0.0 | NA |
| Approach | 1241 | 11.8 | 1241 | 11.8 | | 0.920 | | 30.2 | LOS C | 9.8 | 74.6 | | | | |
| Intersection | 4518 | 8.3 | 4442[N] [1] | 8.5 | | 0.920 | | 29.3 | LOS C | 25.0 | 184.4 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.
N3 Capacity Adjustment due to downstream lane blockage determined by the program.
N4 Average back of queue has been restricted to the available queue storage space.

### Approach Lane Flows (veh/h)

South: Ti Rakau Drive

| Mov. From S To Exit: | L2 W | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 566 | - | 566 | 8.5 | 896[1] | 0.632 | 100 | NA | NA |
| Lane 2 | 17 | - | 17 | 100.0 | 121 | 0.141 | 100 | 0.0 | 1 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Lane 3 | - | 186 | 186 | 4.0 | 342 | 0.545 | 100 | NA | NA |
| Lane 4 | - | 186 | 186 | 4.0 | 342 | 0.545 | 100 | NA | NA |
| Lane 5 | - | 186 | 186 | 4.0 | 342 | 0.545 | 100 | 28.3 | 4 |
| Approach | 583 | 559 | 1142 | 7.7 | | 0.632 | | | |

East: Pakuranga Road (East)

| Mov. From E To Exit: | L2 S | T1 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 812 | - | 812 | 4.8 | 1062 | 0.764 | 100 | NA | NA |
| Lane 2 | - | 611 | 611 | 6.0 | 689 | 0.887 | 100 | NA | NA |
| Lane 3 | - | 611 | 611 | 6.0 | 689 | 0.887 | 100 | NA | NA |
| Lane 4 | - | 25 | 25 | 100.0 | 85 | 0.293 | 100 | 0.0 | 3 |
| Approach | 812 | 1247 | 2059 | 6.7 | | 0.887 | | | |

West: Pakuranga Road (West)

| Mov. From W To Exit: | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 9 | 15 | 24 | 100.0 | 78 | 0.309 | 100 | NA | NA |
| Lane 2 | 318 | - | 318 | 9.6 | 695 | 0.458 | 100 | 0.0 | 3 |
| Lane 3 | 318 | - | 318 | 9.6 | 695 | 0.458 | 100 | NA | NA |
| Lane 4 | 318 | - | 318 | 9.6 | 695 | 0.458 | 100 | NA | NA |
| Lane 5 | - | 131 | 131 | 11.5 | 142 | 0.920 | 100 | 0.0 | 4 |
| Lane 6 | - | 131 | 131 | 11.5 | 142 | 0.920 | 100 | 0.0 | 5 |
| Approach | 964 | 277 | 1241 | 11.8 | | 0.920 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| Intersection | 4442 | 8.5 | 0.920 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: Ti Rakau Drive<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: Pakuranga Road (East)<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: Pakuranga Road (West)<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | | |

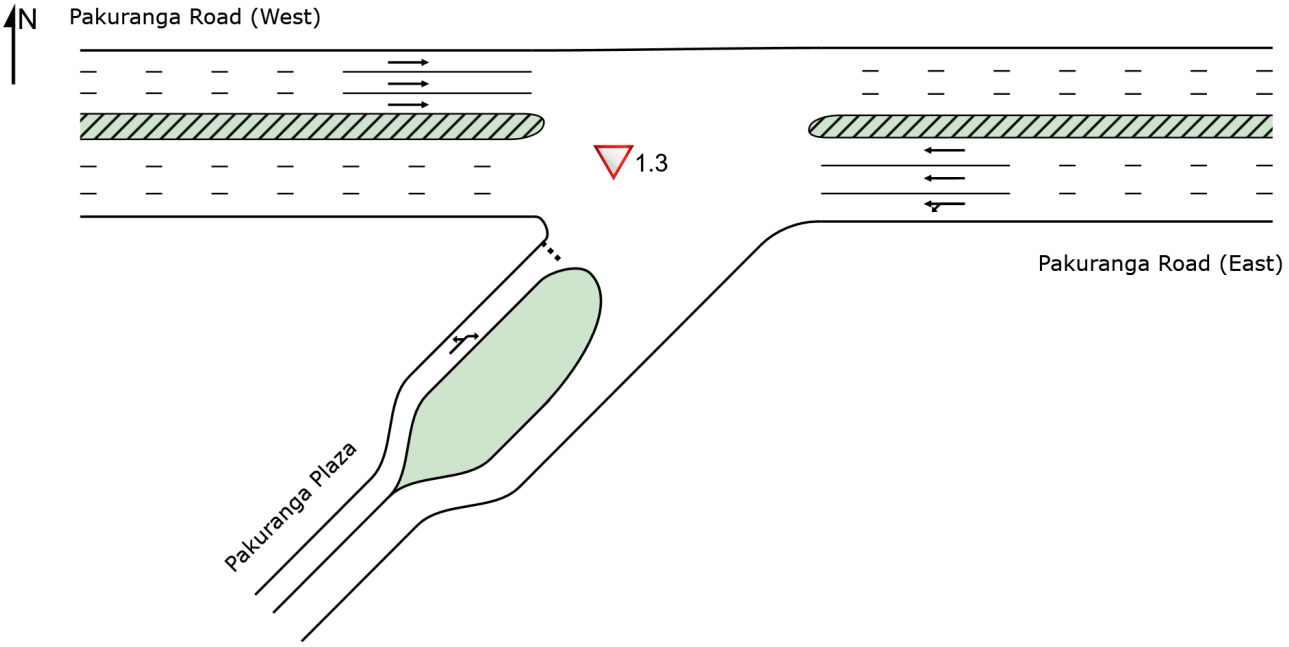
Assessment\ITA 2 - EB2,3R\Version 9 (Addendum)\AIMSUN and SIDRA\CS 1.3\CS 1.3 AM.sip9

# SITE LAYOUT

## Site: 1.3 [1.3 Mall/ Pakuranga Rd - PD (Site Folder: General)]

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

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



# LANE SUMMARY

## Site: 1.3 [1.3 Mall/ Pakuranga Rd - PD (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

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

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Pakuranga Road (East) | | | | | | | | | | | | | | | |
| Lane 1 | 719 | 8.5 | 719 | 8.5 | 1844 | 0.390 | 100 | 1.4 | LOS A | 0.0 | 0.0 | Full | 152 | 0.0 | 0.0 |
| Lane 2 | 737 | 5.6 | 737 | 5.6 | 1892 | 0.390 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 152 | 0.0 | 0.0 |
| Lane 3 | 737 | 5.6 | 737 | 5.6 | 1892 | 0.390 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 152 | 0.0 | 0.0 |
| Approach | 2193 | 6.5 | 2193 | 6.5 | | 0.390 | | 0.5 | NA | 0.0 | 0.0 | | | | |
| West: Pakuranga Road (West) | | | | | | | | | | | | | | | |
| Lane 1 | 509 | 8.1 | 505 | 8.1 | 1785 | 0.283 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 108 | 0.0 | 0.0 |
| Lane 2 | 509 | 8.1 | 505 | 8.1 | 1785 | 0.283 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 108 | 0.0 | 0.0 |
| Lane 3 | 506 | 8.1 | 503 | 8.1 | 1775 | 0.283 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 108 | 0.0 | 0.0 |
| Approach | 1524 | 8.1 | 1514 N1 | 8.1 | | 0.283 | | 0.0 | NA | 0.0 | 0.0 | | | | |
| SouthWest: Pakuranga Plaza | | | | | | | | | | | | | | | |
| Lane 1 | 54 | 5.6 | 54 | 5.6 | 11 | 4.740 | 100 | 3575.0 | LOS F | 35.6 | 260.8 | Full | 196 | -11.4 N7 | 14.2 |
| Approach | 54 | 5.6 | 54 | 5.6 | | 4.740 | | 3575.0 | LOS F | 35.6 | 260.8 | | | | |
| Intersection | 3771 | 7.2 | 3761 N1 | 7.2 | | 4.740 | | 51.6 | NA | 35.6 | 260.8 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.
N7 The capacity reduction has been determined from the queue blockage probability of a Site further downstream due to intermediate continuous lanes.

**Approach Lane Flows (veh/h)**

East: Pakuranga Road (East)

| Mov. From E To Exit: | L1 SW | T1 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 180 | 539 | 719 | 8.5 | 1844 | 0.390 | 100 | NA | NA |
| Lane 2 | - | 737 | 737 | 5.6 | 1892 | 0.390 | 100 | NA | NA |
| Lane 3 | - | 737 | 737 | 5.6 | 1892 | 0.390 | 100 | NA | NA |
| Approach | 180 | 2013 | 2193 | 6.5 | | 0.390 | | | |

West: Pakuranga Road (West)

| Mov. From W To Exit: | T1 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 505 | 505 | 8.1 | 1785 | 0.283 | 100 | NA | NA |
| Lane 2 | 505 | 505 | 8.1 | 1785 | 0.283 | 100 | NA | NA |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Lane 3 | 503 | 503 | 8.1 | | 1775 | 0.283 | 100 | NA | NA |
| Approach | 1514 | 1514 | 8.1 | | | 0.283 | | | |
| SouthWest: Pakuranga Plaza | | | | | | | | | |
| Mov. From SW To Exit: | L3 W | R1 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 29 | 25 | 54 | 5.6 | 11 | 4.740 | 100 | NA | NA |
| Approach | 29 | 25 | 54 | 5.6 | | 4.740 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | |
| Intersection | 3761 | 7.2 | | 4.740 | | | | | |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

**Merge Analysis**

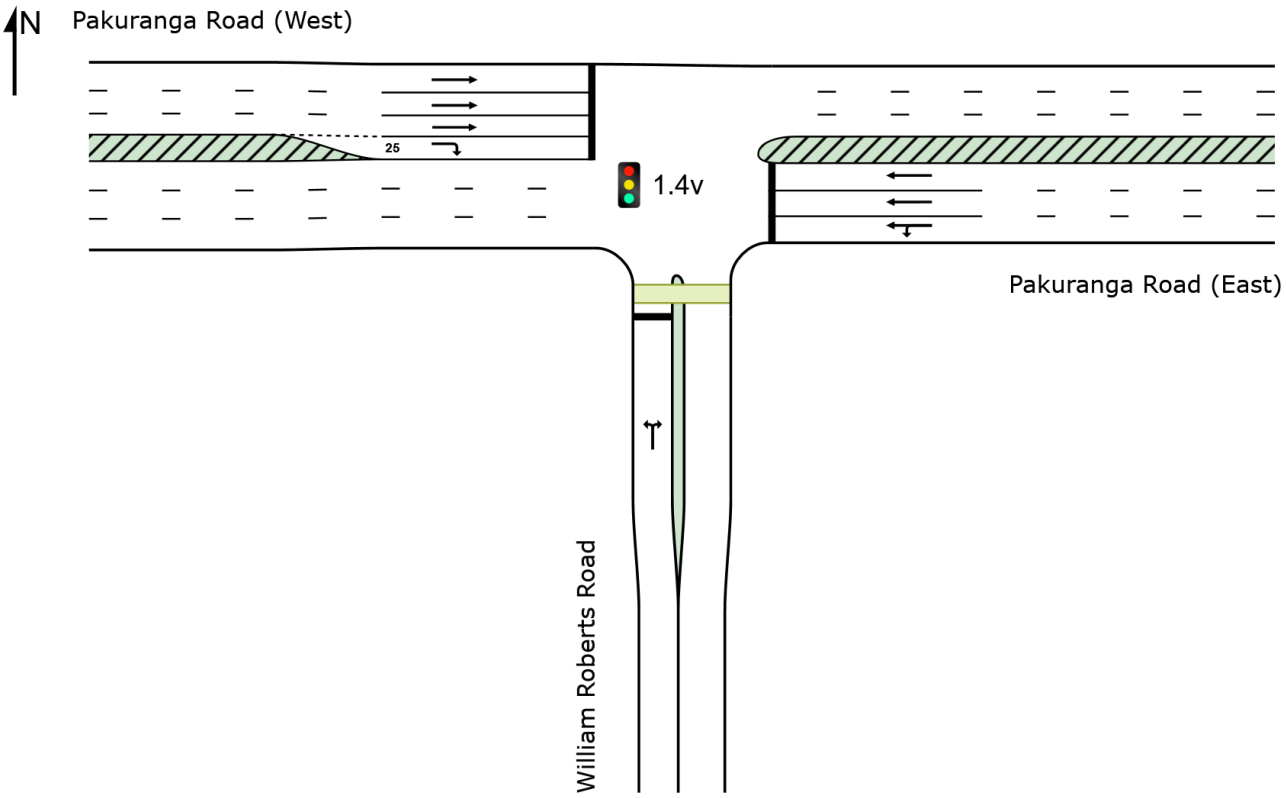
| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East Exit: Pakuranga Road (East) Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: Pakuranga Road (West) Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | | |
| SouthWest Exit: Pakuranga Plaza Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# SITE LAYOUT

## Site: 1.4v [1.4 William Roberts/ Pakuranga Rd - PD - Conversion (Site Folder: General)]

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.





Organisation: AECOM AUSTRALIA PTY LTD | Licence: NETWORK / Enterprise | Created: Wednesday, 15 February 2023 9:48:08 am
Project: C:\Users\jacques.vandenheever\Eastern Busway Alliance\PAA - 05 DESIGN MGMNT\12 Transport\3-3. Integrated Transport Assessment\ITA 2 - EB2,3R\Version 9 (Addendum)\AIMSUN and SIDRA\CS 1.3\CS 1.3 AM.sip9

# LANE SUMMARY

## Site: 1.4v [1.4 William Roberts/ Pakuranga Rd - PD - Conversion (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 61 seconds (Site Practical Cycle Time)

### Lane Use and Performance

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: William Roberts Road | | | | | | | | | | | | | | | |
| Lane 1 | 287 | 8.7 | 287 | 8.7 | 329 | 0.871 | 100 | 40.0 | LOS D | 10.3 | 77.1 | Full | 244 | -0.7 N7 | 0.0 |
| Approach | 287 | 8.7 | 287 | 8.7 | | 0.871 | | 40.0 | LOS D | 10.3 | 77.1 | | | | |
| East: Pakuranga Road (East) | | | | | | | | | | | | | | | |
| Lane 1 | 699 | 6.0 | 699 | 6.0 | 790 | 0.885 | 100 | 29.7 | LOS C | 25.3 | 185.9 | Full | 184 | 0.0 | 5.9 |
| Lane 2 | 688 | 6.2 | 688 | 6.2 | 778 | 0.885 | 100 | 28.9 | LOS C | 24.9 | 183.3 | Full | 184 | 0.0 | 4.6 |
| Lane 3 | 696 | 6.2 | 696 | 6.2 | 786 | 0.885 | 100 | 28.8 | LOS C | 25.1 | 184.9 | Full | 184 | 0.0 | 5.4 |
| Approach | 2083 | 6.1 | 2083 | 6.1 | | 0.885 | | 29.1 | LOS C | 25.3 | 185.9 | | | | |
| West: Pakuranga Road (West) | | | | | | | | | | | | | | | |
| Lane 1 | 565 | 8.1 | 558 | 8.1 | 1142 | 0.489 | 100 | 6.7 | LOS A | 9.0 | 67.7 | Full | 152 | 0.0 | 0.0 |
| Lane 2 | 516 | 8.1 | 510 | 8.1 | 1043 | 0.489 | 100 | 6.8 | LOS A | 8.3 | 62.0 | Full | 152 | -5.6 N3 | 0.0 |
| Lane 3 | 470 | 8.1 | 464 | 8.1 | 949 1 | 0.489 | 100 | 6.5 | LOS A | 7.3 | 54.4 | Full | 152 | -5.6 N3 | 0.0 |
| Lane 4 | 54 | 13.0 | 53 | 13.0 | 160 | 0.333 | 100 | 35.8 | LOS D | 1.6 | 12.5 | Short | 25 | 0.0 | NA |
| Approach | 1605 | 8.2 | 1585 N 1 | 8.3 | | 0.489 | | 7.7 | LOS A | 9.0 | 67.7 | | | | |
| Intersection | 3975 | 7.2 | 3955 N 1 | 7.2 | | 0.885 | | 21.3 | LOS C | 25.3 | 185.9 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.
N3 Capacity Adjustment due to downstream lane blockage determined by the program.
N7 The capacity reduction has been determined from the queue blockage probability of a Site further downstream due to intermediate continuous lanes.

### Approach Lane Flows (veh/h)

South: William Roberts Road

| Mov. From S To Exit: | L2 W | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 253 | 34 | 287 | 8.7 | 329 | 0.871 | 100 | NA | NA |
| Approach | 253 | 34 | 287 | 8.7 | | 0.871 | | | |

East: Pakuranga Road (East)

| Mov. From E To Exit: | L2 S | T1 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 143 | 556 | 699 | 6.0 | 790 | 0.885 | 100 | NA | NA |
| Lane 2 | - | 688 | 688 | 6.2 | 778 | 0.885 | 100 | NA | NA |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Lane 3 | - | 696 | 696 | 6.2 | 786 | 0.885 | 100 | NA | NA |
| Approach | 143 | 1940 | 2083 | 6.1 | | 0.885 | | | |

West: Pakuranga Road (West)

| Mov. From W To Exit: | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 558 | - | 558 | 8.1 | 1142 | 0.489 | 100 | NA | NA |
| Lane 2 | 510 | - | 510 | 8.1 | 1043 | 0.489 | 100 | NA | NA |
| Lane 3 | 464 | - | 464 | 8.1 | 949[1] | 0.489 | 100 | NA | NA |
| Lane 4 | - | 53 | 53 | 13.0 | 160 | 0.333 | 100 | 0.0 | 3 |
| Approach | 1532 | 53 | 1585 | 8.3 | | 0.489 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| Intersection | 3955 | 7.2 | 0.885 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

**Merge Analysis**

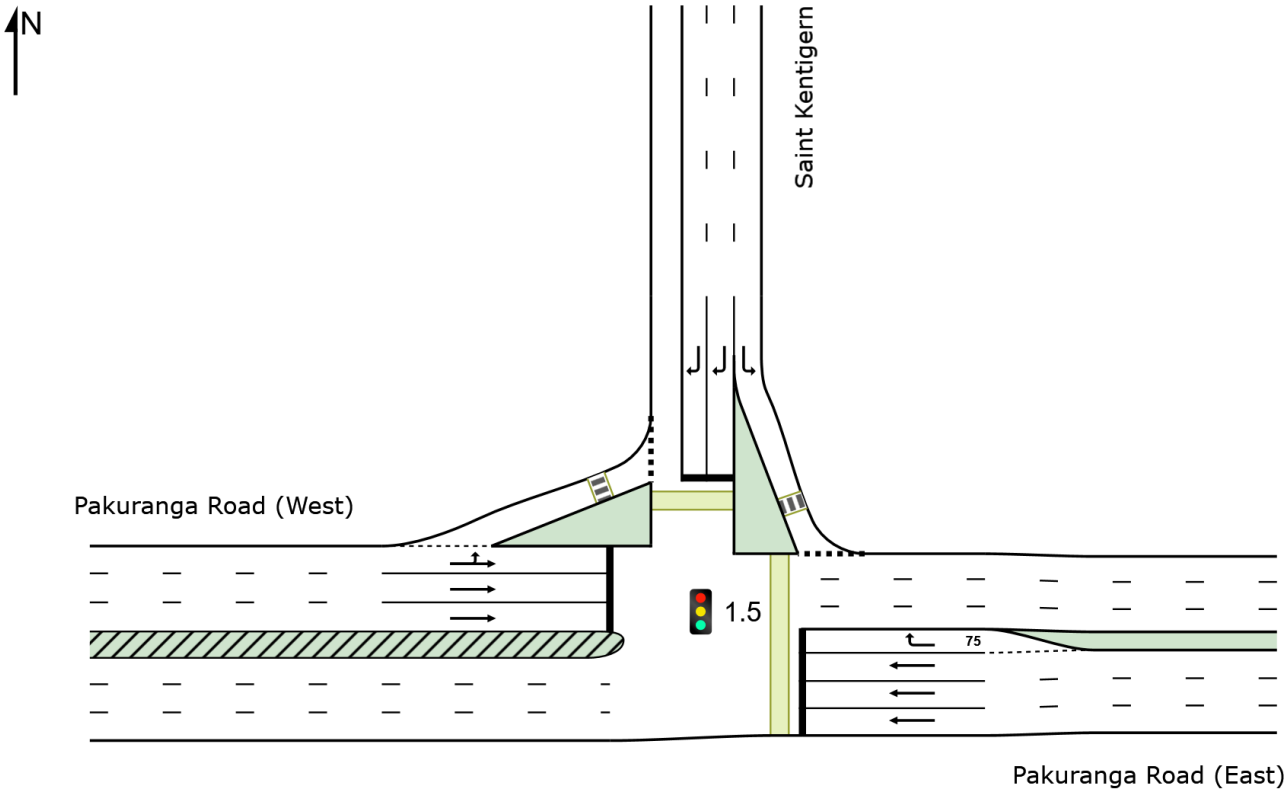
| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: William Roberts Road<br>Merge Type: **Not Applied** | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | |
| East Exit: Pakuranga Road (East)<br>Merge Type: **Not Applied** | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | |
| West Exit: Pakuranga Road (West)<br>Merge Type: **Not Applied** | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | |

# SITE LAYOUT

## Site: 1.5 [1.5 Saint Kentigern/ Pakuranga Rd - PD (Site Folder: General)]

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.





Organisation: AECOM AUSTRALIA PTY LTD | Licence: NETWORK / Enterprise | Created: Wednesday, 15 February 2023 9:48:11 am
Project: C:\Users\jacques.vandenheever\Eastern Busway Alliance\PAA - 05 DESIGN MGMNT\12 Transport\3-3. Integrated Transport Assessment\ITA 2 - EB2,3R\Version 9 (Addendum)\AIMSUN and SIDRA\CS 1.3\CS 1.3 AM.sip9

# LANE SUMMARY

## Site: 1.5 [1.5 Saint Kentigern/ Pakuranga Rd - PD (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 88 seconds (Site Practical Cycle Time)

### Lane Use and Performance

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Pakuranga Road (East) | | | | | | | | | | | | | | | |
| Lane 1 | 685 | 6.3 | 685 | 6.3 | 1065 | 0.644 | 100 | 11.6 | LOS B | 18.7 | 138.0 | Full | 87 | -5.9 N7 | 47.3 |
| Lane 2 | 695 | 6.3 | 695 | 6.3 | 1079 | 0.644 | 100 | 11.6 | LOS B | 18.9 | 139.8 | Full | 87 | -4.6 N3 | 48.5 |
| Lane 3 | 672 | 6.3 | 672 | 6.3 | 1045 | 0.644 | 100 | 11.4 | LOS B | 18.0 | 132.8 | Full | 87 | -5.4 N3 | 43.7 |
| Lane 4 | 72 | 2.8 | 72 | 2.8 | 239 | 0.301 | 100 | 26.0 | LOS C | 1.7 | 12.0 | Short | 75 | 0.0 | NA |
| Approach | 2124 | 6.2 | 2124 | 6.2 | | 0.644 | | 12.0 | LOS B | 18.9 | 139.8 | | | | |
| North: Saint Kentigern | | | | | | | | | | | | | | | |
| Lane 1 | 13 | 0.0 | 13 | 0.0 | 938 | 0.014 | 100 | 5.8 | LOS A | 0.2 | 1.3 | Full | 96 | 0.0 | 0.0 |
| Lane 2 | 20 | 10.0 | 20 | 10.0 | 407 | 0.050 | 100 | 27.1 | LOS C | 0.7 | 5.0 | Full | 96 | -4.6 N3 | 0.0 |
| Lane 3 | 20 | 10.0 | 20 | 10.0 | 397 | 0.050 | 100 | 27.1 | LOS C | 0.6 | 4.9 | Full | 96 | -5.4 N3 | 0.0 |
| Approach | 53 | 7.5 | 53 | 7.5 | | 0.050 | | 21.9 | LOS C | 0.7 | 5.0 | | | | |
| West: Pakuranga Road (West) | | | | | | | | | | | | | | | |
| Lane 1 | 505 | 7.2 | 499 | 7.3 | 586 | 0.853 | 100 | 33.1 | LOS C | 21.0 | 156.0 | Full | 184 | 0.0 | 0.0 |
| Lane 2 | 541 | 8.4 | 535 | 8.4 | 627 | 0.853 | 100 | 36.8 | LOS D | 24.7 | 185.3 | Full | 184 | 0.0 | 5.6 |
| Lane 3 | 541 | 8.4 | 535 | 8.4 | 627 | 0.853 | 100 | 36.8 | LOS D | 24.7 | 185.3 | Full | 184 | 0.0 | 5.6 |
| Approach | 1587 | 8.0 | 1569 N1 | 8.1 | | 0.853 | | 35.6 | LOS D | 24.7 | 185.3 | | | | |
| Intersection | 3764 | 7.0 | 3746 N1 | 7.0 | | 0.853 | | 22.0 | LOS C | 24.7 | 185.3 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.
N3 Capacity Adjustment due to downstream lane blockage determined by the program.
N7 The capacity reduction has been determined from the queue blockage probability of a Site further downstream due to intermediate continuous lanes.

### Approach Lane Flows (veh/h)

East: Pakuranga Road (East)

| Mov. From E To Exit: | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 685 | - | 685 | 6.3 | 1065 | 0.644 | 100 | NA | NA |
| Lane 2 | 695 | - | 695 | 6.3 | 1079 | 0.644 | 100 | NA | NA |
| Lane 3 | 672 | - | 672 | 6.3 | 1045 | 0.644 | 100 | NA | NA |
| Lane 4 | - | 72 | 72 | 2.8 | 239 | 0.301 | 100 | 0.0 | 3 |
| Approach | 2052 | 72 | 2124 | 6.2 | | 0.644 | | | |

North: Saint Kentigern

| Mov. From N | L2 | R2 | Total | %HV | Cap. | Deg. Satn | Lane Util. | Prob. SL Ov. | Ov. Lane |
|---|---|---|---|---|---|---|---|---|---|

| To Exit: | E | W | | | veh/h | v/c | % | % | No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 13 | - | 13 | 0.0 | 938 | 0.014 | 100 | NA | NA |
| Lane 2 | - | 20 | 20 | 10.0 | 407 | 0.050 | 100 | NA | NA |
| Lane 3 | - | 20 | 20 | 10.0 | 397 | 0.050 | 100 | NA | NA |
| Approach | 13 | 40 | 53 | 7.5 | | 0.050 | | | |

West: Pakuranga Road (West)

| Mov. From W To Exit: | L2 N | T1 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 127 | 372 | 499 | 7.3 | 586 | 0.853 | 100 | NA | NA |
| Lane 2 | - | 535 | 535 | 8.4 | 627 | 0.853 | 100 | NA | NA |
| Lane 3 | - | 535 | 535 | 8.4 | 627 | 0.853 | 100 | NA | NA |
| Approach | 127 | 1441 | 1569 | 8.1 | | 0.853 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| Intersection | 3746 | 7.0 | 0.853 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

**Merge Analysis**

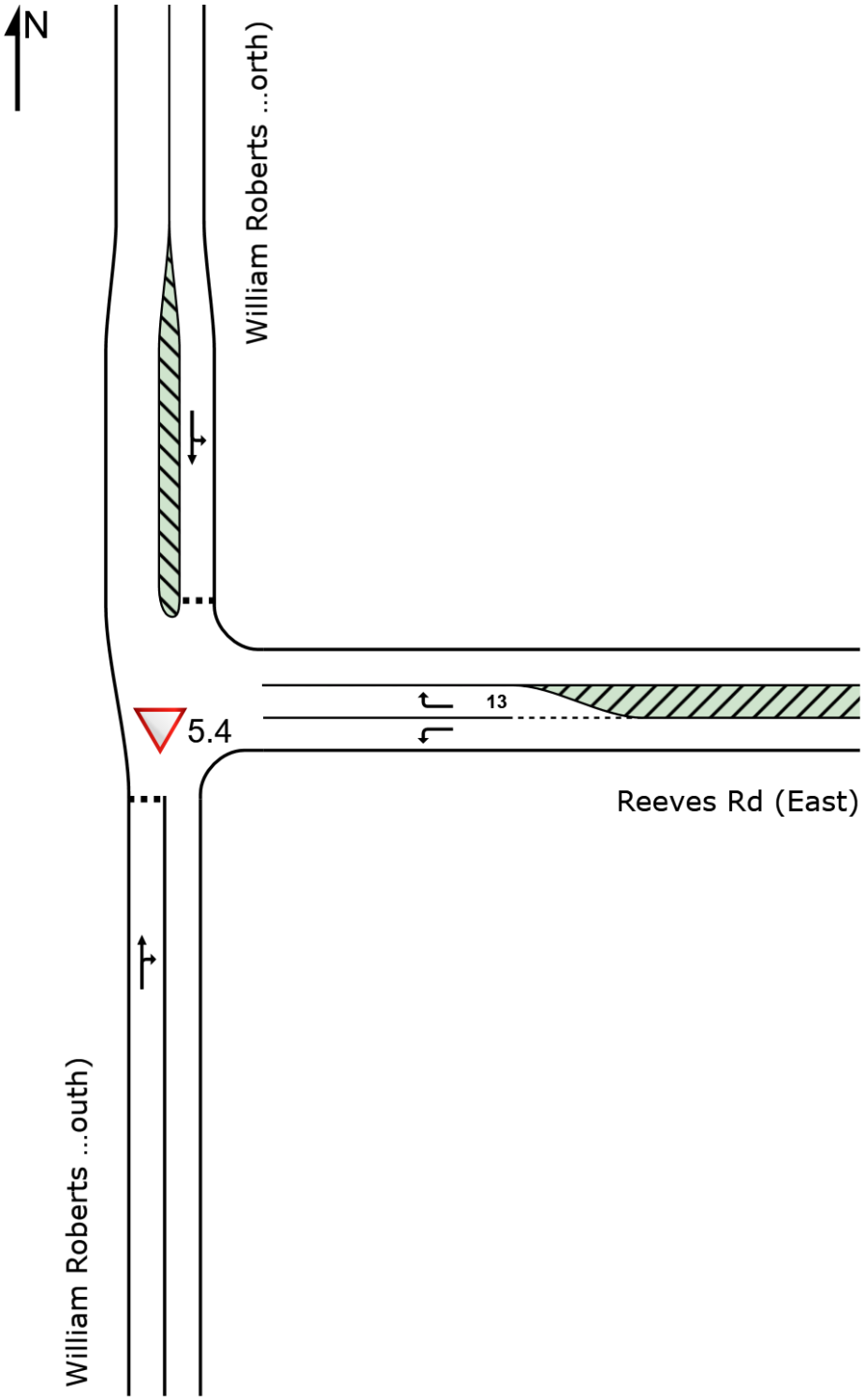
| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East Exit: Pakuranga Road (East) Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: Saint Kentigern Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: Pakuranga Road (West) Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | | |

# SITE LAYOUT

## Site: 5.4 [5.4 Reeves Rd / William Roberts Rd - Import (Site Folder: General)]

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

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



# LANE SUMMARY

## Site: 5.4 [5.4 Reeves Rd / William Roberts Rd - Import (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

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

### Lane Use and Performance

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: William Roberts Rd (South) | | | | | | | | | | | | | | | |
| Lane 1 | 219 | 7.8 | 219 | 7.8 | 831 | 0.263 | 100 | 4.2 | LOS A | 1.0 | 7.6 | Full | 243 | 0.0 | 0.0 |
| Approach | 219 | 7.8 | 219 | 7.8 | | 0.263 | | 4.2 | LOS A | 1.0 | 7.6 | | | | |
| East: Reeves Rd (East) | | | | | | | | | | | | | | | |
| Lane 1 | 215 | 9.3 | 215 | 9.3 | 1714 | 0.125 | 100 | 4.7 | LOS A | 0.0 | 0.0 | Full | 266 | 0.0 | 0.0 |
| Lane 2 | 222 | 9.0 | 222 | 9.0 | 1718 | 0.129 | 100 | 4.7 | LOS A | 0.0 | 0.0 | Short | 13 | 0.0 | NA |
| Approach | 437 | 9.2 | 437 | 9.2 | | 0.129 | | 4.7 | NA | 0.0 | 0.0 | | | | |
| North: William Roberts Rd (North) | | | | | | | | | | | | | | | |
| Lane 1 | 141 | 5.0 | 141 | 5.0 | 1113 | 0.126 | 100 | 5.7 | LOS A | 0.5 | 3.4 | Full | 244 | 0.0 | 0.0 |
| Approach | 141 | 5.0 | 141 | 5.0 | | 0.126 | | 5.7 | LOS A | 0.5 | 3.4 | | | | |
| Intersection | 797 | 8.0 | 796[N1] | 8.1 | | 0.263 | | 4.7 | NA | 1.0 | 7.6 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

### Approach Lane Flows (veh/h)

South: William Roberts Rd (South)

| Mov. From S To Exit: | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 66 | 153 | 219 | 7.8 | 831 | 0.263 | 100 | NA | NA |
| Approach | 66 | 153 | 219 | 7.8 | | 0.263 | | | |

East: Reeves Rd (East)

| Mov. From E To Exit: | L2 S | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 215 | - | 215 | 9.3 | 1714 | 0.125 | 100 | NA | NA |
| Lane 2 | - | 222 | 222 | 9.0 | 1718 | 0.129 | 100 | 0.0 | 1 |
| Approach | 215 | 222 | 437 | 9.2 | | 0.129 | | | |

North: William Roberts Rd (North)

| Mov. From N To Exit: | L2 E | T1 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 42 | 99 | 141 | 5.0 | 1113 | 0.126 | 100 | NA | NA |
| Approach | 42 | 99 | 141 | 5.0 | | 0.126 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| Intersection | 796 | 8.1 | 0.263 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

**Merge Analysis**

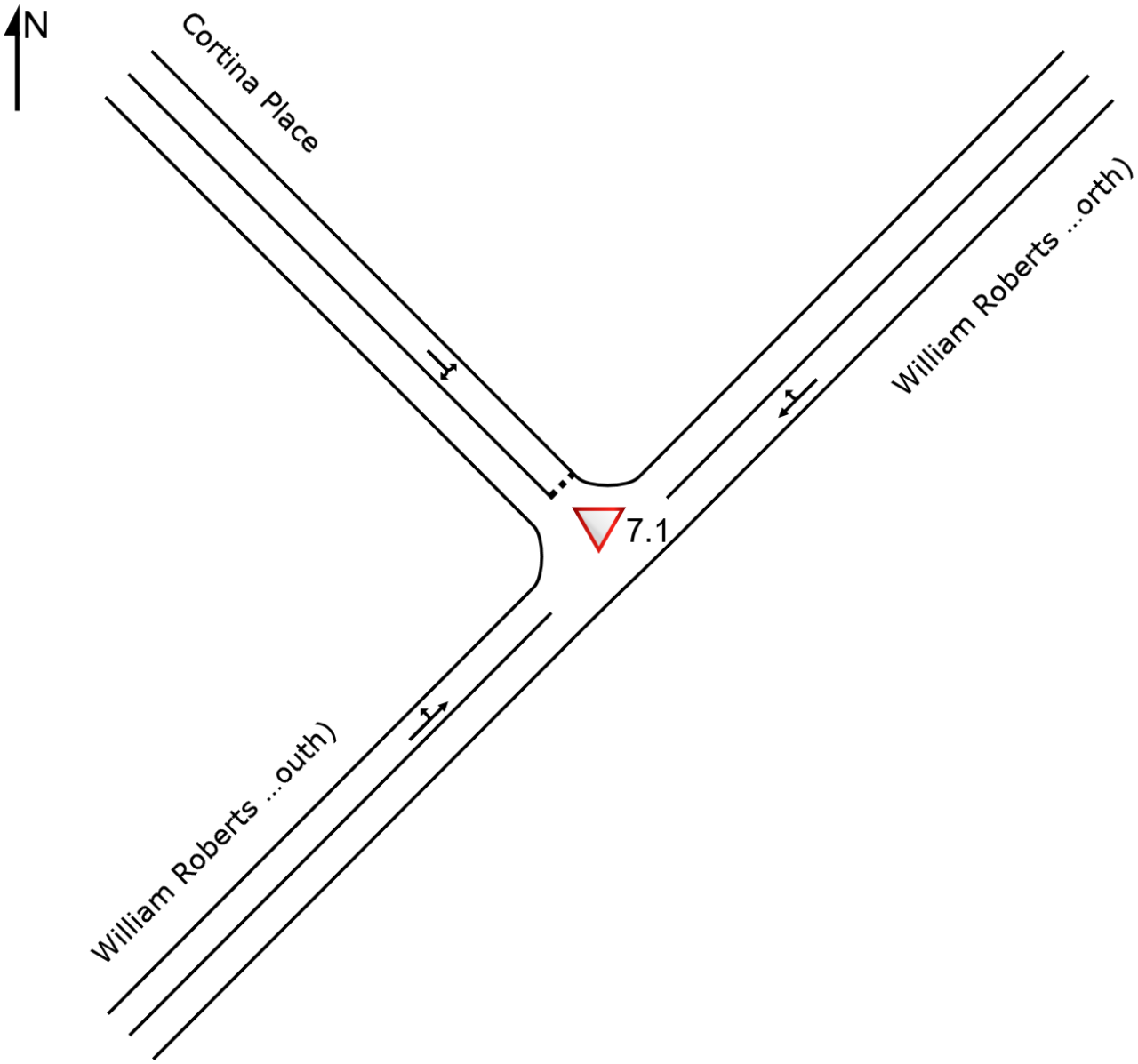
| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: William Roberts Rd (South)<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: Reeves Rd (East)<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: William Roberts Rd (North)<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# SITE LAYOUT

## Site: 7.1 [7.1 William Roberts Rd / Cortina Pl - Import (Site Folder: General)]

Scheme Design
Site Category: (None)
Give-Way (Two-Way)

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





Organisation: AECOM AUSTRALIA PTY LTD | Licence: NETWORK / Enterprise | Created: Wednesday, 15 February 2023 9:48:25 am
Project: C:\Users\jacques.vandenheever\Eastern Busway Alliance\PAA - 05 DESIGN MGMNT\12 Transport\3-3. Integrated Transport Assessment\ITA 2 - EB2,3R\Version 9 (Addendum)\AIMSUN and SIDRA\CS 1.3\CS 1.3 AM.sip9

# LANE SUMMARY

## Site: 7.1 [7.1 William Roberts Rd / Cortina Pl - Import (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

Scheme Design
Site Category: (None)
Give-Way (Two-Way)

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NorthEast: William Roberts Road (North) | | | | | | | | | | | | | | | |
| Lane 1 | 293 | 7.8 | 293 | 7.9 | 1772 | 0.165 | 100 | 0.5 | LOS A | 0.3 | 2.2 | Full | 243 | 0.0 | 0.0 |
| Approach | 293 | 7.8 | 293 | 7.9 | | 0.165 | | 0.5 | NA | 0.3 | 2.2 | | | | |
| NorthWest: Cortina Place | | | | | | | | | | | | | | | |
| Lane 1 | 31 | 6.5 | 31 | 6.5 | 1051 | 0.029 | 100 | 3.3 | LOS A | 0.1 | 0.8 | Full | 177 | 0.0 | 0.0 |
| Approach | 31 | 6.5 | 31 | 6.5 | | 0.029 | | 3.3 | LOS A | 0.1 | 0.8 | | | | |
| SouthWest: William Roberts Road (South) | | | | | | | | | | | | | | | |
| Lane 1 | 204 | 8.8 | 204 | 8.8 | 1785 | 0.114 | 100 | 0.2 | LOS A | 0.0 | 0.0 | Full | 110 | 0.0 | 0.0 |
| Approach | 204 | 8.8 | 204 | 8.8 | | 0.114 | | 0.2 | NA | 0.0 | 0.0 | | | | |
| Intersection | 528 | 8.2 | 527[N1] | 8.2 | | 0.165 | | 0.6 | NA | 0.3 | 2.2 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

**Approach Lane Flows (veh/h)**

NorthEast: William Roberts Road (North)

| Mov. From NE To Exit: | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 256 | 37 | 293 | 7.9 | 1772 | 0.165 | 100 | NA | NA |
| Approach | 256 | 37 | 293 | 7.9 | | 0.165 | | | |

NorthWest: Cortina Place

| Mov. From NW To Exit: | L2 NE | R2 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 20 | 11 | 31 | 6.5 | 1051 | 0.029 | 100 | NA | NA |
| Approach | 20 | 11 | 31 | 6.5 | | 0.029 | | | |

SouthWest: William Roberts Road (South)

| Mov. From SW To Exit: | L2 NW | T1 NE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 24 | 180 | 204 | 8.8 | 1785 | 0.114 | 100 | NA | NA |
| Approach | 24 | 180 | 204 | 8.8 | | 0.114 | | | |

| Total | %HV | Deg.Satn (v/c) |
|---|---|---|

| | | | |
|---|---|---|---|
| Intersection | 527 | 8.2 | 0.165 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

**Merge Analysis**

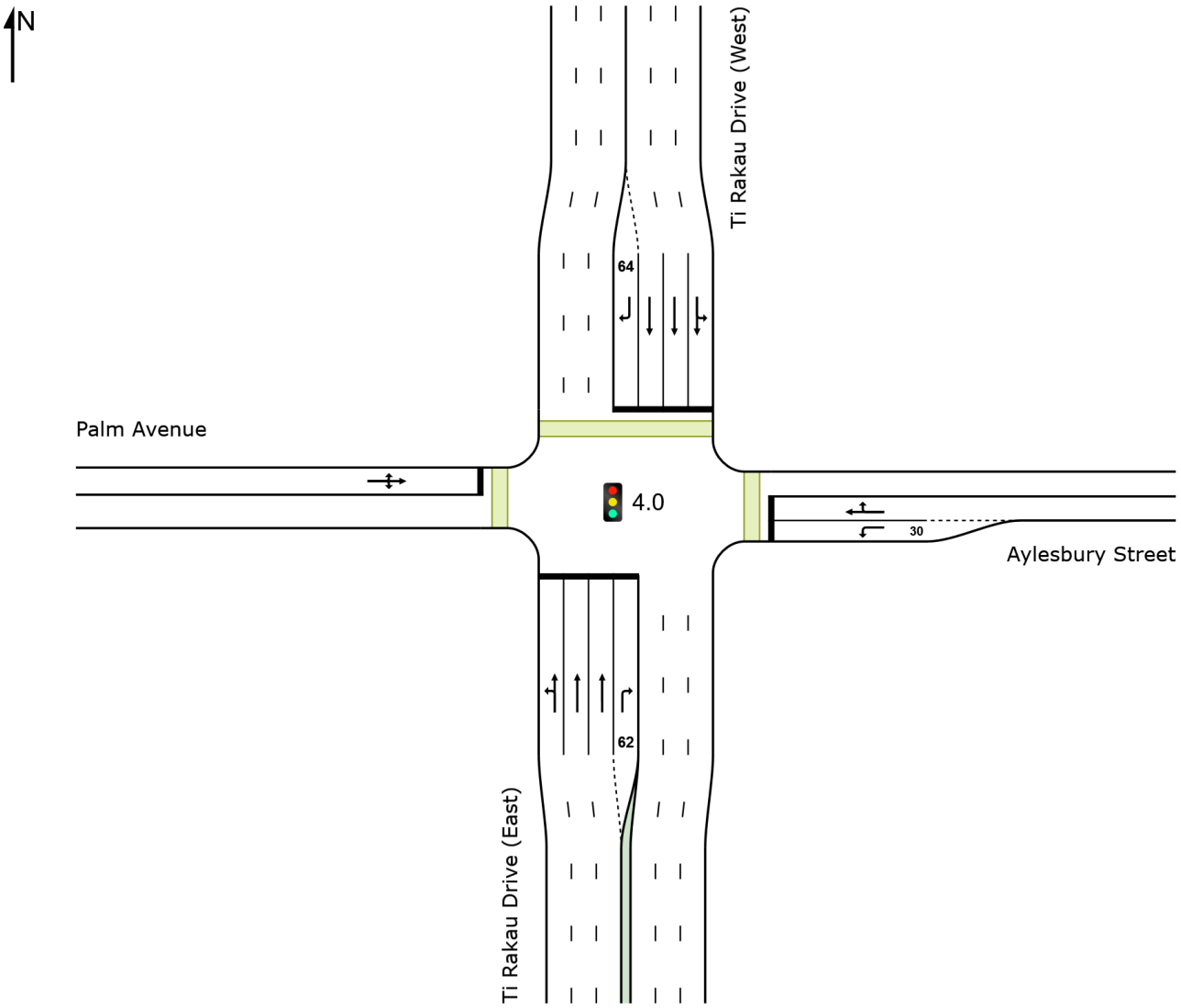
| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NorthEast Exit: William Roberts Road (North)<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| NorthWest Exit: Cortina Place<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| SouthWest Exit: William Roberts Road (South)<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# SITE LAYOUT

## Site: 4.0 [4.0 Palm Ave / Aylesbury St - Import (Site Folder: General)]

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

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



# LANE SUMMARY

**Site: 4.0 [4.0 Palm Ave / Aylesbury St - Import (Site Folder: General)]**

**Network: N101 [AM (Network Folder: General)]**

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated  Cycle Time = 137 seconds (Site User-Given Phase Times)

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ti Rakau Drive (East) | | | | | | | | | | | | | | | |
| Lane 1 | 374 | 6.1 | 357 | 6.1 | 820 | 0.435 | 100 | 31.8 | LOS C | 15.5 | 114.3 | Full | 110 | 0.0 | 8.5 |
| Lane 2 | 380 | 10.6 | 363 | 10.6 | 834 | 0.435 | 100 | 27.1 | LOS C | 15.0 | 114.8 | Full | 110 | 0.0 | 8.9 |
| Lane 3 | 380 | 6.5 | 362 | 6.4 | 833[1] | 0.435 | 100 | 27.9 | LOS C | 15.5 | 114.6 | Full | 110 | 0.0 | 8.7 |
| Lane 4 | 23 | 4.3 | 22 | 4.3 | 225 | 0.098 | 100 | 60.7 | LOS E | 1.3 | 9.5 | Short | 62 | 0.0 | NA |
| Approach | 1157 | 7.7 | 1104[N1] | 7.6 | | 0.435 | | 29.5 | LOS C | 15.5 | 114.8 | | | | |
| East: Aylesbury Street | | | | | | | | | | | | | | | |
| Lane 1 | 10 | 0.0 | 10 | 0.0 | 451 | 0.022 | 100 | 27.2 | LOS C | 0.4 | 2.7 | Short | 30 | 0.0 | NA |
| Lane 2 | 20 | 0.0 | 20 | 0.0 | 236 | 0.085 | 100 | 57.8 | LOS E | 1.2 | 8.3 | Full | 40 | 0.0 | 0.0 |
| Approach | 30 | 0.0 | 30 | 0.0 | | 0.085 | | 47.6 | LOS D | 1.2 | 8.3 | | | | |
| North: Ti Rakau Drive (West) | | | | | | | | | | | | | | | |
| Lane 1 | 540 | 8.3 | 531 | 8.4 | 845 | 0.628 | 100 | 30.3 | LOS C | 25.3 | 190.0 | Full | 174 | 0.0 | 12.9 |
| Lane 2 | 271 | 7.8 | 266 | 7.9 | 424 | 0.628 | 100 | 31.7 | LOS C | 13.2 | 98.7 | Full | 174 | -50.0[N3] | 0.0 |
| Lane 3 | 273 | 6.5 | 268 | 6.5 | 428 | 0.628 | 100 | 32.1 | LOS C | 13.5 | 99.6 | Full | 174 | -50.0[N3] | 0.0 |
| Lane 4 | 21 | 0.0 | 21 | 0.0 | 232 | 0.089 | 100 | 60.5 | LOS E | 1.2 | 8.6 | Short | 64 | 0.0 | NA |
| Approach | 1106 | 7.6 | 1086[N1] | 7.6 | | 0.628 | | 31.7 | LOS C | 25.3 | 190.0 | | | | |
| West: Palm Avenue | | | | | | | | | | | | | | | |
| Lane 1 | 135 | 4.4 | 135 | 4.4 | 138 | 0.981 | 100 | 111.4 | LOS F | 12.3 | 89.6 | Full | 87 | -31.5[N3] | 7.7 |
| Approach | 135 | 4.4 | 135 | 4.4 | | 0.981 | | 111.4 | LOS F | 12.3 | 89.6 | | | | |
| Intersection | 2428 | 7.4 | 2355[N1] | 7.6 | | 0.981 | | 35.4 | LOS D | 25.3 | 190.0 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.
N3 Capacity Adjustment due to downstream lane blockage determined by the program.

**Approach Lane Flows (veh/h)**

South: Ti Rakau Drive (East)

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 32 | 324 | - | 357 | 6.1 | 820 | 0.435 | 100 | NA | NA |
| Lane 2 | - | 363 | - | 363 | 10.6 | 834 | 0.435 | 100 | NA | NA |
| Lane 3 | - | 362 | - | 362 | 6.4 | 833[1] | 0.435 | 100 | NA | NA |
| Lane 4 | - | - | 22 | 22 | 4.3 | 225 | 0.098 | 100 | 0.0 | 3 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 32 | 1049 | 22 | 1104 | 7.6 | | 0.435 | | | |
| East: Aylesbury Street | | | | | | | | | | |
| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 10 | - | - | 10 | 0.0 | 451 | 0.022 | 100 | 0.0 | 2 |
| Lane 2 | - | 10 | 10 | 20 | 0.0 | 236 | 0.085 | 100 | NA | NA |
| Approach | 10 | 10 | 10 | 30 | 0.0 | | 0.085 | | | |
| North: Ti Rakau Drive (West) | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | T1 S | R2 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 10 | 521 | - | 531 | 8.4 | 845 | 0.628 | 100 | NA | NA |
| Lane 2 | - | 266 | - | 266 | 7.9 | 424 | 0.628 | 100 | NA | NA |
| Lane 3 | - | 268 | - | 268 | 6.5 | 428 | 0.628 | 100 | NA | NA |
| Lane 4 | - | - | 21 | 21 | 0.0 | 232 | 0.089 | 100 | 0.0 | 3 |
| Approach | 10 | 1056 | 21 | 1086 | 7.6 | | 0.628 | | | |
| West: Palm Avenue | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 63 | 10 | 62 | 135 | 4.4 | 138 | 0.981 | 100 | NA | NA |
| Approach | 63 | 10 | 62 | 135 | 4.4 | | 0.981 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | |
| Intersection | 2355 | 7.6 | | 0.981 | | | | | | |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

## Merge Analysis

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: Ti Rakau Drive (East) Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: Aylesbury Street Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: Ti Rakau Drive (West) Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: Palm Avenue Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

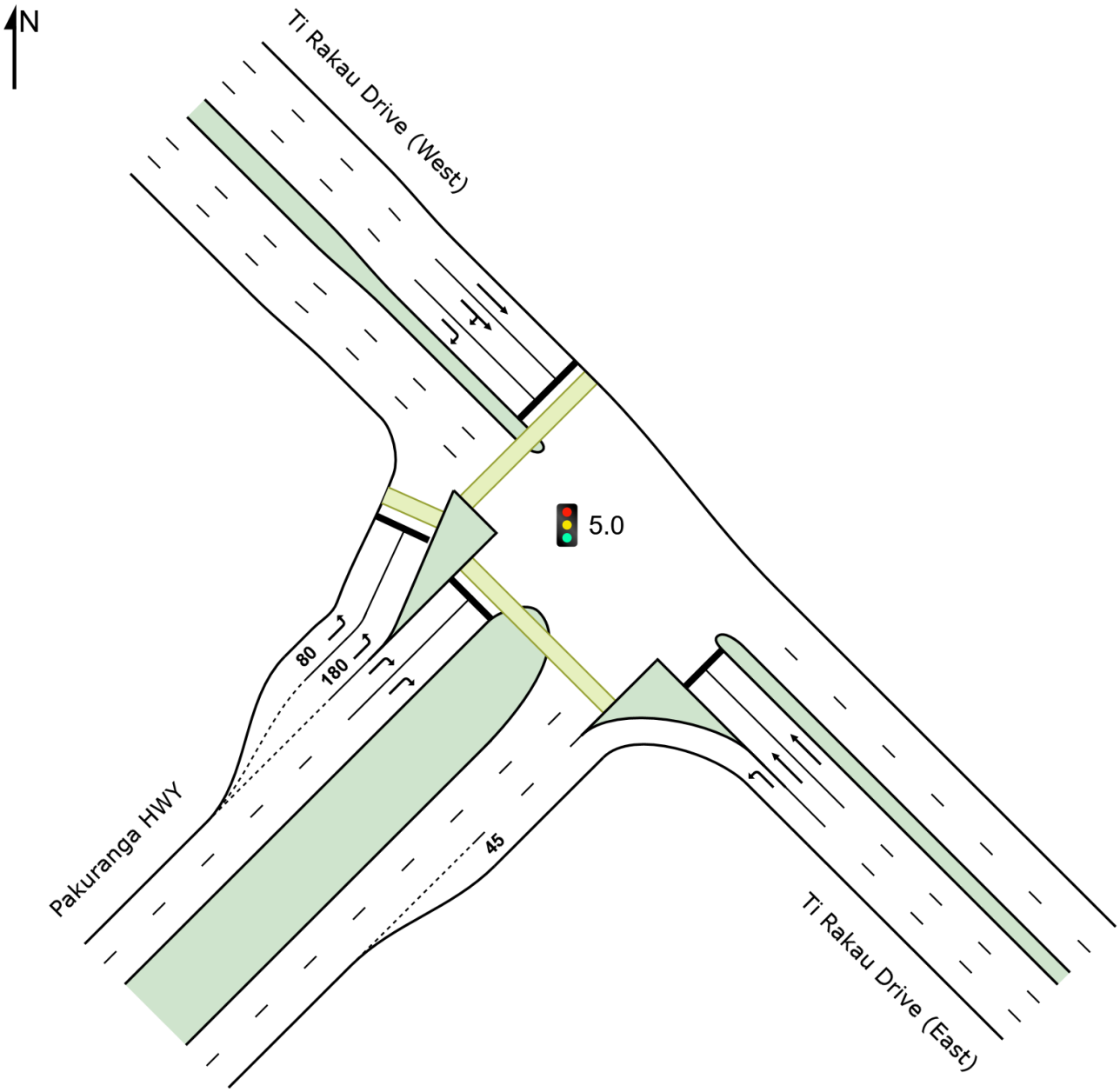
Project: C:\Users\jacques.vandenheever\Eastern Busway Alliance\PAA - 05 DESIGN MGMNT\12 Transport\3-3. Integrated Transport Assessment\ITA 2 - EB2,3R\Version 9 (Addendum)\AIMSUN and SIDRA\CS 1.3\CS 1.3 AM.sip9

# SITE LAYOUT

## Site: 5.0 [5.0 Pakuranga HWY/ Reeves Rd (Site Folder: General)]

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.



# LANE SUMMARY

## Site: 5.0 [5.0 Pakuranga HWY/ Reeves Rd (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 89 seconds (Site Practical Cycle Time)

### Lane Use and Performance

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Ti Rakau Drive (East) | | | | | | | | | | | | | | | |
| Lane 1 | 1572 | 9.6 | 1405 | 9.6 | 1702 | 0.825 | 100 | 98.3 | LOS F | 0.0 | 0.0 | Full | 91 | 0.0 | 0.0 |
| Lane 2 | 258 | 11.3 | 231 | 11.5 | 351 | 0.659 | 100 | 36.1 | LOS D | 9.6 | 73.9 | Full | 91 | -8.5 N3 | 0.0 |
| Lane 3 | 256 | 11.3 | 229 | 11.5 | 348 | 0.659 | 100 | 36.1 | LOS D | 9.5 | 73.2 | Full | 91 | -8.9 N3 | 0.0 |
| Approach | 2086 | 10.0 | 1865 N1 | 10.1 | | 0.825 | | 82.9 | LOS F | 9.6 | 73.9 | | | | |
| NorthWest: Ti Rakau Drive (West) | | | | | | | | | | | | | | | |
| Lane 1 | 154 | 24.0 | 152 | 24.2 | 506 | 0.300 | 33 5 | 25.9 | LOS C | 5.1 | 43.1 | Full | 110 | 0.0 | 0.0 |
| Lane 2 | 499 | 5.2 | 490 | 5.2 | 546 | 0.898 | 100 | 50.4 | LOS D | 24.6 N4 | 179.5 N4 | Full | 110 | 0.0 | 50.0 |
| Lane 3 | 486 | 5.2 | 478 | 5.2 | 532 | 0.898 | 100 | 50.7 | LOS D | 24.6 N4 | 179.5 N4 | Full | 110 | 0.0 | 50.0 |
| Approach | 1139 | 7.7 | 1120 N1 | 7.8 | | 0.898 | | 47.2 | LOS D | 24.6 | 179.5 | | | | |
| SouthWest: Pakuranga HWY | | | | | | | | | | | | | | | |
| Lane 1 | 325 | 4.9 | 325 | 4.9 | 506 | 0.642 | 100 | 36.8 | LOS D | 12.4 | 90.6 | Short | 80 | -8.5 N3 | NA |
| Lane 2 | 323 | 4.9 | 323 | 4.9 | 504 | 0.642 | 100 | 36.8 | LOS D | 12.4 | 90.2 | Short | 180 | -8.9 N3 | NA |
| Lane 3 | 429 | 9.3 | 429 | 9.3 | 487 | 0.882 | 100 | 52.2 | LOS D | 21.7 | 163.7 | Full | 1650 | 0.0 | 0.0 |
| Lane 4 | 434 | 9.3 | 434 | 9.3 | 492 | 0.882 | 100 | 52.1 | LOS D | 21.9 | 165.2 | Full | 1650 | 0.0 | 0.0 |
| Approach | 1511 | 7.4 | 1511 | 7.4 | | 0.882 | | 45.6 | LOS D | 21.9 | 165.2 | | | | |
| Intersection | 4736 | 8.6 | 4496 N1 | 9.1 | | 0.898 | | 61.5 | LOS E | 24.6 | 179.5 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

5 Lane under-utilisation found by the program
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.
N3 Capacity Adjustment due to downstream lane blockage determined by the program.
N4 Average back of queue has been restricted to the available queue storage space.

### Approach Lane Flows (veh/h)

SouthEast: Ti Rakau Drive (East)

| Mov. From SE To Exit: | L2 SW | T1 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 1405 | - | 1405 | 9.6 | 1702 | 0.825 | 100 | NA | NA |
| Lane 2 | - | 231 | 231 | 11.5 | 351 | 0.659 | 100 | NA | NA |
| Lane 3 | - | 229 | 229 | 11.5 | 348 | 0.659 | 100 | NA | NA |
| Approach | 1405 | 460 | 1865 | 10.1 | | 0.825 | | | |

NorthWest: Ti Rakau Drive (West)

| Mov. From NW To Exit: | T1 SE | R2 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 152 | - | 152 | 24.2 | 506 | 0.300 | 33[5] | NA | NA |
| Lane 2 | - | 490 | 490 | 5.2 | 546 | 0.898 | 100 | NA | NA |
| Lane 3 | - | 478 | 478 | 5.2 | 532 | 0.898 | 100 | NA | NA |
| Approach | 152 | 968 | 1120 | 7.8 | | 0.898 | | | |

SouthWest: Pakuranga HWY

| Mov. From SW To Exit: | L2 NW | R2 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 325 | - | 325 | 4.9 | 506 | 0.642 | 100 | 16.3 | 2 |
| Lane 2 | 323 | - | 323 | 4.9 | 504 | 0.642 | 100 | 0.0 | 4 |
| Lane 3 | - | 429 | 429 | 9.3 | 487 | 0.882 | 100 | NA | NA |
| Lane 4 | - | 434 | 434 | 9.3 | 492 | 0.882 | 100 | NA | NA |
| Approach | 648 | 863 | 1511 | 7.4 | | 0.882 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| Intersection | 4496 | 9.1 | 0.898 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

5 Lane under-utilisation found by the program

**Merge Analysis**

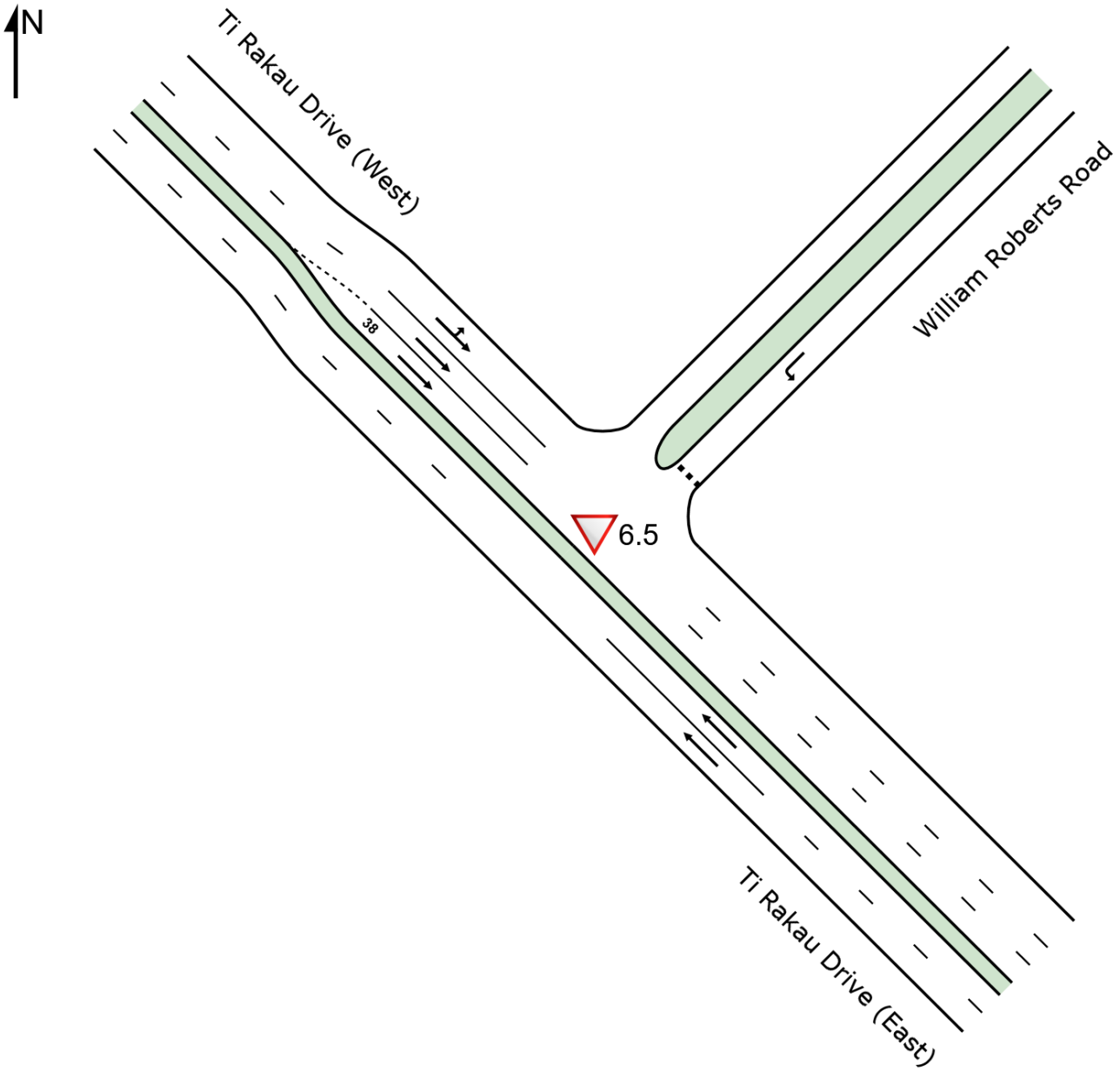
| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast Exit: Ti Rakau Drive (East) Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| NorthWest Exit: Ti Rakau Drive (West) Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | | |
| SouthWest Exit: Pakuranga HWY Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 45 | 0.0 | 490 | 503 | 3.00 | 2.00 | 1405 | 1283 | 1.095 | 0.8 | 93.7 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 490 | 1800 | 0.272 | 0.0 | 0.0 |

# SITE LAYOUT

## Site: 6.5 [6.5 William Roberts Rd / Ti Rakau Dr - Import (Site Folder: General)]

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

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



# LANE SUMMARY

## Site: 6.5 [6.5 William Roberts Rd / Ti Rakau Dr - Import (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

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

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Ti Rakau Drive (East) | | | | | | | | | | | | | | | |
| Lane 1 | 998 | 10.1 | 885 | 10.2 | 1781 | 0.497 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 18 | 0.0 | 0.0 |
| Lane 2 | 987 | 10.1 | 875 | 10.2 | 1762 | 0.497 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 18 | 0.0 | 0.0 |
| Approach | 1985 | 10.1 | 1760[N 1] | 10.2 | | 0.497 | | 0.0 | NA | 0.0 | 0.0 | | | | |
| NorthEast: William Roberts Road | | | | | | | | | | | | | | | |
| Lane 1 | 263 | 8.0 | 263 | 8.0 | 553 | 0.475 | 100 | 2.9 | LOS A | 1.1 | 8.1 | Full | 110 | -50.0[N7] | 0.0 |
| Approach | 263 | 8.0 | 263 | 8.0 | | 0.475 | | 2.9 | LOS A | 1.1 | 8.1 | | | | |
| NorthWest: Ti Rakau Drive (West) | | | | | | | | | | | | | | | |
| Lane 1 | 348 | 10.2 | 348 | 10.2 | 1827 | 0.190 | 100 | 2.7 | LOS A | 0.0 | 0.0 | Full | 97 | 0.0 | 0.0 |
| Lane 2 | 332 | 12.1 | 332 | 12.1 | 1742 | 0.190 | 100 | 0.0 | LOS A | 4.1[N5] | 31.7[N5] | Full | 97 | 0.0 | 0.0 |
| Lane 3 | 332 | 12.1 | 332 | 12.1 | 1742 | 0.190 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Short | 38 | 0.0 | NA |
| Approach | 1013 | 11.5 | 1011[N 1] | 11.5 | | 0.190 | | 0.9 | NA | 4.1 | 31.7 | | | | |
| Intersection | 3261 | 10.4 | 3034[N 1] | 11.1 | | 0.497 | | 0.6 | NA | 4.1 | 31.7 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.
N5 Continuous Lane results determined by Back of Queue values of downstream lanes (proportional to lane movement flows).
N7 The capacity reduction has been determined from the queue blockage probability of a Site further downstream due to intermediate continuous lanes.

**Approach Lane Flows (veh/h)**

SouthEast: Ti Rakau Drive (East)

| Mov. From SE To Exit: | T1 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 885 | 885 | 10.2 | 1781 | 0.497 | 100 | NA | NA |
| Lane 2 | 875 | 875 | 10.2 | 1762 | 0.497 | 100 | NA | NA |
| Approach | 1760 | 1760 | 10.2 | | 0.497 | | | |

NorthEast: William Roberts Road

| Mov. From NE To Exit: | L2 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 263 | 263 | 8.0 | 553 | 0.475 | 100 | NA | NA |
| Approach | 263 | 263 | 8.0 | | 0.475 | | | |

| NorthWest: Ti Rakau Drive (West) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mov. From NW To Exit: | L2 NE | T1 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 204 | 144 | 348 | 10.2 | 1827 | 0.190 | 100 | NA | NA |
| Lane 2 | - | 332 | 332 | 12.1 | 1742 | 0.190 | 100 | NA | NA |
| Lane 3 | - | 332 | 332 | 12.1 | 1742 | 0.190 | 100 | 0.0 | 2 |
| Approach | 204 | 807 | 1011 | 11.5 | | 0.190 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | |
| Intersection | 3034 | 11.1 | | 0.497 | | | | | |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

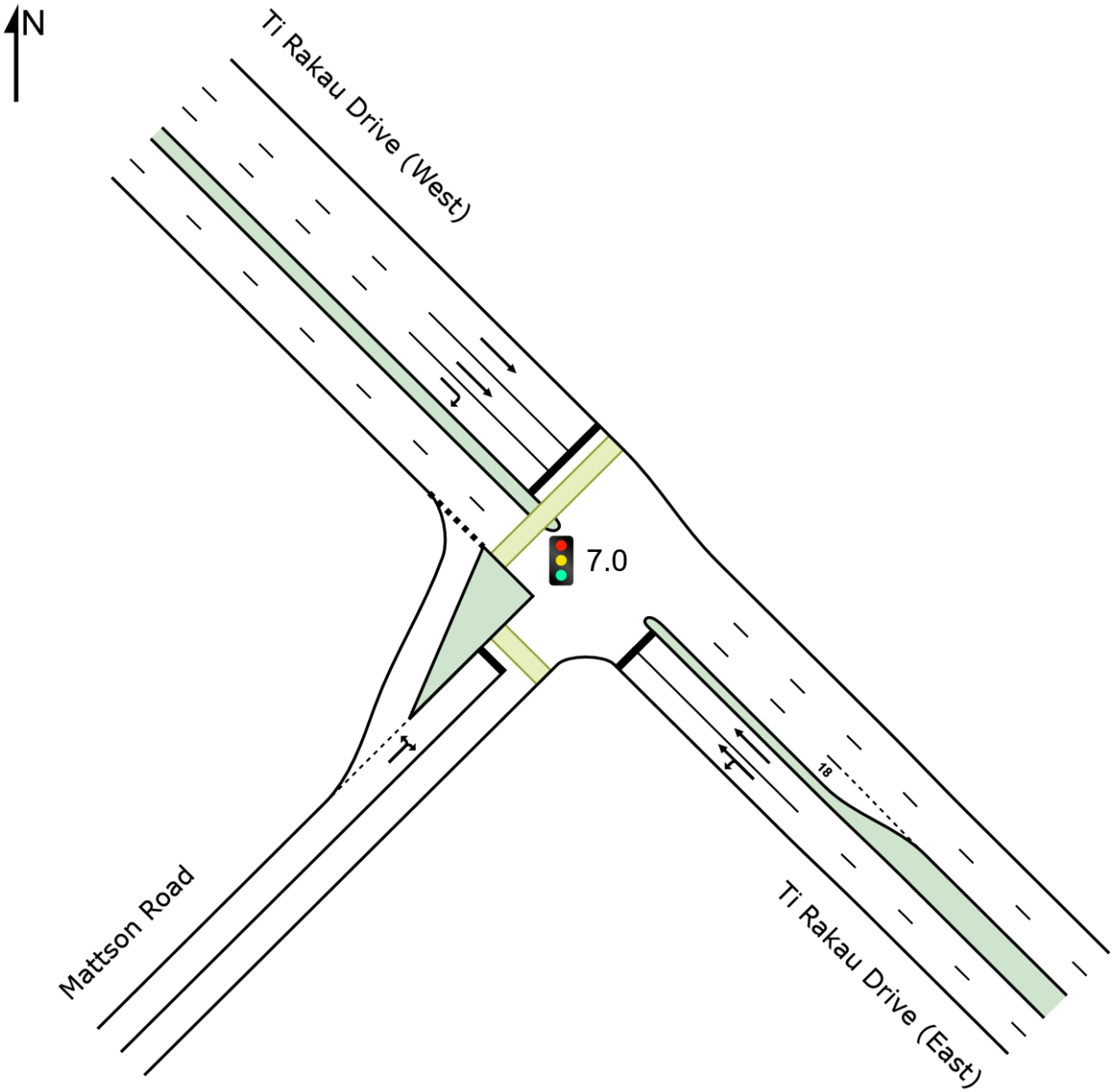
| Merge Analysis | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
| SouthEast Exit: Ti Rakau Drive (East) Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | | |
| NorthEast Exit: William Roberts Road Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| NorthWest Exit: Ti Rakau Drive (West) Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |

# SITE LAYOUT

## Site: 7.0 [7.0 Mattson Rd/ Ti Rakau Dr (Site Folder: General)]

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.



# LANE SUMMARY

## Site: 7.0 [7.0 Mattson Rd/ Ti Rakau Dr (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 80 seconds (Site Practical Cycle Time)

### Lane Use and Performance

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Ti Rakau Drive (East) | | | | | | | | | | | | | | | |
| Lane 1 | 969 | 10.3 | 855 | 10.4 | 962 | 0.889 | 100 | 29.1 | LOS C | 37.5 | 285.5 | Full | 187 | 0.0 | 43.8 |
| Lane 2 | 976 | 10.3 | 861 | 10.4 | 968 | 0.889 | 100 | 29.2 | LOS C | 37.7 | 287.2 | Full | 187 | 0.0 | 44.3 |
| Approach | 1945 | 10.3 | 1716[N1] | 10.4 | | 0.889 | | 29.1 | LOS C | 37.7 | 287.2 | | | | |
| NorthWest: Ti Rakau Drive (West) | | | | | | | | | | | | | | | |
| Lane 1 | 525 | 11.3 | 524 | 11.3 | 1318 | 0.398 | 100 | 5.3 | LOS A | 3.8[N4] | 29.4[N4] | Full | 18 | 0.0 | 50.0 |
| Lane 2 | 494 | 11.3 | 493 | 11.3 | 1239 | 0.398 | 100 | 5.3 | LOS A | 3.8[N4] | 29.4[N4] | Full | 18 | 0.0 | 50.0 |
| Lane 3 | 52 | 7.7 | 52 | 7.7 | 129 | 0.401 | 100 | 43.5 | LOS D | 2.1 | 15.6 | Full | 18 | 0.0 | 0.0 |
| Approach | 1071 | 11.1 | 1069[N1] | 11.1 | | 0.401 | | 7.2 | LOS A | 3.8 | 29.4 | | | | |
| SouthWest: Mattson Road | | | | | | | | | | | | | | | |
| Lane 1 | 136 | 4.4 | 136 | 4.4 | 515 | 0.264 | 100 | 25.0 | LOS C | 4.3 | 31.0 | Full | 282 | 0.0 | 0.0 |
| Approach | 136 | 4.4 | 136 | 4.4 | | 0.264 | | 25.0 | LOS C | 4.3 | 31.0 | | | | |
| Intersection | 3152 | 10.3 | 2921[N1] | 11.1 | | 0.889 | | 20.9 | LOS C | 37.7 | 287.2 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.
N4 Average back of queue has been restricted to the available queue storage space.

### Approach Lane Flows (veh/h)

SouthEast: Ti Rakau Drive (East)

| Mov. From SE To Exit: | L2 SW | T1 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 21 | 834 | 855 | 10.4 | 962 | 0.889 | 100 | NA | NA |
| Lane 2 | - | 861 | 861 | 10.4 | 968 | 0.889 | 100 | NA | NA |
| Approach | 21 | 1695 | 1716 | 10.4 | | 0.889 | | | |

NorthWest: Ti Rakau Drive (West)

| Mov. From NW To Exit: | T1 SE | R2 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 524 | - | 524 | 11.3 | 1318 | 0.398 | 100 | NA | NA |
| Lane 2 | 493 | - | 493 | 11.3 | 1239 | 0.398 | 100 | NA | NA |
| Lane 3 | - | 52 | 52 | 7.7 | 129 | 0.401 | 100 | NA | NA |
| Approach | 1017 | 52 | 1069 | 11.1 | | 0.401 | | | |

SouthWest: Mattson Road

| Mov. | L2 | R2 | Total | %HV | | Deg. | Lane | Prob. | Ov. |
|---|---|---|---|---|---|---|---|---|---|

| From SW To Exit: | NW | SE | | | Cap. veh/h | Satn v/c | Util. % | SL Ov. % | Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 72 | 64 | 136 | 4.4 | 515 | 0.264 | 100 | NA | NA |
| Approach | 72 | 64 | 136 | 4.4 | | 0.264 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| Intersection | 2921 | 11.1 | 0.889 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

**Merge Analysis**

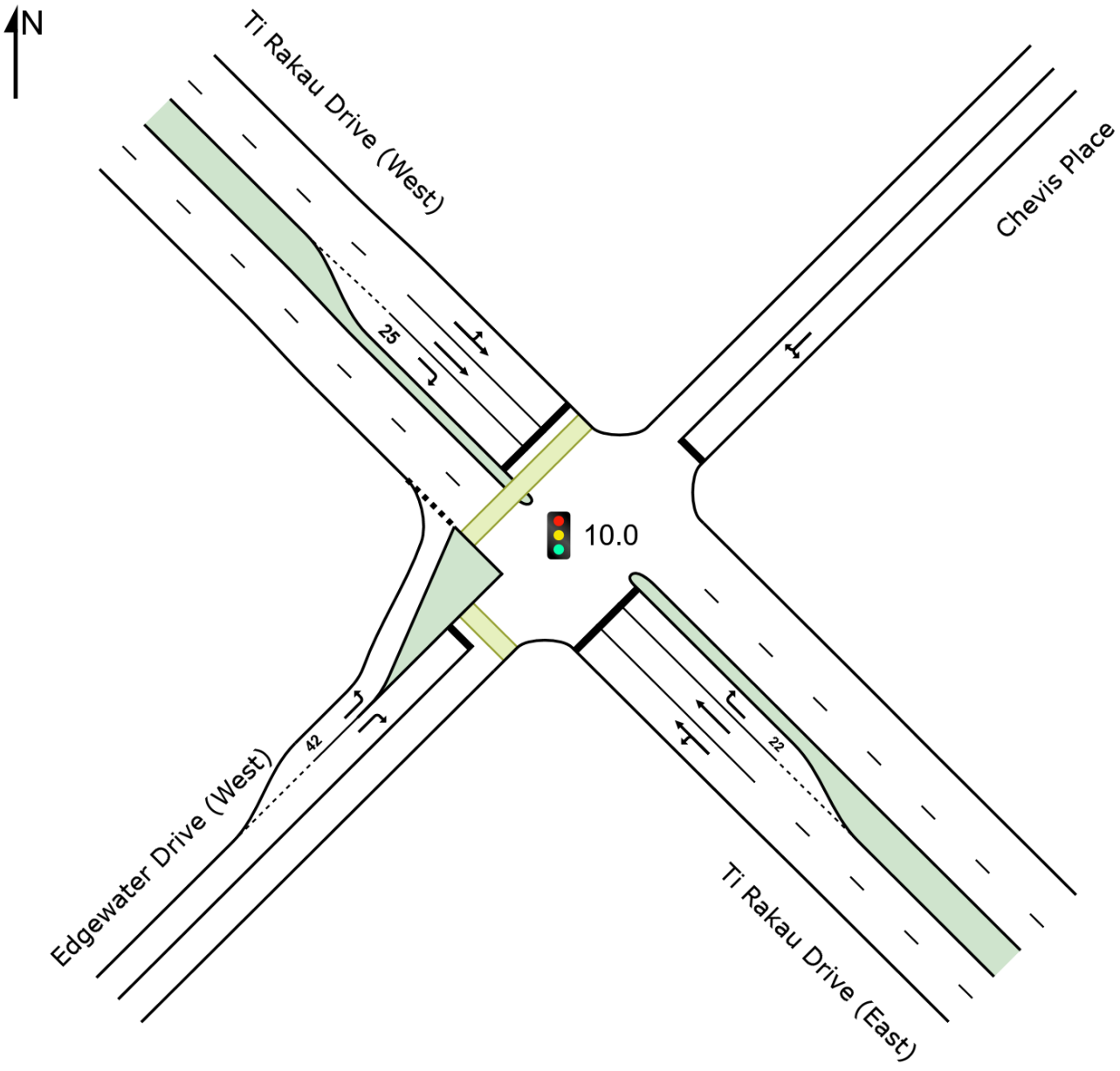
| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast Exit: Ti Rakau Drive (East) Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 3 | 18 | 0.0 | 493 | 521 | 3.00 | 2.00 | 64 | 1265 | 0.051 | 0.9 | 1.1 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 493 | 1800 | 0.274 | 0.0 | 0.0 |
| NorthWest Exit: Ti Rakau Drive (West) Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| SouthWest Exit: Mattson Road Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# SITE LAYOUT

## Site: 10.0 [10.0 Edgewater Dr (West) / Chevis Pl (Site Folder: General)]

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.



# LANE SUMMARY

## Site: 10.0 [10.0 Edgewater Dr (West) / Chevis Pl (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 107 seconds (Site Practical Cycle Time)

### Lane Use and Performance

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Ti Rakau Drive (East) | | | | | | | | | | | | | | | |
| Lane 1 | 924 | 9.8 | 854 | 10.0 | 961 | 0.888 | 100 | 34.6 | LOS C | 34.8[N4] | 264.4[N4] | Full | 162 | 0.0 | 50.0 |
| Lane 2 | 904 | 10.4 | 835 | 10.6 | 940[1] | 0.888 | 100 | 34.7 | LOS C | 34.6[N4] | 264.4[N4] | Full | 162 | 0.0 | 50.0 |
| Lane 3 | 10 | 0.0 | 9 | 0.0 | 100 | 0.092 | 100 | 59.1 | LOS E | 0.5 | 3.4 | Short | 22 | 0.0 | NA |
| Approach | 1838 | 10.0 | 1698[N1] | 10.2 | | 0.888 | | 34.8 | LOS C | 34.8 | 264.4 | | | | |
| NorthEast: Chevis Place | | | | | | | | | | | | | | | |
| Lane 1 | 28 | 3.6 | 28 | 3.6 | 102 | 0.276 | 100 | 60.4 | LOS E | 1.5 | 10.8 | Full | 138 | 0.0 | 0.0 |
| Approach | 28 | 3.6 | 28 | 3.6 | | 0.276 | | 60.4 | LOS E | 1.5 | 10.8 | | | | |
| NorthWest: Ti Rakau Drive (West) | | | | | | | | | | | | | | | |
| Lane 1 | 463 | 11.3 | 445 | 11.3 | 974 | 0.457 | 100 | 17.1 | LOS B | 14.4 | 110.6 | Full | 68 | 0.0 | 49.7 |
| Lane 2 | 397 | 11.5 | 381 | 11.6 | 834[1] | 0.457 | 100 | 16.5 | LOS B | 12.0 | 92.3 | Full | 68 | 0.0 | 32.9 |
| Lane 3 | 45 | 13.3 | 43 | 13.3 | 95 | 0.457 | 100 | 61.6 | LOS E | 2.4 | 18.5 | Short | 25 | 0.0 | NA |
| Approach | 905 | 11.5 | 870[N1] | 11.5 | | 0.457 | | 19.1 | LOS B | 14.4 | 110.6 | | | | |
| SouthWest: Edgewater Drive (West) | | | | | | | | | | | | | | | |
| Lane 1 | 118 | 8.5 | 118 | 8.5 | 619 | 0.191 | 100 | 19.0 | LOS B | 3.3 | 24.5 | Short | 42 | 0.0 | NA |
| Lane 2 | 34 | 8.8 | 34 | 8.8 | 244 | 0.140 | 100 | 49.0 | LOS D | 1.6 | 12.0 | Full | 789 | 0.0 | 0.0 |
| Approach | 152 | 8.6 | 152 | 8.6 | | 0.191 | | 25.7 | LOS C | 3.3 | 24.5 | | | | |
| Intersection | 2923 | 10.3 | 2748[N1] | 11.0 | | 0.888 | | 29.6 | LOS C | 34.8 | 264.4 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.
N4 Average back of queue has been restricted to the available queue storage space.

### Approach Lane Flows (veh/h)

SouthEast: Ti Rakau Drive (East)

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 88 | 766 | - | 854 | 10.0 | 961 | 0.888 | 100 | NA | NA |
| Lane 2 | - | 835 | - | 835 | 10.6 | 940[1] | 0.888 | 100 | NA | NA |
| Lane 3 | - | - | 9 | 9 | 0.0 | 100 | 0.092 | 100 | 0.0 | 2 |
| Approach | 88 | 1601 | 9 | 1698 | 10.2 | | 0.888 | | | |

NorthEast: Chevis Place

| Mov. | L2 | R2 | Total | %HV | | Deg. | Lane | Prob. | Ov. |
|---|---|---|---|---|---|---|---|---|---|

| From NE To Exit: | SE | NW | | | | Cap. veh/h | Satn v/c | Util. % | SL Ov. % | Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 10 | 18 | 28 | 3.6 | | 102 | 0.276 | 100 | NA | NA |
| Approach | 10 | 18 | 28 | 3.6 | | | 0.276 | | | |
| NorthWest: Ti Rakau Drive (West) | | | | | | | | | | |
| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 10 | 436 | - | 445 | 11.3 | 974 | 0.457 | 100 | NA | NA |
| Lane 2 | - | 381 | - | 381 | 11.6 | 834[1] | 0.457 | 100 | NA | NA |
| Lane 3 | - | - | 43 | 43 | 13.3 | 95 | 0.457 | 100 | 0.0 | 2 |
| Approach | 10 | 817 | 43 | 870 | 11.5 | | 0.457 | | | |
| SouthWest: Edgewater Drive (West) | | | | | | | | | | |
| Mov. From SW To Exit: | L2 NW | R2 SE | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 118 | - | 118 | 8.5 | | 619 | 0.191 | 100 | 0.0 | 2 |
| Lane 2 | - | 34 | 34 | 8.8 | | 244 | 0.140 | 100 | NA | NA |
| Approach | 118 | 34 | 152 | 8.6 | | | 0.191 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| Intersection | 2748 | 11.0 | 0.888 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

**Merge Analysis**

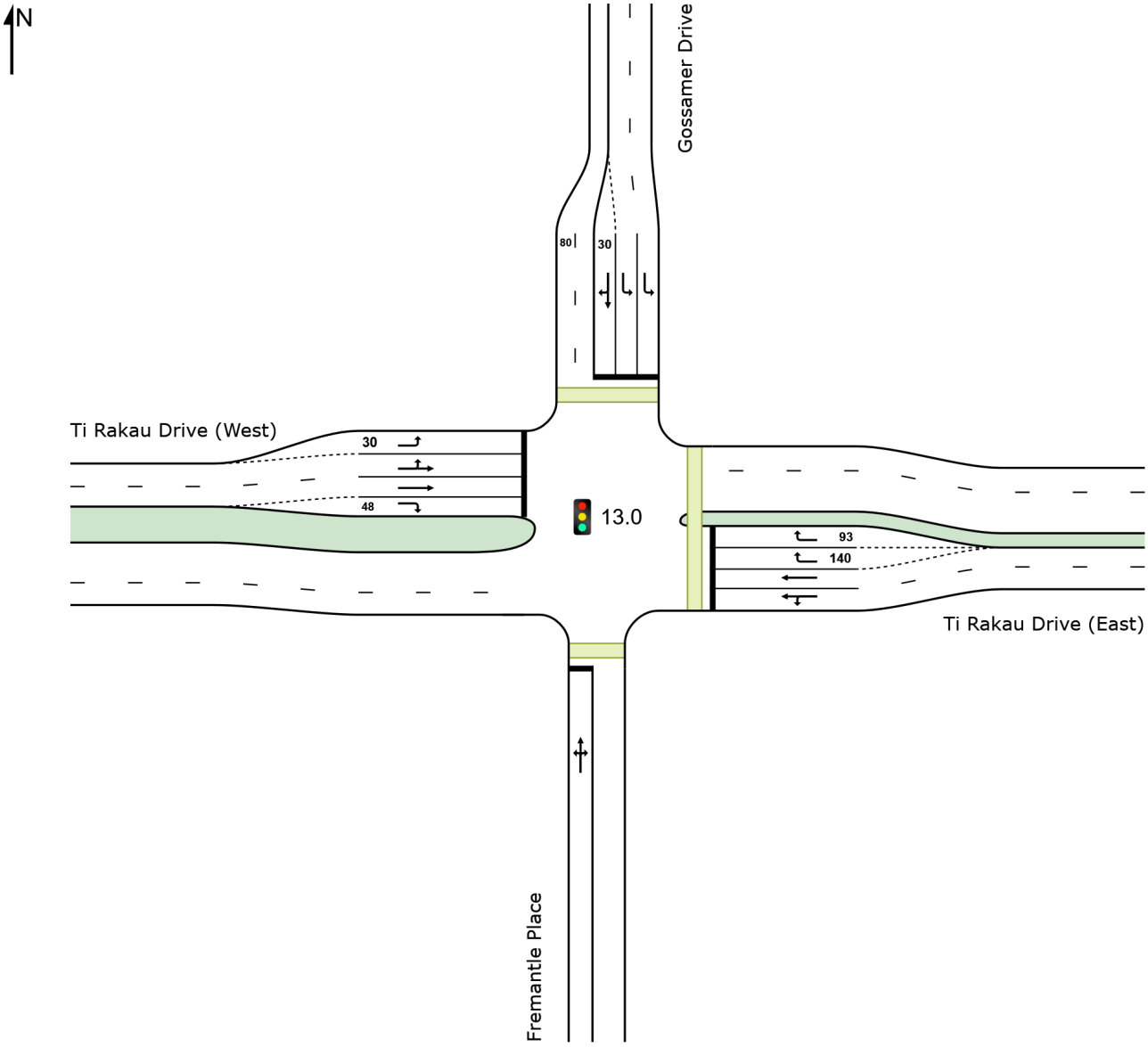
| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast Exit: Ti Rakau Drive (East) Merge Type: **Not Applied** | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | |
| NorthEast Exit: Chevis Place Merge Type: **Not Applied** | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | |
| NorthWest Exit: Ti Rakau Drive (West) Merge Type: **Not Applied** | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | |
| SouthWest Exit: Edgewater Drive (West) Merge Type: **Not Applied** | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | |

# SITE LAYOUT

## Site: 13.0 [13.0 Gossamer Dr / Ti Rakau Dr (Site Folder: General)]

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

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





Organisation: AECOM AUSTRALIA PTY LTD | Licence: NETWORK / Enterprise | Created: Wednesday, 15 February 2023 9:48:58 am
Project: C:\Users\jacques.vandenheever\Eastern Busway Alliance\PAA - 05 DESIGN MGMNT\12 Transport\3-3. Integrated Transport Assessment\ITA 2 - EB2,3R\Version 9 (Addendum)\AIMSUN and SIDRA\CS 1.3\CS 1.3 AM.sip9

# LANE SUMMARY

## Site: 13.0 [13.0 Gossamer Dr / Ti Rakau Dr (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

Scheme Design
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 132 seconds (Site User-Given Phase Times)

### Lane Use and Performance

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Fremantle Place | | | | | | | | | | | | | | | |
| Lane 1 | 50 | 6.0 | 50 | 6.0 | 82 | 0.612 | 100 | 76.0 | LOS E | 3.4 | 25.3 | Full | 285 | 0.0 | 0.0 |
| Approach | 50 | 6.0 | 50 | 6.0 | | 0.612 | | 76.0 | LOS E | 3.4 | 25.3 | | | | |
| East: Ti Rakau Drive (East) | | | | | | | | | | | | | | | |
| Lane 1 | 784 | 10.7 | 784 | 10.7 | 752 | 1.043 | 100 | 97.8 | LOS F | 66.6 | 508.9 | Full | 636 | 0.0 | 0.0 |
| Lane 2 | 730 | 10.8 | 730 | 10.8 | 700[1] | 1.043 | 100 | 120.9 | LOS F | 77.5 | 592.9 | Full | 636 | 0.0 | 0.0 |
| Lane 3 | 128 | 7.8 | 128 | 7.8 | 328 | 0.389 | 47[6] | 31.2 | LOS C | 3.8 | 28.6 | Short | 140 | 0.0 | NA |
| Lane 4 | 271 | 7.8 | 271 | 7.8 | 328 | 0.827 | 100 | 45.1 | LOS D | 11.6 | 86.8 | Short | 93 | 0.0 | NA |
| Approach | 1913 | 10.1 | 1913 | 10.1 | | 1.043 | | 94.7 | LOS F | 77.5 | 592.9 | | | | |
| North: Gossamer Drive | | | | | | | | | | | | | | | |
| Lane 1 | 521 | 8.9 | 521 | 8.9 | 794 | 0.656 | 100 | 23.1 | LOS C | 19.4 | 145.9 | Full | 1010 | 0.0 | 0.0 |
| Lane 2 | 409 | 8.9 | 409 | 8.9 | 623[1] | 0.656 | 100 | 21.5 | LOS C | 13.9 | 104.4 | Full | 1010 | 0.0 | 0.0 |
| Lane 3 | 291 | 5.8 | 291 | 5.8 | 230[1] | 1.267 | 100 | 315.6 | LOS F | 47.7 | 350.5 | Short | 30 | 0.0 | NA |
| Approach | 1221 | 8.2 | 1221 | 8.2 | | 1.267 | | 92.3 | LOS F | 47.7 | 350.5 | | | | |
| West: Ti Rakau Drive (West) | | | | | | | | | | | | | | | |
| Lane 1 | 55 | 9.1 | 52 | 9.1 | 907 | 0.057 | 8[5] | 14.1 | LOS B | 1.1 | 8.4 | Short | 30 | 0.0 | NA |
| Lane 2 | 396 | 11.4 | 373 | 11.6 | 510[1] | 0.731 | 100 | 42.9 | LOS D | 21.0 | 161.5 | Full | 479 | 0.0 | 0.0 |
| Lane 3 | 418 | 11.4 | 394 | 11.6 | 539[1] | 0.731 | 100 | 43.6 | LOS D | 22.5 | 173.5 | Full | 479 | 0.0 | 0.0 |
| Lane 4 | 11 | 9.1 | 10 | 9.1 | 218 | 0.048 | 100 | 59.3 | LOS E | 0.6 | 4.4 | Short | 48 | 0.0 | NA |
| Approach | 880 | 11.3 | 829[N1] | 11.4 | | 0.731 | | 41.6 | LOS D | 22.5 | 173.5 | | | | |
| Intersection | 4064 | 9.7 | 4013[N1] | 9.9 | | 1.267 | | 82.8 | LOS F | 77.5 | 592.9 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
5 Lane under-utilisation found by the program
6 Lane under-utilisation due to downstream effects
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

### Approach Lane Flows (veh/h)

South: Fremantle Place

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 23 | 10 | 17 | 50 | 6.0 | 82 | 0.612 | 100 | NA | NA |
| Approach | 23 | 10 | 17 | 50 | 6.0 | | 0.612 | | | |
| East: Ti Rakau Drive (East) | | | | | | | | | | |

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 18 | 766 | - | 784 | 10.7 | 752 | 1.043 | 100 | NA | NA |
| Lane 2 | - | 730 | - | 730 | 10.8 | 700[1] | 1.043 | 100 | NA | NA |
| Lane 3 | - | - | 128 | 128 | 7.8 | 328 | 0.389 | 47[6] | 0.0 | 2 |
| Lane 4 | - | - | 271 | 271 | 7.8 | 328 | 0.827 | 100 | 0.0 | 3 |
| Approach | 18 | 1496 | 399 | 1913 | 10.1 | | 1.043 | | | |

North: Gossamer Drive

| Mov. From N To Exit: | L2 E | T1 S | R2 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 521 | - | - | 521 | 8.9 | 794 | 0.656 | 100 | NA | NA |
| Lane 2 | 409 | - | - | 409 | 8.9 | 623[1] | 0.656 | 100 | NA | NA |
| Lane 3 | - | 11 | 280 | 291 | 5.8 | 230[1] | 1.267 | 100 | 100.0 | 2 |
| Approach | 930 | 11 | 280 | 1221 | 8.2 | | 1.267 | | | |

West: Ti Rakau Drive (West)

| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 52 | - | - | 52 | 9.1 | 907 | 0.057 | 8[5] | 0.0 | 2 |
| Lane 2 | - | 373 | - | 373 | 11.6 | 510[1] | 0.731 | 100 | NA | NA |
| Lane 3 | - | 394 | - | 394 | 11.6 | 539[1] | 0.731 | 100 | NA | NA |
| Lane 4 | - | - | 10 | 10 | 9.1 | 218 | 0.048 | 100 | 0.0 | 3 |
| Approach | 52 | 767 | 10 | 829 | 11.4 | | 0.731 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| Intersection | 4013 | 9.9 | 1.267 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
5 Lane under-utilisation found by the program
6 Lane under-utilisation due to downstream effects

**Merge Analysis**

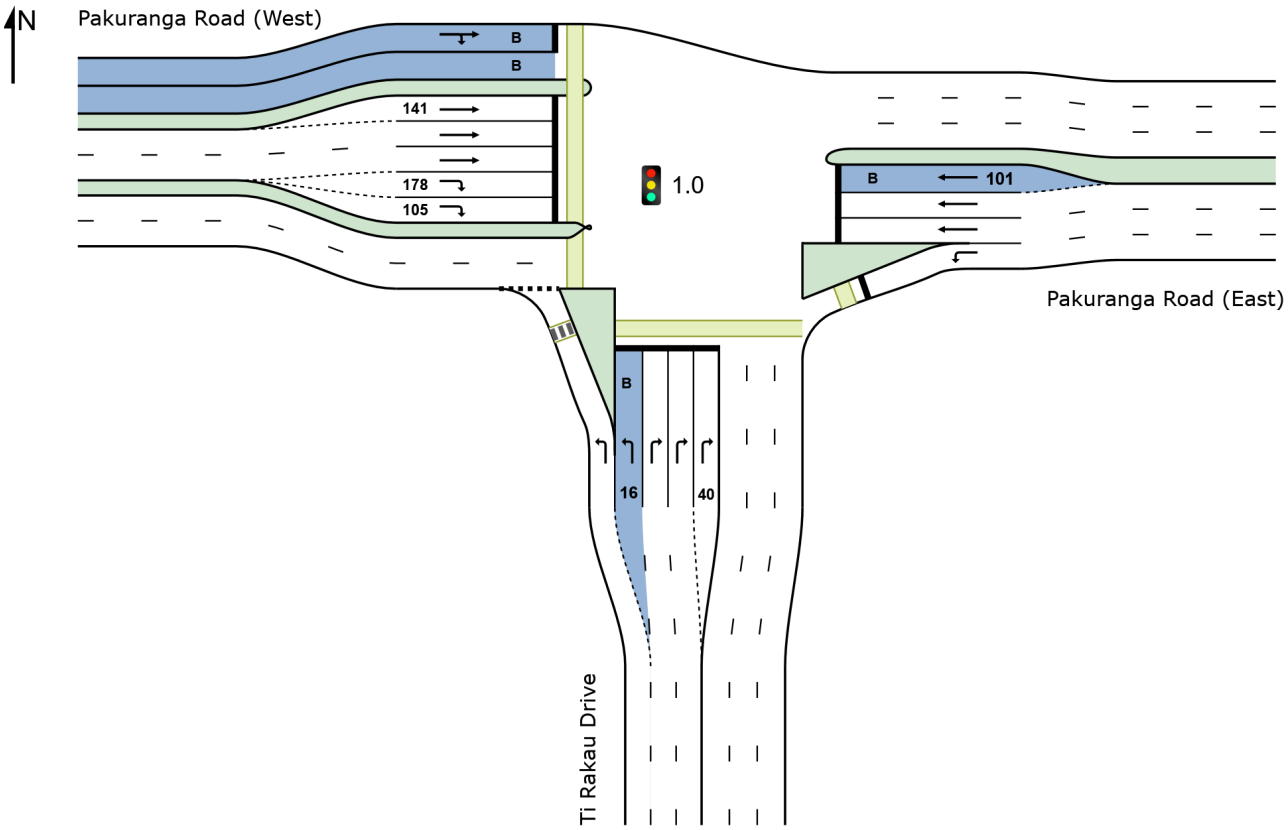
| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: Fremantle Place<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: Ti Rakau Drive (East)<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: Gossamer Drive<br>Merge Type: **Zipper** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 80 | 50.0 | 141 | 146 | 2.50 | 2.00 | 179 | 1631 | 0.110 | 0.0 | 0.1 |
| Merge Lane | 2 | - | 50.0 | 90 | 93 | 2.50 | 2.00 | 281 | 1694 | 0.166 | 0.0 | 0.0 |
| West Exit: Ti Rakau Drive (West)<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |

# SITE LAYOUT

## Site: 1.0 [1.0 Pakuranga Rd / Ti Rakau Rd (Site Folder: General)]

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

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



# LANE SUMMARY

## Site: 1.0 [1.0 Pakuranga Rd / Ti Rakau Rd (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated  Cycle Time = 79 seconds (Site Practical Cycle Time)

### Lane Use and Performance

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ti Rakau Drive | | | | | | | | | | | | | | | |
| Lane 1 | 767 | 4.8 | 753 | 4.8 | 1142[1] | 0.659 | 100 | 9.3 | LOS A | 13.3 | 97.0 | Full | 174 | 0.0 | 0.0 |
| Lane 2 (B) | 13 | 100.0 | 13 | 100.0 | 129 | 0.101 | 100 | 44.1 | LOS D | 0.5 | 6.5 | Short | 16 | 0.0 | NA |
| Lane 3 | 382 | 4.1 | 375 | 4.0 | 432 | 0.868 | 100 | 45.3 | LOS D | 16.7 | 120.6 | Full | 174 | 0.0 | 0.0 |
| Lane 4 | 325 | 4.1 | 319 | 4.0 | 367[1] | 0.868 | 100 | 45.0 | LOS D | 13.9 | 100.4 | Full | 174 | 0.0 | 0.0 |
| Lane 5 | 325 | 4.1 | 319 | 4.0 | 367[1] | 0.868 | 100 | 45.0 | LOS D | 13.9 | 100.4 | Short | 40 | 0.0 | NA |
| Approach | 1811 | 5.1 | 1778[N1] | 5.0 | | 0.868 | | 30.0 | LOS C | 16.7 | 120.6 | | | | |
| East: Pakuranga Road (East) | | | | | | | | | | | | | | | |
| Lane 1 | 787 | 4.7 | 749 | 4.7 | 973 | 0.770 | 100 | 22.1 | LOS C | 23.6 | 171.6 | Full | 113 | 0.0 | 43.2 |
| Lane 2 | 406 | 10.2 | 386 | 10.3 | 414 | 0.932 | 100 | 51.9 | LOS D | 19.7 | 149.7 | Full | 113 | 0.0 | 30.6 |
| Lane 3 | 406 | 10.2 | 386 | 10.3 | 414 | 0.932 | 100 | 51.9 | LOS D | 19.7 | 149.7 | Full | 113 | 0.0 | 30.6 |
| Lane 4 (B) | 11 | 100.0 | 11 | 100.0 | 91 | 0.121 | 100 | 41.6 | LOS D | 0.4 | 5.6 | Short | 101 | 0.0 | NA |
| Approach | 1609 | 8.1 | 1533[N1] | 8.2 | | 0.932 | | 37.3 | LOS D | 23.6 | 171.6 | | | | |
| West: Pakuranga Road (West) | | | | | | | | | | | | | | | |
| Lane 1 (B) | 42 | 100.0 | 42 | 100.0 | 87 | 0.484 | 100 | 41.4 | LOS D | 1.7 | 21.6 | Full | 388 | 0.0 | 0.0 |
| Lane 2 | 450 | 7.1 | 450 | 7.1 | 563 | 0.799 | 100 | 31.5 | LOS C | 17.7 | 131.2 | Short | 141 | 0.0 | NA |
| Lane 3 | 450 | 7.1 | 450 | 7.1 | 563 | 0.799 | 100 | 31.5 | LOS C | 17.7 | 131.2 | Full | 388 | 0.0 | 0.0 |
| Lane 4 | 450 | 7.1 | 450 | 7.1 | 563 | 0.799 | 100 | 31.5 | LOS C | 17.7 | 131.2 | Full | 388 | 0.0 | 0.0 |
| Lane 5 | 228 | 8.8 | 228 | 8.8 | 264 | 0.861 | 100 | 50.1 | LOS D | 10.2 | 76.4 | Short | 178 | 0.0 | NA |
| Lane 6 | 228 | 8.8 | 228 | 8.8 | 264 | 0.861 | 100 | 50.1 | LOS D | 10.2 | 76.4 | Short | 105 | 0.0 | NA |
| Approach | 1847 | 9.6 | 1847 | 9.6 | | 0.861 | | 36.4 | LOS D | 17.7 | 131.2 | | | | |
| Intersection | 5267 | 7.6 | 5157[N1] | 7.8 | | 0.932 | | 34.4 | LOS C | 23.6 | 171.6 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

### Approach Lane Flows (veh/h)

South: Ti Rakau Drive

| Mov. From S To Exit: | L2 W | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 753 | - | 753 | 4.8 | 1142[1] | 0.659 | 100 | NA | NA |
| Lane 2 | 13 | - | 13 | 100.0 | 129 | 0.101 | 100 | 0.0 | 1 |
| Lane 3 | - | 375 | 375 | 4.0 | 432 | 0.868 | 100 | NA | NA |
| Lane 4 | - | 319 | 319 | 4.0 | 367[1] | 0.868 | 100 | NA | NA |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Lane 5 | - | 319 | 319 | 4.0 | 367[1] | 0.868 | 100 | 91.5 | 4 |
| Approach | 766 | 1012 | 1778 | 5.0 | | 0.868 | | | |

East: Pakuranga Road (East)

| Mov. From E To Exit: | L2 S | T1 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 749 | - | 749 | 4.7 | 973 | 0.770 | 100 | NA | NA |
| Lane 2 | - | 386 | 386 | 10.3 | 414 | 0.932 | 100 | NA | NA |
| Lane 3 | - | 386 | 386 | 10.3 | 414 | 0.932 | 100 | NA | NA |
| Lane 4 | - | 11 | 11 | 100.0 | 91 | 0.121 | 100 | 0.0 | 3 |
| Approach | 749 | 783 | 1533 | 8.2 | | 0.932 | | | |

West: Pakuranga Road (West)

| Mov. From W To Exit: | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 21 | 21 | 42 | 100.0 | 87 | 0.484 | 100 | NA | NA |
| Lane 2 | 450 | - | 450 | 7.1 | 563 | 0.799 | 100 | 0.0 | 3 |
| Lane 3 | 450 | - | 450 | 7.1 | 563 | 0.799 | 100 | NA | NA |
| Lane 4 | 450 | - | 450 | 7.1 | 563 | 0.799 | 100 | NA | NA |
| Lane 5 | - | 228 | 228 | 8.8 | 264 | 0.861 | 100 | 0.0 | 4 |
| Lane 6 | - | 228 | 228 | 8.8 | 264 | 0.861 | 100 | 0.0 | 5 |
| Approach | 1371 | 476 | 1847 | 9.6 | | 0.861 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| Intersection | 5157 | 7.8 | 0.932 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

**Merge Analysis**

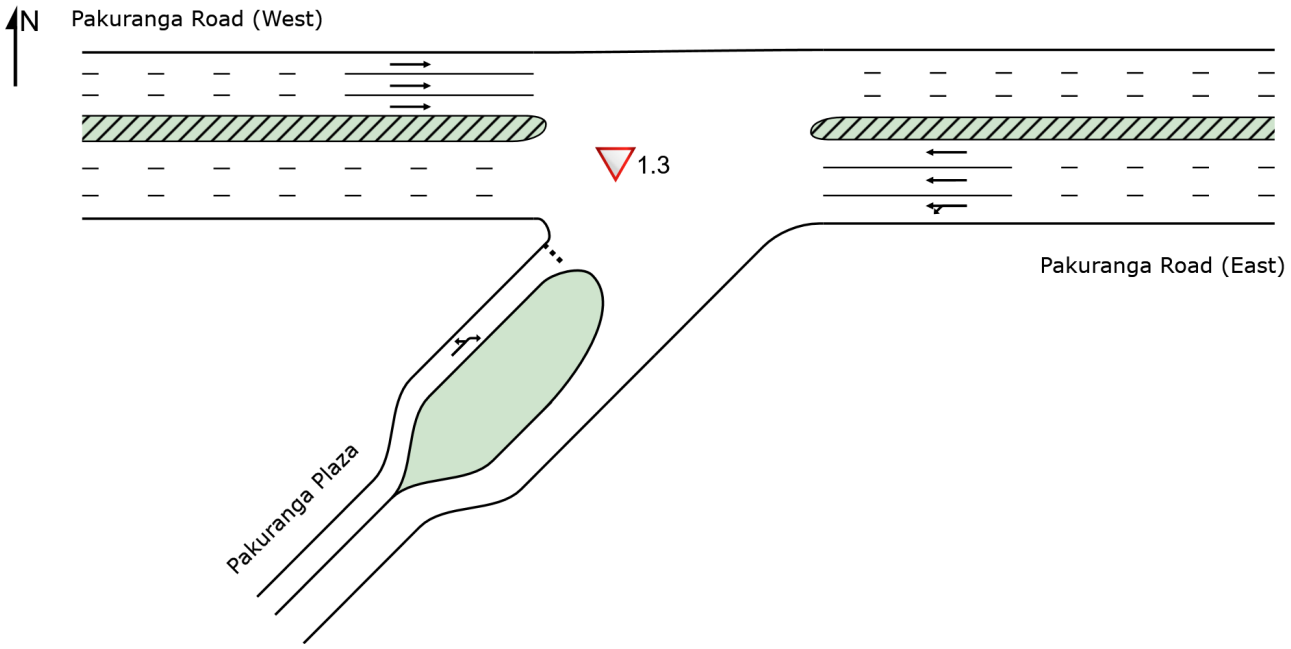
| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: Ti Rakau Drive<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: Pakuranga Road (East)<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: Pakuranga Road (West)<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | | |

# SITE LAYOUT

## Site: 1.3 [1.3 Mall/ Pakuranga Rd - PD (Site Folder: General)]

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

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



# LANE SUMMARY

## Site: 1.3 [1.3 Mall/ Pakuranga Rd - PD (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

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

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Pakuranga Road (East) | | | | | | | | | | | | | | | |
| Lane 1 | 508 | 8.7 | 508 | 8.7 | 1846 | 0.275 | 100 | 1.0 | LOS A | 0.0 | 0.0 | Full | 152 | 0.0 | 0.0 |
| Lane 2 | 515 | 7.3 | 515 | 7.3 | 1872 | 0.275 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 152 | 0.0 | 0.0 |
| Lane 3 | 515 | 7.3 | 515 | 7.3 | 1872 | 0.275 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 152 | 0.0 | 0.0 |
| Approach | 1539 | 7.7 | 1539 | 7.7 | | 0.275 | | 0.4 | NA | 0.0 | 0.0 | | | | |
| West: Pakuranga Road (West) | | | | | | | | | | | | | | | |
| Lane 1 | 797 | 6.6 | 792 | 6.6 | 1802 | 0.439 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 108 | 0.0 | 0.0 |
| Lane 2 | 797 | 6.6 | 792 | 6.6 | 1802 | 0.439 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 108 | 0.0 | 0.0 |
| Lane 3 | 792 | 6.6 | 787 | 6.6 | 1792 | 0.439 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 108 | 0.0 | 0.0 |
| Approach | 2386 | 6.6 | 2371 N1 | 6.6 | | 0.439 | | 0.0 | NA | 0.0 | 0.0 | | | | |
| SouthWest: Pakuranga Plaza | | | | | | | | | | | | | | | |
| Lane 1 | 108 | 6.5 | 108 | 6.5 | 56 | 1.929 | 100 | 966.9 | LOS F | 38.6 | 284.9 | Full | 196 | -8.5 N7 | 17.4 |
| Approach | 108 | 6.5 | 108 | 6.5 | | 1.929 | | 966.9 | LOS F | 38.6 | 284.9 | | | | |
| Intersection | 4033 | 7.0 | 4018 N1 | 7.1 | | 1.929 | | 26.1 | NA | 38.6 | 284.9 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.
N7 The capacity reduction has been determined from the queue blockage probability of a Site further downstream due to intermediate continuous lanes.

**Approach Lane Flows (veh/h)**

East: Pakuranga Road (East)

| Mov. From E To Exit: | L1 SW | T1 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 94 | 414 | 508 | 8.7 | 1846 | 0.275 | 100 | NA | NA |
| Lane 2 | - | 515 | 515 | 7.3 | 1872 | 0.275 | 100 | NA | NA |
| Lane 3 | - | 515 | 515 | 7.3 | 1872 | 0.275 | 100 | NA | NA |
| Approach | 94 | 1445 | 1539 | 7.7 | | 0.275 | | | |

West: Pakuranga Road (West)

| Mov. From W To Exit: | T1 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 792 | 792 | 6.6 | 1802 | 0.439 | 100 | NA | NA |
| Lane 2 | 792 | 792 | 6.6 | 1802 | 0.439 | 100 | NA | NA |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Lane 3 | 787 | 787 | 6.6 | | 1792 | 0.439 | 100 | NA | NA |
| Approach | 2371 | 2371 | 6.6 | | | 0.439 | | | |
| SouthWest: Pakuranga Plaza | | | | | | | | | |
| Mov. From SW To Exit: | L3 W | R1 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 98 | 10 | 108 | 6.5 | 56 | 1.929 | 100 | NA | NA |
| Approach | 98 | 10 | 108 | 6.5 | | 1.929 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | |
| Intersection | 4018 | 7.1 | | 1.929 | | | | | |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

**Merge Analysis**

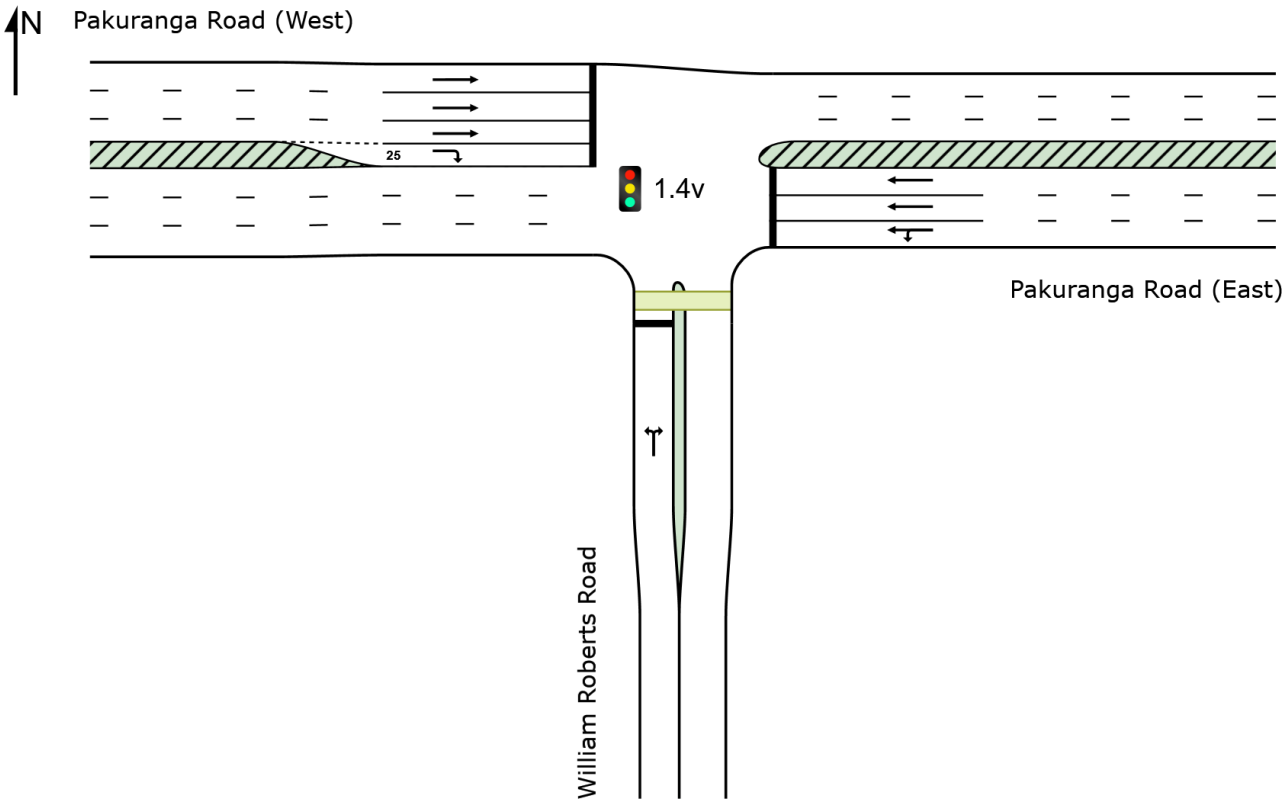
| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East Exit: Pakuranga Road (East) Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: Pakuranga Road (West) Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | | |
| SouthWest Exit: Pakuranga Plaza Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# SITE LAYOUT

## Site: 1.4v [1.4 William Roberts/ Pakuranga Rd - PD - Conversion (Site Folder: General)]

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.





Organisation: AECOM AUSTRALIA PTY LTD | Licence: NETWORK / Enterprise | Created: Wednesday, 15 February 2023 9:51:39 am
Project: C:\Users\jacques.vandenheever\Eastern Busway Alliance\PAA - 05 DESIGN MGMNT\12 Transport\3-3. Integrated Transport Assessment\ITA 2 - EB2,3R\Version 9 (Addendum)\AIMSUN and SIDRA\CS 1.3\CS 1.3 PM.sip9

# LANE SUMMARY

## Site: 1.4v [1.4 William Roberts/ Pakuranga Rd - PD - Conversion (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated  Cycle Time = 150 seconds (Network User-Given Cycle Time)

### Lane Use and Performance

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: William Roberts Road | | | | | | | | | | | | | | | |
| Lane 1 | 236 | 7.2 | 236 | 7.2 | 256 | 0.921 | 100 | 92.0 | LOS F | 20.7 | 154.0 | Full | 244 | -28.7 N7 | 0.0 |
| Approach | 236 | 7.2 | 236 | 7.2 | | 0.921 | | 92.0 | LOS F | 20.7 | 154.0 | | | | |
| East: Pakuranga Road (East) | | | | | | | | | | | | | | | |
| Lane 1 | 490 | 7.3 | 490 | 7.3 | 1114 | 0.440 | 100 | 12.3 | LOS B | 12.7 | 94.7 | Full | 184 | 0.0 | 0.0 |
| Lane 2 | 488 | 7.6 | 488 | 7.6 | 1110 | 0.440 | 100 | 15.1 | LOS B | 15.7 | 117.2 | Full | 184 | 0.0 | 0.0 |
| Lane 3 | 493 | 7.6 | 493 | 7.6 | 1122 | 0.440 | 100 | 15.0 | LOS B | 15.8 | 118.0 | Full | 184 | 0.0 | 0.0 |
| Approach | 1471 | 7.5 | 1471 | 7.5 | | 0.440 | | 14.2 | LOS B | 15.8 | 118.0 | | | | |
| West: Pakuranga Road (West) | | | | | | | | | | | | | | | |
| Lane 1 | 1212 | 6.5 | 1209 | 6.6 | 1345 | 0.899 | 100 | 17.8 | LOS B | 33.6 N4 | 248.1 N4 | Full | 152 | 0.0 | 50.0 |
| Lane 2 | 688 | 6.5 | 687 | 6.6 | 764 | 0.899 | 100 | 35.8 | LOS D | 33.6 N4 | 248.1 N4 | Full | 152 | -43.2 N3 | 50.0 |
| Lane 3 | 561 | 6.5 | 560 | 6.6 | 623 1 | 0.899 | 100 | 40.5 | LOS D | 33.6 N4 | 248.1 N4 | Full | 152 | -50.0 N3 | 50.0 |
| Lane 4 | 54 | 13.0 | 54 | 13.0 | 119 | 0.451 | 100 | 80.8 | LOS F | 4.0 | 30.8 | Short | 25 | 0.0 | NA |
| Approach | 2515 | 6.7 | 2509 N 1 | 6.7 | | 0.899 | | 29.1 | LOS C | 33.6 | 248.1 | | | | |
| Intersection | 4222 | 7.0 | 4216 N 1 | 7.0 | | 0.921 | | 27.4 | LOS C | 33.6 | 248.1 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.
N3 Capacity Adjustment due to downstream lane blockage determined by the program.
N4 Average back of queue has been restricted to the available queue storage space.
N7 The capacity reduction has been determined from the queue blockage probability of a Site further downstream due to intermediate continuous lanes.

### Approach Lane Flows (veh/h)

South: William Roberts Road

| Mov. From S To Exit: | L2 W | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 141 | 95 | 236 | 7.2 | 256 | 0.921 | 100 | NA | NA |
| Approach | 141 | 95 | 236 | 7.2 | | 0.921 | | | |

East: Pakuranga Road (East)

| Mov. From E To Exit: | L2 S | T1 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 73 | 417 | 490 | 7.3 | 1114 | 0.440 | 100 | NA | NA |
| Lane 2 | - | 488 | 488 | 7.6 | 1110 | 0.440 | 100 | NA | NA |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Lane 3 | - | 493 | 493 | 7.6 | 1122 | 0.440 | 100 | NA | NA |
| Approach | 73 | 1398 | 1471 | 7.5 | | 0.440 | | | |
| West: Pakuranga Road (West) | | | | | | | | | |
| Mov. From W To Exit: | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 1209 | - | 1209 | 6.6 | 1345 | 0.899 | 100 | NA | NA |
| Lane 2 | 687 | - | 687 | 6.6 | 764 | 0.899 | 100 | NA | NA |
| Lane 3 | 560 | - | 560 | 6.6 | 623[1] | 0.899 | 100 | NA | NA |
| Lane 4 | - | 54 | 54 | 13.0 | 119 | 0.451 | 100 | 24.0 | 3 |
| Approach | 2456 | 54 | 2509 | 6.7 | | 0.899 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | |
| Intersection | 4216 | 7.0 | | 0.921 | | | | | |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

**Merge Analysis**

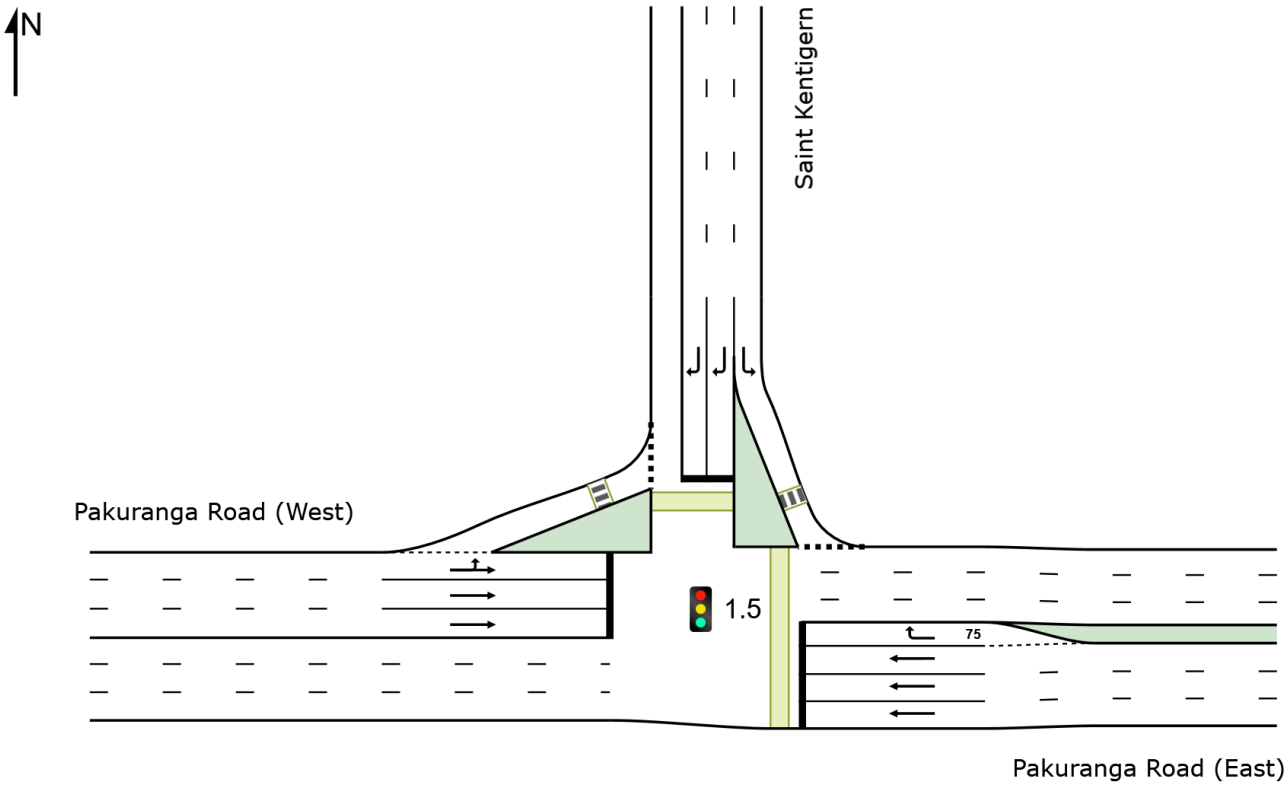
| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate sec | Capacity veh/h | Deg. Satn veh/h | Min. Delay v/c | Merge Delay sec | sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: William Roberts Road<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: Pakuranga Road (East)<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: Pakuranga Road (West)<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | | |

# SITE LAYOUT

## Site: 1.5 [1.5 Saint Kentigern/ Pakuranga Rd - PD (Site Folder: General)]

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.





Organisation: AECOM AUSTRALIA PTY LTD | Licence: NETWORK / Enterprise | Created: Wednesday, 15 February 2023 9:51:42 am
Project: C:\Users\jacques.vandenheever\Eastern Busway Alliance\PAA - 05 DESIGN MGMNT\12 Transport\3-3. Integrated Transport Assessment\ITA 2 - EB2,3R\Version 9 (Addendum)\AIMSUN and SIDRA\CS 1.3\CS 1.3 PM.sip9

# LANE SUMMARY

## Site: 1.5 [1.5 Saint Kentigern/ Pakuranga Rd - PD (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated  Cycle Time = 150 seconds (Network User-Given Cycle Time)

### Lane Use and Performance

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Pakuranga Road (East) | | | | | | | | | | | | | | | |
| Lane 1 | 458 | 7.6 | 458 | 7.6 | 1415 | 0.323 | 100 | 5.4 | LOS A | 9.8 | 73.3 | Full | 87 | 0.0 | 0.0 |
| Lane 2 | 458 | 7.6 | 458 | 7.6 | 1415 | 0.323 | 100 | 5.4 | LOS A | 9.8 | 73.3 | Full | 87 | 0.0 | 0.0 |
| Lane 3 | 460 | 7.6 | 460 | 7.6 | 1422 | 0.323 | 100 | 5.4 | LOS A | 9.9 | 73.6 | Full | 87 | 0.0 | 0.0 |
| Lane 4 | 27 | 3.7 | 27 | 3.7 | 139 | 0.194 | 100 | 52.6 | LOS D | 1.5 | 10.8 | Short | 75 | 0.0 | NA |
| Approach | 1402 | 7.5 | 1402 | 7.5 | | 0.323 | | 6.3 | LOS A | 9.9 | 73.6 | | | | |
| North: Saint Kentigern | | | | | | | | | | | | | | | |
| Lane 1 | 57 | 3.5 | 57 | 3.5 | 544 | 0.105 | 100 | 15.0 | LOS B | 1.9 | 13.8 | Full | 96 | 0.0 | 0.0 |
| Lane 2 | 47 | 7.5 | 47 | 7.5 | 254 | 0.184 | 100 | 60.9 | LOS E | 3.0 | 22.6 | Full | 96 | 0.0 | 0.0 |
| Lane 3 | 46 | 7.5 | 46 | 7.5 | 250 | 0.184 | 100 | 61.0 | LOS E | 3.0 | 22.3 | Full | 96 | 0.0 | 0.0 |
| Approach | 150 | 6.0 | 150 | 6.0 | | 0.184 | | 43.5 | LOS D | 3.0 | 22.6 | | | | |
| West: Pakuranga Road (West) | | | | | | | | | | | | | | | |
| Lane 1 | 603 | 6.2 | 602 | 6.2 | 701 | 0.859 | 100 | 15.7 | LOS B | 21.8 | 160.7 | Full | 184 | 0.0 | 0.0 |
| Lane 2 | 982 | 6.5 | 981 | 6.5 | 1142 | 0.859 | 100 | 10.5 | LOS B | 37.8 | 279.2 | Full | 184 | 0.0 | 43.2 |
| Lane 3 | 982 | 6.5 | 981 | 6.5 | 1142 | 0.859 | 100 | 16.7 | LOS B | 40.6[N4] | 300.3[N4] | Full | 184 | 0.0 | 50.0 |
| Approach | 2568 | 6.4 | 2564[N] 1 | 6.4 | | 0.859 | | 14.1 | LOS B | 40.6 | 300.3 | | | | |
| Intersection | 4120 | 6.8 | 4116[N] 1 | 6.8 | | 0.859 | | 12.4 | LOS B | 40.6 | 300.3 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.
N4 Average back of queue has been restricted to the available queue storage space.

### Approach Lane Flows (veh/h)

East: Pakuranga Road (East)

| Mov. From E To Exit: | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 458 | - | 458 | 7.6 | 1415 | 0.323 | 100 | NA | NA |
| Lane 2 | 458 | - | 458 | 7.6 | 1415 | 0.323 | 100 | NA | NA |
| Lane 3 | 460 | - | 460 | 7.6 | 1422 | 0.323 | 100 | NA | NA |
| Lane 4 | - | 27 | 27 | 3.7 | 139 | 0.194 | 100 | 0.0 | 3 |
| Approach | 1375 | 27 | 1402 | 7.5 | | 0.323 | | | |

North: Saint Kentigern

| Mov. From N To Exit: | L2 E | R2 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 57 | - | 57 | 3.5 | 544 | 0.105 | 100 | NA | NA |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Lane 2 | - | 47 | 47 | 7.5 | 254 | 0.184 | 100 | NA | NA |
| Lane 3 | - | 46 | 46 | 7.5 | 250 | 0.184 | 100 | NA | NA |
| Approach | 57 | 93 | 150 | 6.0 | | 0.184 | | | |

West: Pakuranga Road (West)

| Mov. From W To Exit: | L2 N | T1 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 54 | 548 | 602 | 6.2 | 701 | 0.859 | 100 | NA | NA |
| Lane 2 | - | 981 | 981 | 6.5 | 1142 | 0.859 | 100 | NA | NA |
| Lane 3 | - | 981 | 981 | 6.5 | 1142 | 0.859 | 100 | NA | NA |
| Approach | 54 | 2510 | 2564 | 6.4 | | 0.859 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| Intersection | 4116 | 6.8 | 0.859 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

**Merge Analysis**

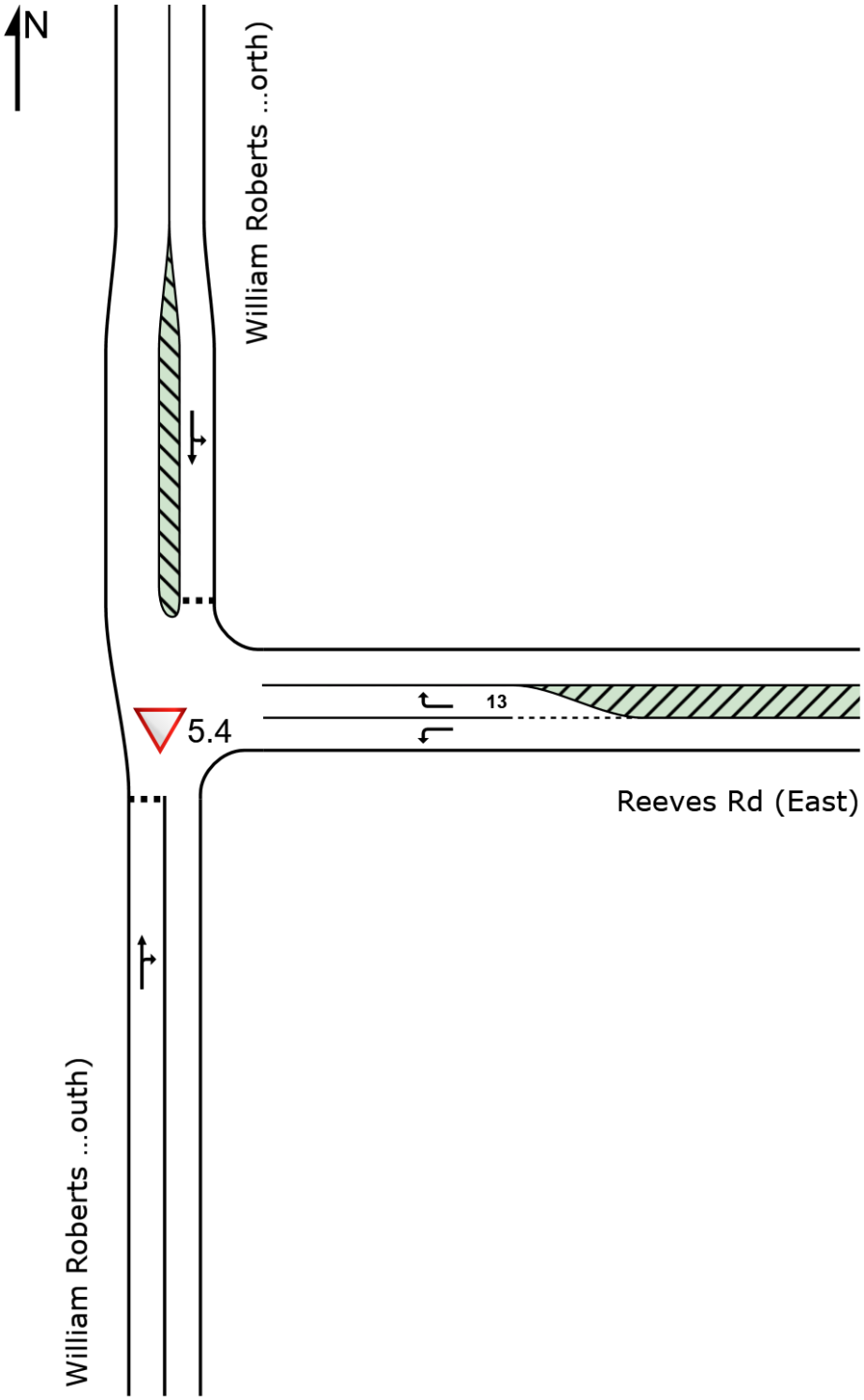
| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate sec | Capacity veh/h | Deg. Satn veh/h | Min. Delay v/c | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| East Exit: Pakuranga Road (East) Merge Type: **Not Applied** | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | |
| North Exit: Saint Kentigern Merge Type: **Not Applied** | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | |
| West Exit: Pakuranga Road (West) Merge Type: **Not Applied** | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | |

# SITE LAYOUT

## Site: 5.4 [5.4 Reeves Rd / William Roberts Rd - Import (Site Folder: General)]

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

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



# LANE SUMMARY

## Site: 5.4 [5.4 Reeves Rd / William Roberts Rd - Import (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

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

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: William Roberts Rd (South) | | | | | | | | | | | | | | | |
| Lane 1 | 315 | 8.0 | 315 | 8.0 | 1139 | 0.276 | 100 | 2.2 | LOS A | 1.2 | 8.8 | Full | 243 | 0.0 | 0.0 |
| Approach | 315 | 8.0 | 315 | 8.0 | | 0.276 | | 2.2 | LOS A | 1.2 | 8.8 | | | | |
| East: Reeves Rd (East) | | | | | | | | | | | | | | | |
| Lane 1 | 57 | 8.8 | 57 | 8.8 | 1721 | 0.033 | 100 | 4.6 | LOS A | 0.0 | 0.0 | Full | 266 | 0.0 | 0.0 |
| Lane 2 | 76 | 15.8 | 76 | 15.8 | 1643 | 0.046 | 100 | 4.7 | LOS A | 0.0 | 0.0 | Short | 13 | 0.0 | NA |
| Approach | 133 | 12.8 | 133 | 12.8 | | 0.046 | | 4.7 | NA | 0.0 | 0.0 | | | | |
| North: William Roberts Rd (North) | | | | | | | | | | | | | | | |
| Lane 1 | 80 | 5.0 | 80 | 5.0 | 1296 | 0.062 | 100 | 4.3 | LOS A | 0.2 | 1.5 | Full | 244 | 0.0 | 0.0 |
| Approach | 80 | 5.0 | 80 | 5.0 | | 0.062 | | 4.3 | LOS A | 0.2 | 1.5 | | | | |
| Intersection | 528 | 8.7 | 528 | 8.8 | | 0.276 | | 3.2 | NA | 1.2 | 8.8 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

**Approach Lane Flows (veh/h)**

South: William Roberts Rd (South)

| Mov. From S To Exit: | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 161 | 154 | 315 | 8.0 | 1139 | 0.276 | 100 | NA | NA |
| Approach | 161 | 154 | 315 | 8.0 | | 0.276 | | | |

East: Reeves Rd (East)

| Mov. From E To Exit: | L2 S | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 57 | - | 57 | 8.8 | 1721 | 0.033 | 100 | NA | NA |
| Lane 2 | - | 76 | 76 | 15.8 | 1643 | 0.046 | 100 | 0.0 | 1 |
| Approach | 57 | 76 | 133 | 12.8 | | 0.046 | | | |

North: William Roberts Rd (North)

| Mov. From N To Exit: | L2 E | T1 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 12 | 68 | 80 | 5.0 | 1296 | 0.062 | 100 | NA | NA |
| Approach | 12 | 68 | 80 | 5.0 | | 0.062 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| Intersection | 528 | 8.8 | 0.276 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

**Merge Analysis**

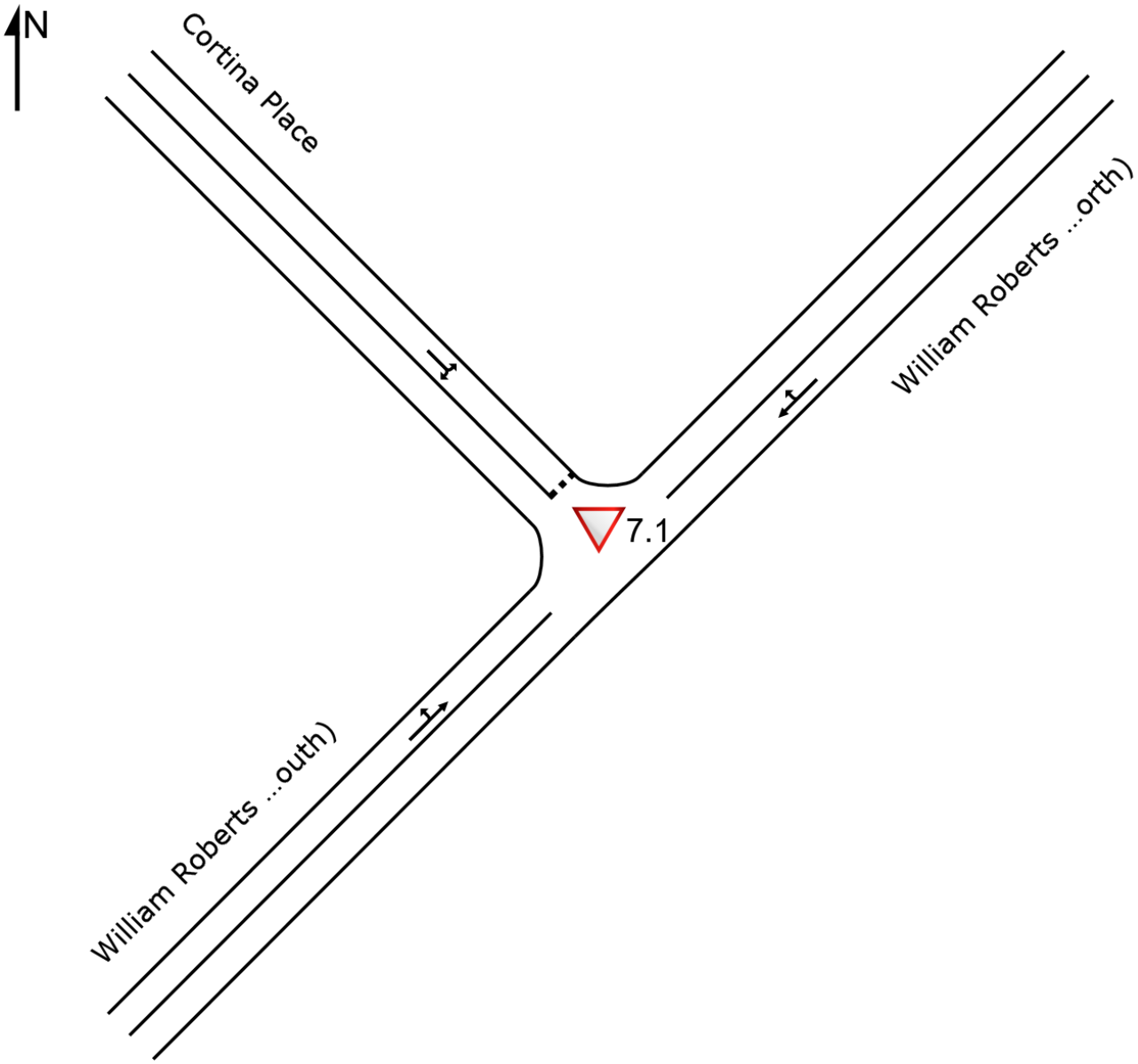
| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: William Roberts Rd (South)<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: Reeves Rd (East)<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: William Roberts Rd (North)<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# SITE LAYOUT

## Site: 7.1 [7.1 William Roberts Rd / Cortina Pl - Import (Site Folder: General)]

Scheme Design
Site Category: (None)
Give-Way (Two-Way)

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





Organisation: AECOM AUSTRALIA PTY LTD | Licence: NETWORK / Enterprise | Created: Wednesday, 15 February 2023 9:52:01 am
Project: C:\Users\jacques.vandenheever\Eastern Busway Alliance\PAA - 05 DESIGN MGMNT\12 Transport\3-3. Integrated Transport Assessment\ITA 2 - EB2,3R\Version 9 (Addendum)\AIMSUN and SIDRA\CS 1.3\CS 1.3 PM.sip9

# LANE SUMMARY

## Site: 7.1 [7.1 William Roberts Rd / Cortina Pl - Import (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

Scheme Design
Site Category: (None)
Give-Way (Two-Way)

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NorthEast: William Roberts Road (North) | | | | | | | | | | | | | | | |
| Lane 1 | 116 | 5.2 | 116 | 5.2 | 1702 | 0.068 | 100 | 1.0 | LOS A | 0.2 | 1.4 | Full | 243 | 0.0 | 0.0 |
| Approach | 116 | 5.2 | 116 | 5.2 | | 0.068 | | 1.0 | NA | 0.2 | 1.4 | | | | |
| NorthWest: Cortina Place | | | | | | | | | | | | | | | |
| Lane 1 | 64 | 6.3 | 64 | 6.3 | 1111 | 0.058 | 100 | 3.2 | LOS A | 0.2 | 1.6 | Full | 177 | 0.0 | 0.0 |
| Approach | 64 | 6.3 | 64 | 6.3 | | 0.058 | | 3.2 | LOS A | 0.2 | 1.6 | | | | |
| SouthWest: William Roberts Road (South) | | | | | | | | | | | | | | | |
| Lane 1 | 276 | 8.4 | 276 | 8.3 | 1792 | 0.154 | 100 | 0.2 | LOS A | 0.0 | 0.0 | Full | 110 | 0.0 | 0.0 |
| Approach | 276 | 8.4 | 276 | 8.3 | | 0.154 | | 0.2 | NA | 0.0 | 0.0 | | | | |
| Intersection | 456 | 7.3 | 456 | 7.3 | | 0.154 | | 0.8 | NA | 0.2 | 1.6 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

**Approach Lane Flows (veh/h)**

NorthEast: William Roberts Road (North)

| Mov. From NE To Exit: | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 91 | 25 | 116 | 5.2 | 1702 | 0.068 | 100 | NA | NA |
| Approach | 91 | 25 | 116 | 5.2 | | 0.068 | | | |

NorthWest: Cortina Place

| Mov. From NW To Exit: | L2 NE | R2 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 45 | 19 | 64 | 6.3 | 1111 | 0.058 | 100 | NA | NA |
| Approach | 45 | 19 | 64 | 6.3 | | 0.058 | | | |

SouthWest: William Roberts Road (South)

| Mov. From SW To Exit: | L2 NW | T1 NE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 29 | 247 | 276 | 8.3 | 1792 | 0.154 | 100 | NA | NA |
| Approach | 29 | 247 | 276 | 8.3 | | 0.154 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Intersection | 456 | 7.3 | 0.154 | |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

**Merge Analysis**

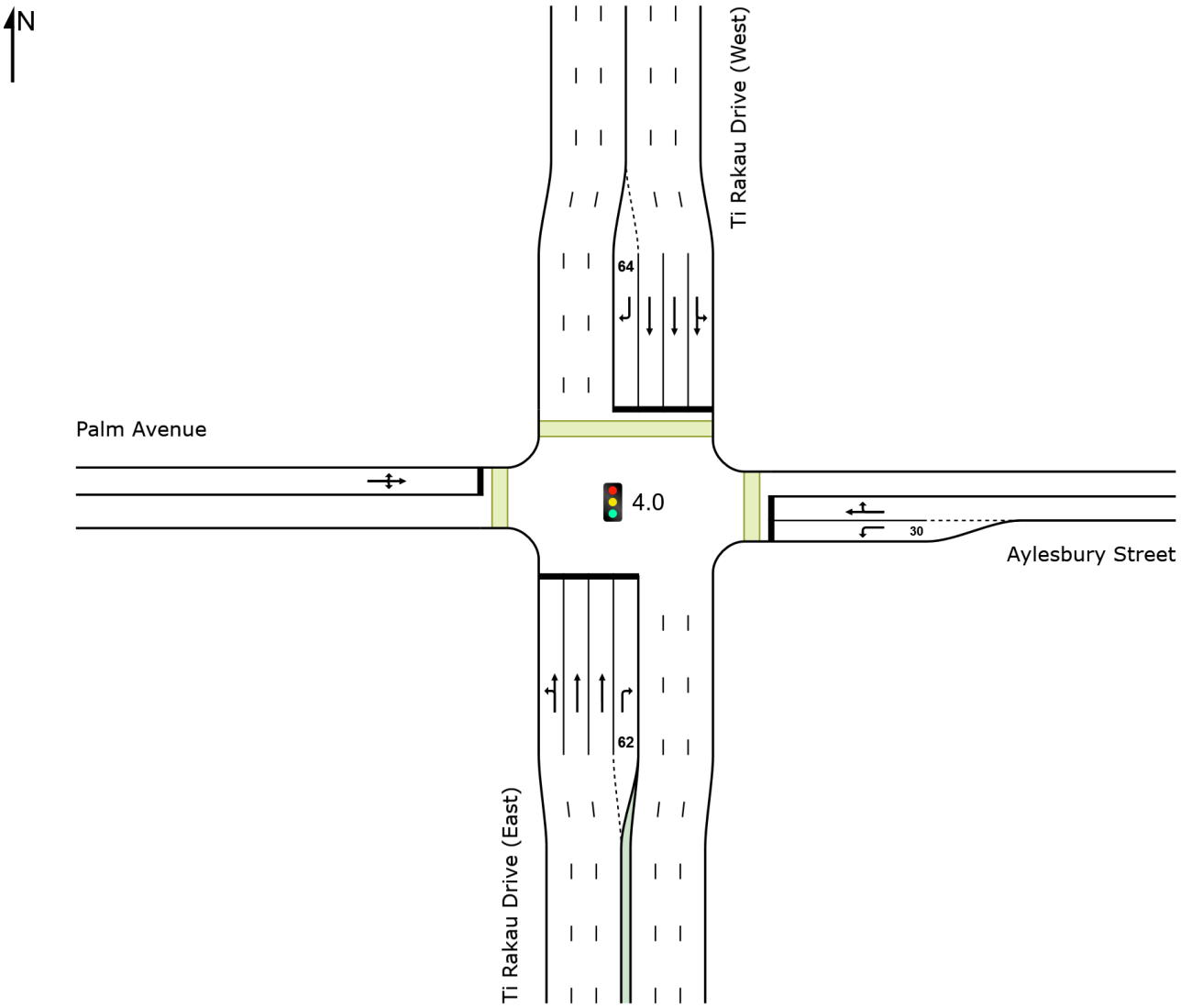
| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NorthEast Exit: William Roberts Road (North)<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| NorthWest Exit: Cortina Place<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| SouthWest Exit: William Roberts Road (South)<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# SITE LAYOUT

## Site: 4.0 [4.0 Palm Ave / Aylesbury St - Import (Site Folder: General)]

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

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



# LANE SUMMARY

## Site: 4.0 [4.0 Palm Ave / Aylesbury St - Import (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated  Cycle Time = 150 seconds (Site User-Given Phase Times)

### Lane Use and Performance

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ti Rakau Drive (East) | | | | | | | | | | | | | | | |
| Lane 1 | 596 | 4.9 | 584 | 4.9 | 1207 | 0.483 | 100 | 16.1 | LOS B | 19.5 | 142.0 | Full | 110 | 0.0 | 28.2 |
| Lane 2 | 619 | 5.1 | 606 | 5.1 | 1254 | 0.483 | 100 | 14.0 | LOS B | 19.5 | 142.3 | Full | 110 | 0.0 | 28.5 |
| Lane 3 | 611 | 5.1 | 598 | 5.1 | 1237[1] | 0.483 | 100 | 13.9 | LOS B | 19.1 | 139.4 | Full | 110 | 0.0 | 26.5 |
| Lane 4 | 10 | 0.0 | 10 | 0.0 | 70 | 0.139 | 100 | 82.9 | LOS F | 0.7 | 5.1 | Short | 62 | 0.0 | NA |
| Approach | 1836 | 5.0 | 1798[N1] | 5.0 | | 0.483 | | 15.0 | LOS B | 19.5 | 142.3 | | | | |
| East: Aylesbury Street | | | | | | | | | | | | | | | |
| Lane 1 | 27 | 3.7 | 27 | 3.7 | 67 | 0.404 | 100 | 61.3 | LOS E | 1.8 | 13.3 | Short | 30 | -50.0[N3] | NA |
| Lane 2 | 20 | 0.0 | 20 | 0.0 | 72 | 0.278 | 100 | 81.3 | LOS F | 1.5 | 10.6 | Full | 40 | 0.0 | 0.0 |
| Approach | 47 | 2.1 | 47 | 2.1 | | 0.404 | | 69.8 | LOS E | 1.8 | 13.3 | | | | |
| North: Ti Rakau Drive (West) | | | | | | | | | | | | | | | |
| Lane 1 | 414 | 7.5 | 402 | 7.7 | 624 | 0.644 | 100 | 15.9 | LOS B | 15.5 | 115.9 | Full | 174 | -49.4[N3] | 0.0 |
| Lane 2 | 409 | 7.7 | 397 | 7.8 | 616 | 0.644 | 100 | 16.4 | LOS B | 15.6 | 116.3 | Full | 174 | -50.0[N3] | 0.0 |
| Lane 3 | 402 | 7.7 | 390 | 7.8 | 606 | 0.644 | 100 | 16.2 | LOS B | 15.1 | 112.7 | Full | 174 | -50.0[N3] | 0.0 |
| Lane 4 | 43 | 7.0 | 42 | 7.1 | 67 | 0.622 | 100 | 86.9 | LOS F | 3.3 | 24.3 | Short | 64 | 0.0 | NA |
| Approach | 1268 | 7.6 | 1231[N1] | 7.8 | | 0.644 | | 18.5 | LOS B | 15.6 | 116.3 | | | | |
| West: Palm Avenue | | | | | | | | | | | | | | | |
| Lane 1 | 95 | 4.2 | 95 | 4.2 | 112 | 0.852 | 100 | 89.2 | LOS F | 7.8 | 56.8 | Full | 87 | -30.1[N3] | 0.0 |
| Approach | 95 | 4.2 | 95 | 4.2 | | 0.852 | | 89.2 | LOS F | 7.8 | 56.8 | | | | |
| Intersection | 3246 | 6.0 | 3170[N1] | 6.1 | | 0.852 | | 19.4 | LOS B | 19.5 | 142.3 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.
N3 Capacity Adjustment due to downstream lane blockage determined by the program.

### Approach Lane Flows (veh/h)

South: Ti Rakau Drive (East)

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 63 | 521 | - | 584 | 4.9 | 1207 | 0.483 | 100 | NA | NA |
| Lane 2 | - | 606 | - | 606 | 5.1 | 1254 | 0.483 | 100 | NA | NA |
| Lane 3 | - | 598 | - | 598 | 5.1 | 1237[1] | 0.483 | 100 | NA | NA |
| Lane 4 | - | - | 10 | 10 | 0.0 | 70 | 0.139 | 100 | 0.0 | 3 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 63 | 1725 | 10 | 1798 | 5.0 | | 0.483 | | | |
| East: Aylesbury Street | | | | | | | | | | |
| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 27 | - | - | 27 | 3.7 | 67 | 0.404 | 100 | 0.0 | 2 |
| Lane 2 | - | 10 | 10 | 20 | 0.0 | 72 | 0.278 | 100 | NA | NA |
| Approach | 27 | 10 | 10 | 47 | 2.1 | | 0.404 | | | |
| North: Ti Rakau Drive (West) | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | T1 S | R2 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 10 | 392 | - | 402 | 7.7 | 624 | 0.644 | 100 | NA | NA |
| Lane 2 | - | 397 | - | 397 | 7.8 | 616 | 0.644 | 100 | NA | NA |
| Lane 3 | - | 390 | - | 390 | 7.8 | 606 | 0.644 | 100 | NA | NA |
| Lane 4 | - | - | 42 | 42 | 7.1 | 67 | 0.622 | 100 | 0.0 | 3 |
| Approach | 10 | 1179 | 42 | 1231 | 7.8 | | 0.644 | | | |
| West: Palm Avenue | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 44 | 10 | 41 | 95 | 4.2 | 112 | 0.852 | 100 | NA | NA |
| Approach | 44 | 10 | 41 | 95 | 4.2 | | 0.852 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | |
| Intersection | 3170 | 6.1 | | 0.852 | | | | | | |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: Ti Rakau Drive (East) Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: Aylesbury Street Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: Ti Rakau Drive (West) Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: Palm Avenue Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

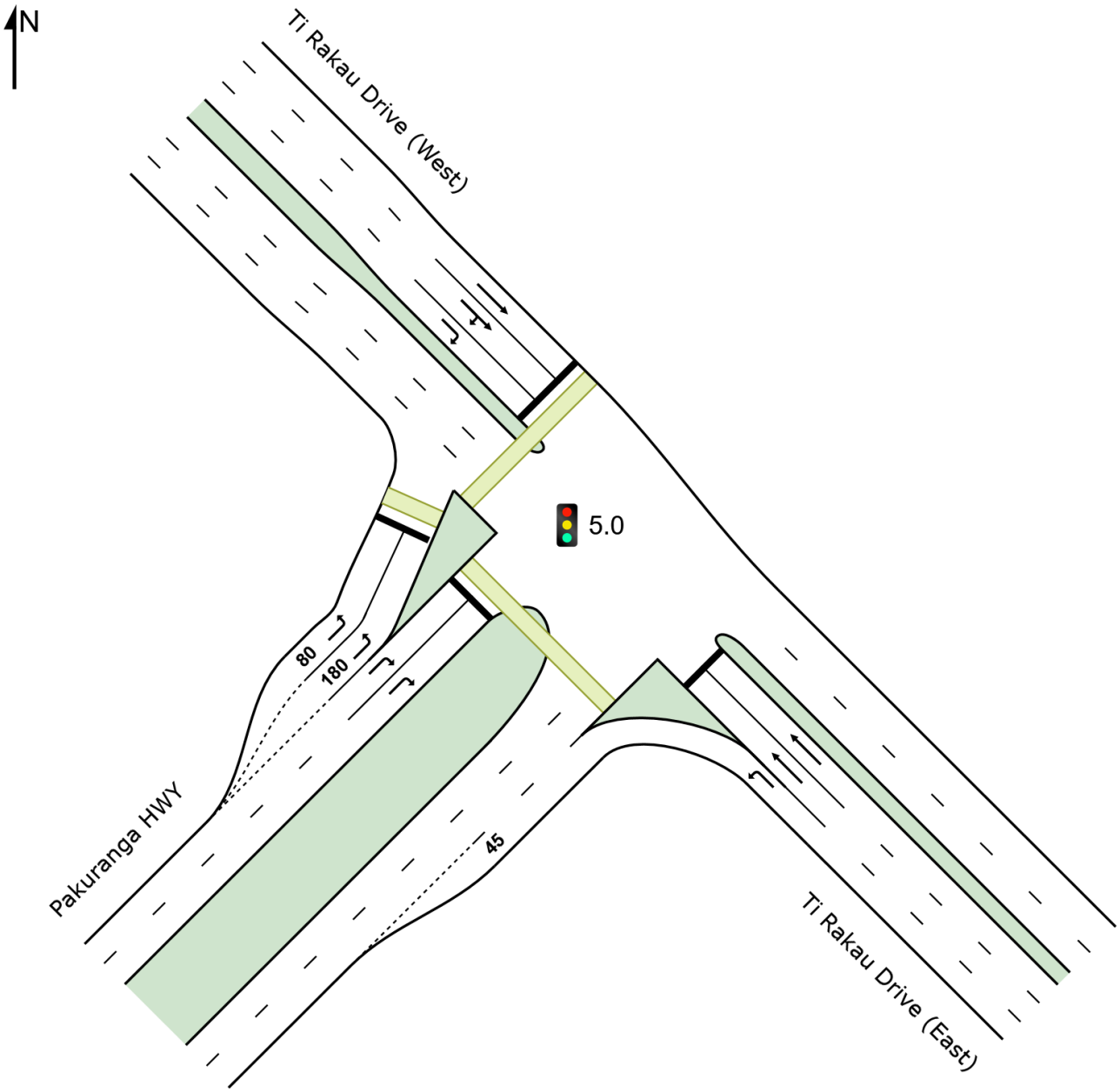
Project: C:\Users\jacques.vandenheever\Eastern Busway Alliance\PAA - 05 DESIGN MGMNT\12 Transport\3-3. Integrated Transport Assessment\ITA 2 - EB2,3R\Version 9 (Addendum)\AIMSUN and SIDRA\CS 1.3\CS 1.3 PM.sip9

# SITE LAYOUT

## Site: 5.0 [5.0 Pakuranga HWY/ Reeves Rd (Site Folder: General)]

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.



# LANE SUMMARY

## Site: 5.0 [5.0 Pakuranga HWY/ Reeves Rd (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 150 seconds (Site User-Given Phase Times)

### Lane Use and Performance

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Ti Rakau Drive (East) | | | | | | | | | | | | | | | |
| Lane 1 | 840 | 7.7 | 795 | 7.5 | 1727 | 0.461 | 100 | 6.4 | LOS A | 0.0 | 0.0 | Full | 91 | 0.0 | 0.0 |
| Lane 2 | 382 | 5.7 | 363 | 5.6 | 392 | 0.925 | 100 | 80.4 | LOS F | 20.2 N4 | 148.5 N4 | Full | 91 | -28.2 N3 | 50.0 |
| Lane 3 | 379 | 5.7 | 360 | 5.6 | 389 | 0.925 | 100 | 80.6 | LOS F | 20.2 N4 | 148.5 N4 | Full | 91 | -28.5 N3 | 50.0 |
| Approach | 1601 | 6.7 | 1518 N 1 | 6.6 | | 0.925 | | 41.7 | LOS D | 20.2 | 148.5 | | | | |
| NorthWest: Ti Rakau Drive (West) | | | | | | | | | | | | | | | |
| Lane 1 | 442 | 9.0 | 429 | 9.1 | 534 | 0.804 | 100 | 55.3 | LOS E | 23.8 N4 | 179.5 N4 | Full | 110 | 0.0 | 50.0 |
| Lane 2 | 433 | 6.9 | 421 | 7.0 | 524 | 0.804 | 100 | 59.6 | LOS E | 24.2 N4 | 179.5 N4 | Full | 110 | 0.0 | 50.0 |
| Lane 3 | 420 | 6.7 | 409 | 6.8 | 509 | 0.804 | 100 | 60.3 | LOS E | 24.2 N4 | 179.5 N4 | Full | 110 | 0.0 | 50.0 |
| Approach | 1295 | 7.6 | 1259 N 1 | 7.7 | | 0.804 | | 58.3 | LOS E | 24.2 | 179.5 | | | | |
| SouthWest: Pakuranga HWY | | | | | | | | | | | | | | | |
| Lane 1 | 534 | 4.7 | 534 | 4.7 | 557 1 | 0.959 | 100 | 75.4 | LOS E | 41.0 | 298.9 | Short | 80 | -28.2 N3 | NA |
| Lane 2 | 534 | 4.7 | 534 | 4.7 | 556 1 | 0.959 | 100 | 75.5 | LOS E | 41.0 | 298.6 | Short | 180 | -28.5 N3 | NA |
| Lane 3 | 492 | 5.7 | 492 | 5.7 | 521 | 0.944 | 100 | 88.7 | LOS F | 43.6 | 320.3 | Full | 1650 | 0.0 | 0.0 |
| Lane 4 | 497 | 5.7 | 497 | 5.7 | 526 | 0.944 | 100 | 88.5 | LOS F | 44.0 | 323.2 | Full | 1650 | 0.0 | 0.0 |
| Approach | 2057 | 5.2 | 2057 | 5.2 | | 0.959 | | 81.8 | LOS F | 44.0 | 323.2 | | | | |
| Intersection | 4953 | 6.3 | 4834 N 1 | 6.5 | | 0.959 | | 63.1 | LOS E | 44.0 | 323.2 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.
N3 Capacity Adjustment due to downstream lane blockage determined by the program.
N4 Average back of queue has been restricted to the available queue storage space.

### Approach Lane Flows (veh/h)

SouthEast: Ti Rakau Drive (East)

| Mov. From SE To Exit: | L2 SW | T1 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 795 | - | 795 | 7.5 | 1727 | 0.461 | 100 | NA | NA |
| Lane 2 | - | 363 | 363 | 5.6 | 392 | 0.925 | 100 | NA | NA |
| Lane 3 | - | 360 | 360 | 5.6 | 389 | 0.925 | 100 | NA | NA |
| Approach | 795 | 722 | 1518 | 6.6 | | 0.925 | | | |

NorthWest: Ti Rakau Drive (West)

| Mov. From NW | T1 | R2 | Total | %HV | Cap. | Deg. Satn | Lane Util. | Prob. SL Ov. | Ov. Lane |
|---|---|---|---|---|---|---|---|---|---|

| To Exit: | SE | SW | | | veh/h | v/c | % | % | No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 429 | - | 429 | 9.1 | 534 | 0.804 | 100 | NA | NA |
| Lane 2 | 38 | 383 | 421 | 7.0 | 524 | 0.804 | 100 | NA | NA |
| Lane 3 | - | 409 | 409 | 6.8 | 509 | 0.804 | 100 | NA | NA |
| Approach | 467 | 792 | 1259 | 7.7 | | 0.804 | | | |

SouthWest: Pakuranga HWY

| Mov. From SW To Exit: | L2 NW | R2 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 534 | - | 534 | 4.7 | 557[1] | 0.959 | 100 | 100.0 | 2 |
| Lane 2 | 534 | - | 534 | 4.7 | 556[1] | 0.959 | 100 | 51.6 | 4 |
| Lane 3 | - | 492 | 492 | 5.7 | 521 | 0.944 | 100 | NA | NA |
| Lane 4 | - | 497 | 497 | 5.7 | 526 | 0.944 | 100 | NA | NA |
| Approach | 1068 | 989 | 2057 | 5.2 | | 0.959 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| Intersection | 4834 | 6.5 | 0.959 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

**Merge Analysis**

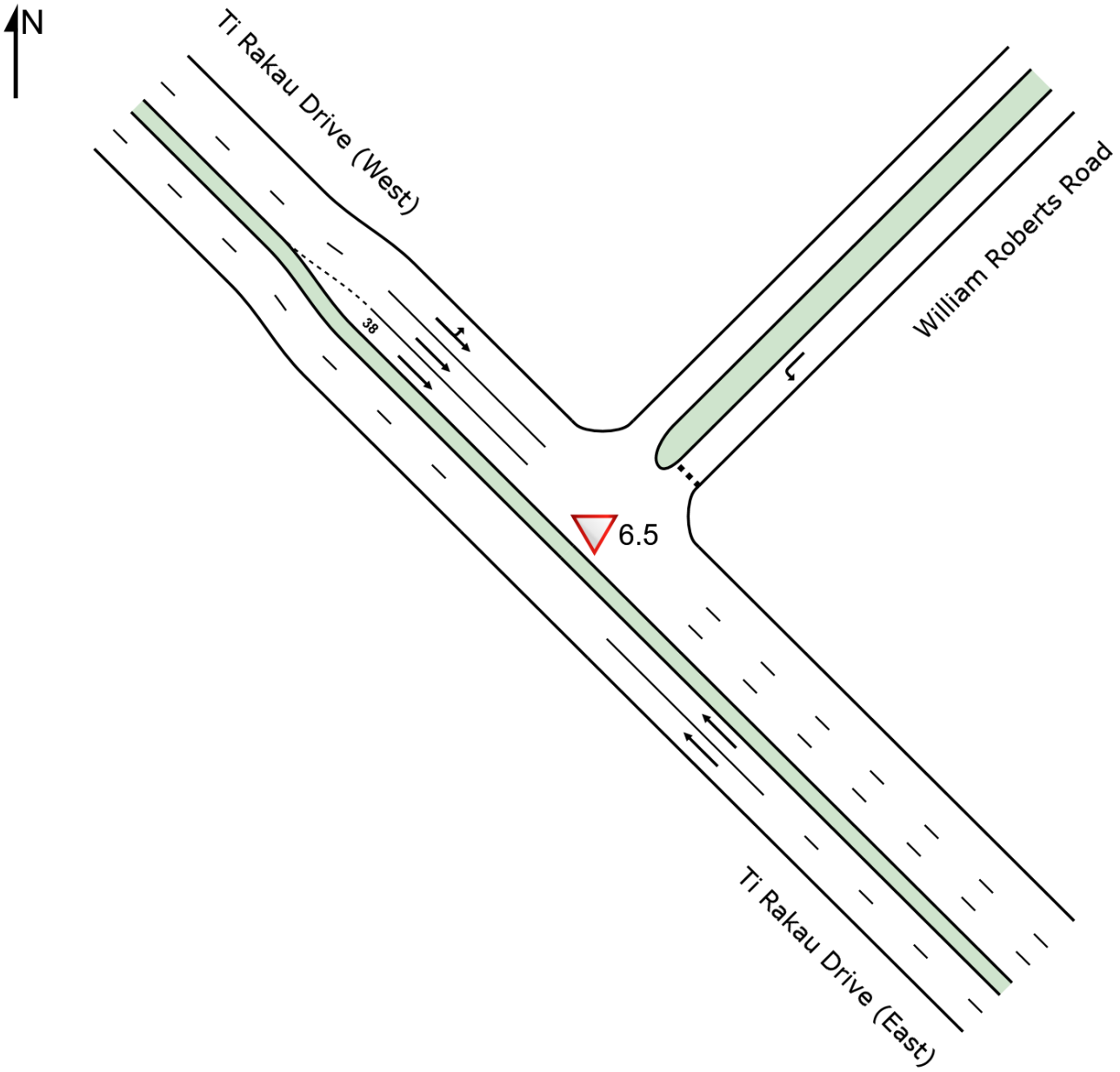
| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast Exit: Ti Rakau Drive (East) Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| NorthWest Exit: Ti Rakau Drive (West) Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | | |
| SouthWest Exit: Pakuranga HWY Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 45 | 0.0 | 383 | 397 | 3.00 | 2.00 | 795 | 1395 | 0.570 | 0.6 | 2.0 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 383 | 1800 | 0.213 | 0.0 | 0.0 |

# SITE LAYOUT

## Site: 6.5 [6.5 William Roberts Rd / Ti Rakau Dr - Import (Site Folder: General)]

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

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



# LANE SUMMARY

## Site: 6.5 [6.5 William Roberts Rd / Ti Rakau Dr - Import (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

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

### Lane Use and Performance

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Ti Rakau Drive (East) | | | | | | | | | | | | | | | |
| Lane 1 | 835 | 6.4 | 789 | 6.2 | 1826 | 0.432 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 18 | 0.0 | 0.0 |
| Lane 2 | 826 | 6.4 | 781 | 6.2 | 1806 | 0.432 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 18 | 0.0 | 0.0 |
| Approach | 1661 | 6.4 | 1570 N1 | 6.2 | | 0.432 | | 0.0 | NA | 0.0 | 0.0 | | | | |
| NorthEast: William Roberts Road | | | | | | | | | | | | | | | |
| Lane 1 | 110 | 3.6 | 110 | 3.6 | 485 | 0.227 | 100 | 3.4 | LOS A | 0.4 | 3.0 | Full | 110 | -50.0 N7 | 0.0 |
| Approach | 110 | 3.6 | 110 | 3.6 | | 0.227 | | 3.4 | LOS A | 0.4 | 3.0 | | | | |
| NorthWest: Ti Rakau Drive (West) | | | | | | | | | | | | | | | |
| Lane 1 | 566 | 7.3 | 565 | 7.3 | 1869 | 0.302 | 100 | 2.3 | LOS A | 0.0 | 0.0 | Full | 97 | 0.0 | 0.0 |
| Lane 2 | 547 | 6.2 | 546 | 6.2 | 1806 | 0.302 | 100 | 0.0 | LOS A | 5.1 N5 | 37.6 N5 | Full | 97 | 0.0 | 0.0 |
| Lane 3 | 349 | 6.2 | 348 | 6.2 | 1152 | 0.302 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Short | 38 | -36.2 N3 | NA |
| Approach | 1461 | 6.7 | 1460 N1 | 6.6 | | 0.302 | | 0.9 | NA | 5.1 | 37.6 | | | | |
| Intersection | 3232 | 6.4 | 3139 N1 | 6.6 | | 0.432 | | 0.5 | NA | 5.1 | 37.6 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.
N3 Capacity Adjustment due to downstream lane blockage determined by the program.
N5 Continuous Lane results determined by Back of Queue values of downstream lanes (proportional to lane movement flows).
N7 The capacity reduction has been determined from the queue blockage probability of a Site further downstream due to intermediate continuous lanes.

### Approach Lane Flows (veh/h)

SouthEast: Ti Rakau Drive (East)

| Mov. From SE To Exit: | T1 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 789 | 789 | 6.2 | 1826 | 0.432 | 100 | NA | NA |
| Lane 2 | 781 | 781 | 6.2 | 1806 | 0.432 | 100 | NA | NA |
| Approach | 1570 | 1570 | 6.2 | | 0.432 | | | |

NorthEast: William Roberts Road

| Mov. From NE To Exit: | L2 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 110 | 110 | 3.6 | 485 | 0.227 | 100 | NA | NA |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Approach | 110 | 110 | 3.6 | | | 0.227 | | | |
| NorthWest: Ti Rakau Drive (West) | | | | | | | | | |
| Mov. From NW To Exit: | L2 NE | T1 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 276 | 289 | 565 | 7.3 | 1869 | 0.302 | 100 | NA | NA |
| Lane 2 | - | 546 | 546 | 6.2 | 1806 | 0.302 | 100 | NA | NA |
| Lane 3 | - | 348 | 348 | 6.2 | 1152 | 0.302 | 100 | 0.0 | 2 |
| Approach | 276 | 1184 | 1460 | 6.6 | | 0.302 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | |
| Intersection | 3139 | 6.6 | | 0.432 | | | | | |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

**Merge Analysis**

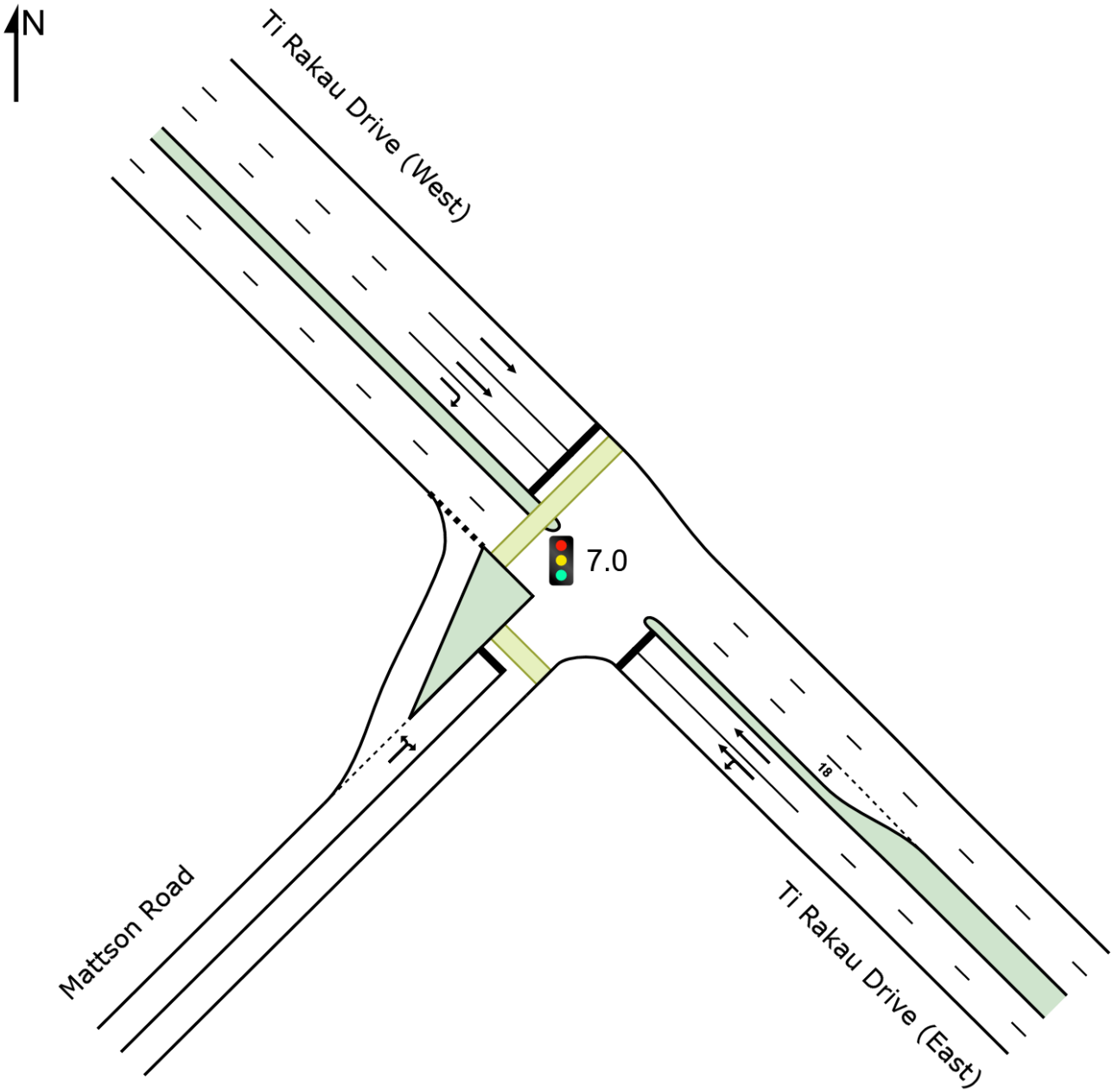
| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast Exit: Ti Rakau Drive (East) Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 3 | Merge Analysis not applied. | | | | | | | | | | |
| NorthEast Exit: William Roberts Road Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| NorthWest Exit: Ti Rakau Drive (West) Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |

# SITE LAYOUT

## Site: 7.0 [7.0 Mattson Rd/ Ti Rakau Dr (Site Folder: General)]

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.





Organisation: AECOM AUSTRALIA PTY LTD | Licence: NETWORK / Enterprise | Created: Wednesday, 15 February 2023 9:52:22 am
Project: C:\Users\jacques.vandenheever\Eastern Busway Alliance\PAA - 05 DESIGN MGMNT\12 Transport\3-3. Integrated Transport Assessment\ITA 2 - EB2,3R\Version 9 (Addendum)\AIMSUN and SIDRA\CS 1.3\CS 1.3 PM.sip9

# LANE SUMMARY

## Site: 7.0 [7.0 Mattson Rd/ Ti Rakau Dr (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 68 seconds (Site Practical Cycle Time)

### Lane Use and Performance

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Ti Rakau Drive (East) | | | | | | | | | | | | | | | |
| Lane 1 | 837 | 6.6 | 790 | 6.4 | 895 | 0.883 | 100 | 27.9 | LOS C | 30.5 | 225.4 | Full | 187 | 0.0 | 21.9 |
| Lane 2 | 845 | 6.5 | 797 | 6.3 | 903 | 0.883 | 100 | 27.8 | LOS C | 30.7 | 226.5 | Full | 187 | 0.0 | 22.4 |
| Approach | 1682 | 6.5 | 1588 N1 | 6.3 | | 0.883 | | 27.8 | LOS C | 30.7 | 226.5 | | | | |
| NorthWest: Ti Rakau Drive (West) | | | | | | | | | | | | | | | |
| Lane 1 | 618 | 6.0 | 617 | 6.0 | 1316 | 0.469 | 100 | 5.6 | LOS A | 4.0 N4 | 29.4 N4 | Full | 18 | 0.0 | 50.0 |
| Lane 2 | 580 | 6.0 | 580 | 6.0 | 1237 | 0.469 | 100 | 5.6 | LOS A | 4.0 N4 | 29.4 N4 | Full | 18 | 0.0 | 50.0 |
| Lane 3 | 97 | 6.2 | 97 | 6.2 | 154 | 0.630 | 100 | 38.1 | LOS D | 3.4 | 25.3 | Full | 18 | 0.0 | 36.2 |
| Approach | 1295 | 6.0 | 1294 N1 | 6.0 | | 0.630 | | 8.0 | LOS A | 4.0 | 29.4 | | | | |
| SouthWest: Mattson Road | | | | | | | | | | | | | | | |
| Lane 1 | 71 | 1.4 | 71 | 1.4 | 405 | 0.175 | 100 | 24.1 | LOS C | 1.9 | 13.7 | Full | 282 | 0.0 | 0.0 |
| Approach | 71 | 1.4 | 71 | 1.4 | | 0.175 | | 24.1 | LOS C | 1.9 | 13.7 | | | | |
| Intersection | 3048 | 6.2 | 2953 N1 | 6.4 | | 0.883 | | 19.1 | LOS B | 30.7 | 226.5 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.
N4 Average back of queue has been restricted to the available queue storage space.

### Approach Lane Flows (veh/h)

SouthEast: Ti Rakau Drive (East)

| Mov. From SE To Exit: | L2 SW | T1 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 41 | 749 | 790 | 6.4 | 895 | 0.883 | 100 | NA | NA |
| Lane 2 | - | 797 | 797 | 6.3 | 903 | 0.883 | 100 | NA | NA |
| Approach | 41 | 1546 | 1588 | 6.3 | | 0.883 | | | |

NorthWest: Ti Rakau Drive (West)

| Mov. From NW To Exit: | T1 SE | R2 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 617 | - | 617 | 6.0 | 1316 | 0.469 | 100 | NA | NA |
| Lane 2 | 580 | - | 580 | 6.0 | 1237 | 0.469 | 100 | NA | NA |
| Lane 3 | - | 97 | 97 | 6.2 | 154 | 0.630 | 100 | NA | NA |
| Approach | 1197 | 97 | 1294 | 6.0 | | 0.630 | | | |

SouthWest: Mattson Road

| Mov. | L2 | R2 | Total | %HV | | Deg. | Lane | Prob. | Ov. |
|---|---|---|---|---|---|---|---|---|---|

| From SW To Exit: | NW | SE | | | Cap. veh/h | Satn v/c | Util. % | SL Ov. % | Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 23 | 48 | 71 | 1.4 | 405 | 0.175 | 100 | NA | NA |
| Approach | 23 | 48 | 71 | 1.4 | | 0.175 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | |
| Intersection | 2953 | 6.4 | 0.883 | | | | | | |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

**Merge Analysis**

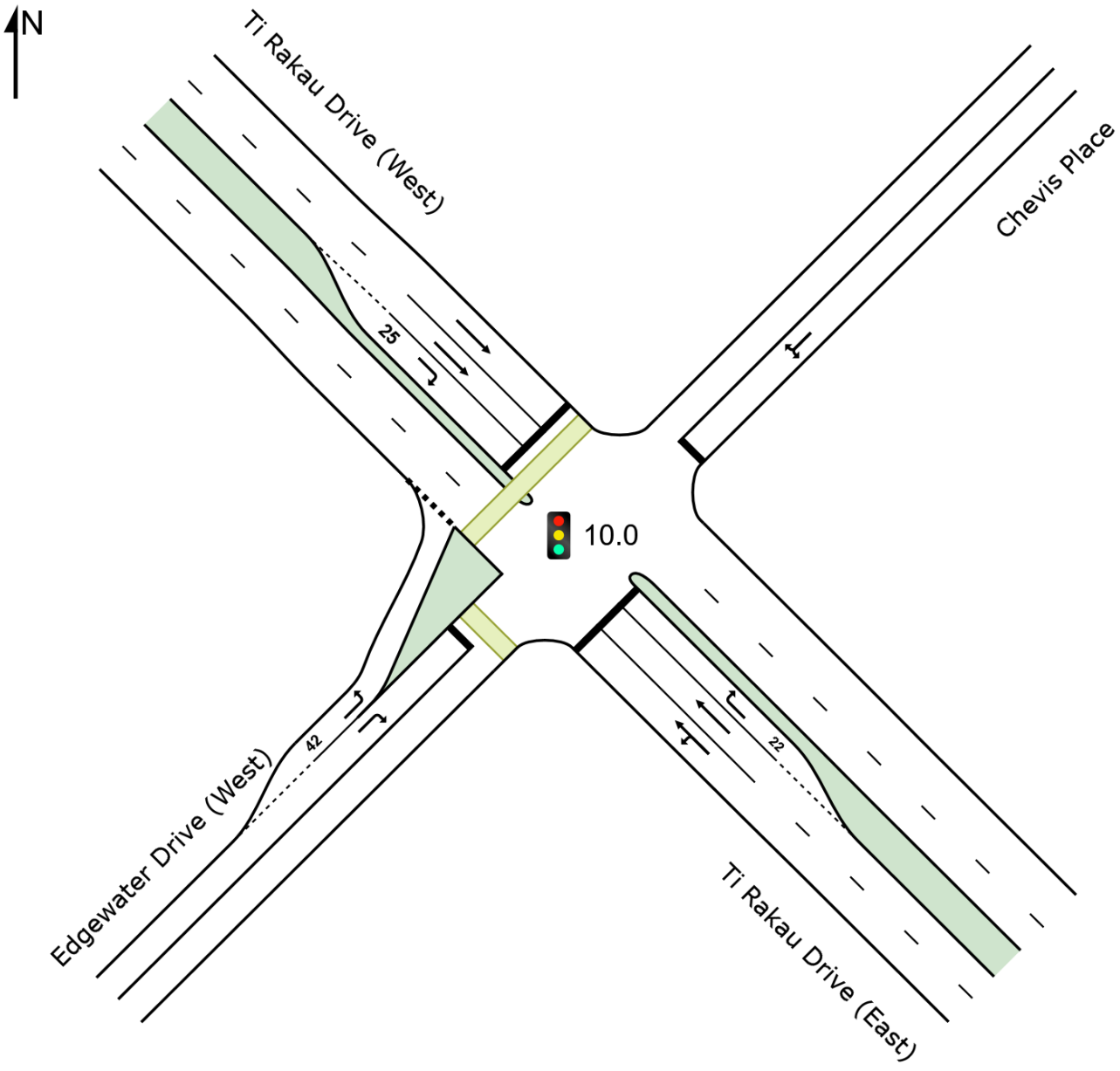
| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast Exit: Ti Rakau Drive (East) Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 3 | 18 | 0.0 | 580 | 597 | 3.00 | 2.00 | 48 | 1184 | 0.041 | 1.1 | 1.3 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 580 | 1800 | 0.322 | 0.0 | 0.0 |
| NorthWest Exit: Ti Rakau Drive (West) Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| SouthWest Exit: Mattson Road Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# SITE LAYOUT

## Site: 10.0 [10.0 Edgewater Dr (West) / Chevis Pl (Site Folder: General)]

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.



# LANE SUMMARY

## Site: 10.0 [10.0 Edgewater Dr (West) / Chevis Pl (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 105 seconds (Site Practical Cycle Time)

### Lane Use and Performance

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Ti Rakau Drive (East) | | | | | | | | | | | | | | | |
| Lane 1 | 868 | 6.5 | 853 | 6.5 | 962 | 0.886 | 100 | 34.3 | LOS C | 35.8 N4 | 264.4 N4 | Full | 162 | 0.0 | 50.0 |
| Lane 2 | 853 | 6.4 | 838 | 6.4 | 946 1 | 0.886 | 100 | 34.1 | LOS C | 35.8 N4 | 264.4 N4 | Full | 162 | 0.0 | 50.0 |
| Lane 3 | 11 | 9.1 | 11 | 9.0 | 96 | 0.113 | 100 | 58.4 | LOS E | 0.6 | 4.2 | Short | 22 | 0.0 | NA |
| Approach | 1732 | 6.5 | 1701 N 1 | 6.4 | | 0.886 | | 34.4 | LOS C | 35.8 | 264.4 | | | | |
| NorthEast: Chevis Place | | | | | | | | | | | | | | | |
| Lane 1 | 20 | 0.0 | 20 | 0.0 | 106 | 0.188 | 100 | 58.6 | LOS E | 1.0 | 7.3 | Full | 138 | 0.0 | 0.0 |
| Approach | 20 | 0.0 | 20 | 0.0 | | 0.188 | | 58.6 | LOS E | 1.0 | 7.3 | | | | |
| NorthWest: Ti Rakau Drive (West) | | | | | | | | | | | | | | | |
| Lane 1 | 526 | 2.5 | 512 | 2.6 | 1012 | 0.506 | 100 | 17.8 | LOS B | 15.5 N4 | 111.0 N4 | Full | 68 | 0.0 | 50.0 |
| Lane 2 | 432 | 2.5 | 420 | 2.6 | 830 1 | 0.506 | 100 | 17.0 | LOS B | 13.4 | 95.5 | Full | 68 | 0.0 | 36.0 |
| Lane 3 | 73 | 5.5 | 71 | 5.6 | 102 | 0.700 | 100 | 62.6 | LOS E | 3.9 | 28.9 | Short | 25 | 0.0 | NA |
| Approach | 1031 | 2.7 | 1003 N 1 | 2.8 | | 0.700 | | 20.7 | LOS C | 15.5 | 111.0 | | | | |
| SouthWest: Edgewater Drive (West) | | | | | | | | | | | | | | | |
| Lane 1 | 87 | 5.7 | 87 | 5.7 | 650 | 0.134 | 100 | 17.2 | LOS B | 2.2 | 16.1 | Short | 42 | 0.0 | NA |
| Lane 2 | 35 | 8.6 | 35 | 8.6 | 249 | 0.141 | 100 | 47.9 | LOS D | 1.6 | 12.1 | Full | 789 | 0.0 | 0.0 |
| Approach | 122 | 6.6 | 122 | 6.6 | | 0.141 | | 26.0 | LOS C | 2.2 | 16.1 | | | | |
| Intersection | 2905 | 5.1 | 2846 N 1 | 5.2 | | 0.886 | | 29.4 | LOS C | 35.8 | 264.4 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.
N4 Average back of queue has been restricted to the available queue storage space.

### Approach Lane Flows (veh/h)

SouthEast: Ti Rakau Drive (East)

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 112 | 741 | - | 853 | 6.5 | 962 | 0.886 | 100 | NA | NA |
| Lane 2 | - | 838 | - | 838 | 6.4 | 946 1 | 0.886 | 100 | NA | NA |
| Lane 3 | - | - | 11 | 11 | 9.0 | 96 | 0.113 | 100 | 0.0 | 2 |
| Approach | 112 | 1579 | 11 | 1701 | 6.4 | | 0.886 | | | |

NorthEast: Chevis Place

| Mov. | L2 | R2 | Total | %HV | | Deg. | Lane | Prob. | Ov. |
|---|---|---|---|---|---|---|---|---|---|

| From NE<br>To Exit: | SE | NW | | | Cap.<br>veh/h | Satn<br>v/c | Util.<br>% | SL Ov.<br>% | Lane<br>No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 10 | 10 | 20 | 0.0 | 106 | 0.188 | 100 | NA | NA |
| Approach | 10 | 10 | 20 | 0.0 | | 0.188 | | | |
| NorthWest: Ti Rakau Drive (West) | | | | | | | | | |
| Mov.<br>From NW<br>To Exit: | T1<br>SE | R2<br>SW | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 512 | - | 512 | 2.6 | 1012 | 0.506 | 100 | NA | NA |
| Lane 2 | 420 | - | 420 | 2.6 | 830[1] | 0.506 | 100 | NA | NA |
| Lane 3 | - | 71 | 71 | 5.6 | 102 | 0.700 | 100 | 18.3 | 2 |
| Approach | 931 | 71 | 1003 | 2.8 | | 0.700 | | | |
| SouthWest: Edgewater Drive (West) | | | | | | | | | |
| Mov.<br>From SW<br>To Exit: | L2<br>NW | R2<br>SE | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 87 | - | 87 | 5.7 | 650 | 0.134 | 100 | 0.0 | 2 |
| Lane 2 | - | 35 | 35 | 8.6 | 249 | 0.141 | 100 | NA | NA |
| Approach | 87 | 35 | 122 | 6.6 | | 0.141 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| Intersection | 2846 | 5.2 | 0.886 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

**Merge Analysis**

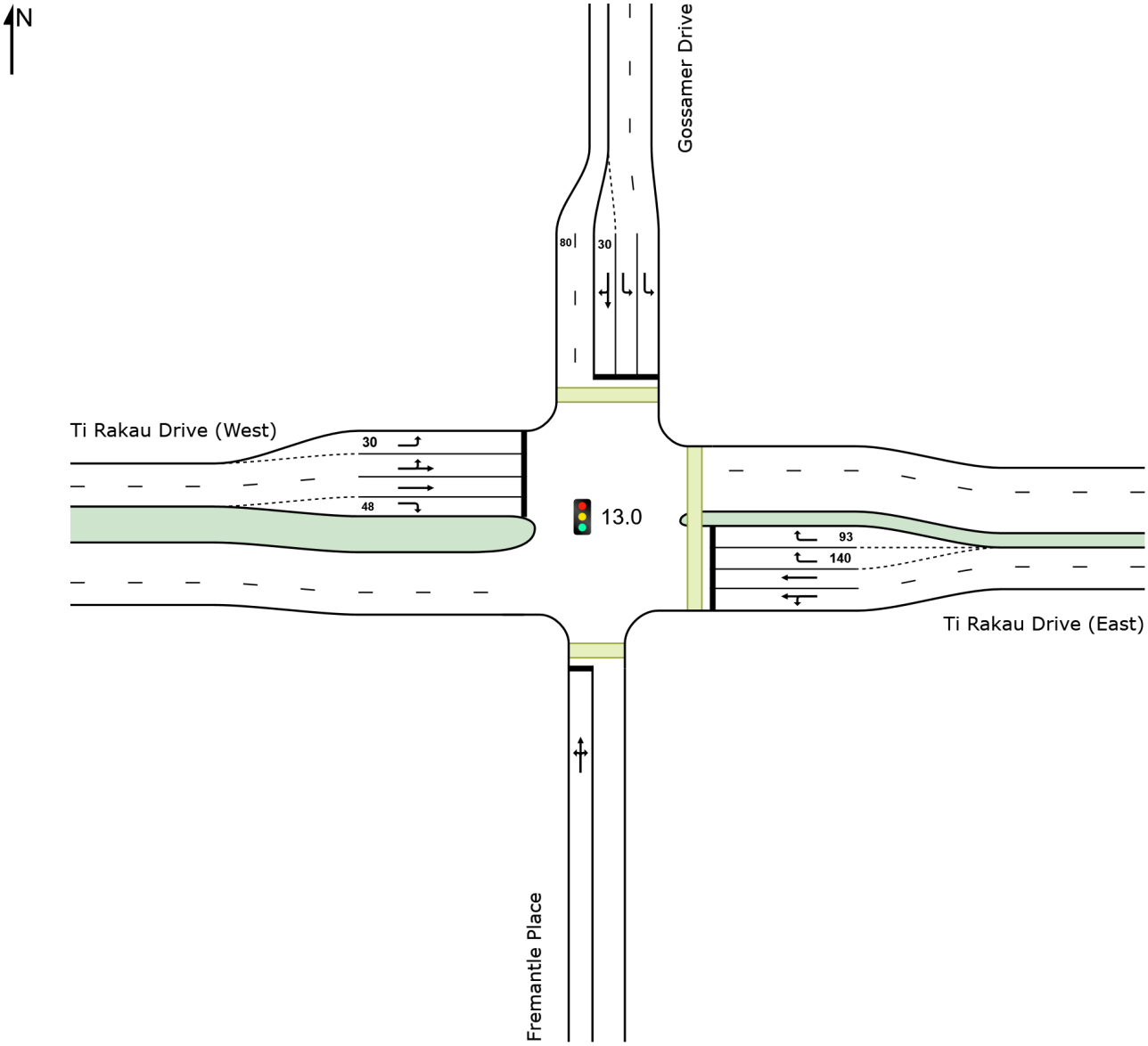
| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast Exit: Ti Rakau Drive (East)<br>Merge Type: **Not Applied** | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | |
| NorthEast Exit: Chevis Place<br>Merge Type: **Not Applied** | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | |
| NorthWest Exit: Ti Rakau Drive (West)<br>Merge Type: **Not Applied** | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | |
| SouthWest Exit: Edgewater Drive (West)<br>Merge Type: **Not Applied** | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | |

# SITE LAYOUT

## Site: 13.0 [13.0 Gossamer Dr / Ti Rakau Dr (Site Folder: General)]

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

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





Organisation: AECOM AUSTRALIA PTY LTD | Licence: NETWORK / Enterprise | Created: Wednesday, 15 February 2023 9:52:31 am
Project: C:\Users\jacques.vandenheever\Eastern Busway Alliance\PAA - 05 DESIGN MGMNT\12 Transport\3-3. Integrated Transport Assessment\ITA 2 - EB2,3R\Version 9 (Addendum)\AIMSUN and SIDRA\CS 1.3\CS 1.3 PM.sip9

# LANE SUMMARY

## Site: 13.0 [13.0 Gossamer Dr / Ti Rakau Dr (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

Scheme Design
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 150 seconds (Site User-Given Phase Times)

### Lane Use and Performance

| | DEMAND FLOWS [ Total veh/h | HV ] % | ARRIVAL FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Fremantle Place | | | | | | | | | | | | | | | |
| Lane 1 | 40 | 5.0 | 40 | 5.0 | 97 | 0.413 | 100 | 81.6 | LOS F | 3.0 | 21.8 | Full | 285 | 0.0 | 0.0 |
| Approach | 40 | 5.0 | 40 | 5.0 | | 0.413 | | 81.6 | LOS F | 3.0 | 21.8 | | | | |
| East: Ti Rakau Drive (East) | | | | | | | | | | | | | | | |
| Lane 1 | 906 | 6.5 | 906 | 6.5 | 901 | 1.005 | 100 | 77.9 | LOS E | 80.1 | 591.9 | Full | 636 | 0.0 | 0.0 |
| Lane 2 | 775 | 6.6 | 775 | 6.6 | 771[1] | 1.005 | 100 | 98.9 | LOS F | 82.1 | 606.8 | Full | 636 | 0.0 | 0.8 |
| Lane 3 | 258 | 8.6 | 258 | 8.6 | 505 | 0.511 | 47[6] | 29.7 | LOS C | 9.3 | 70.2 | Short | 140 | 0.0 | NA |
| Lane 4 | 548 | 8.6 | 548 | 8.6 | 505 | 1.084 | 100 | 141.5 | LOS F | 50.3 | 378.1 | Short | 93 | 0.0 | NA |
| Approach | 2487 | 7.2 | 2487 | 7.2 | | 1.084 | | 93.5 | LOS F | 82.1 | 606.8 | | | | |
| North: Gossamer Drive | | | | | | | | | | | | | | | |
| Lane 1 | 259 | 17.8 | 259 | 17.8 | 757 | 0.342 | 100 | 22.2 | LOS C | 9.2 | 73.9 | Full | 1010 | 0.0 | 0.0 |
| Lane 2 | 246 | 17.8 | 246 | 17.8 | 719[1] | 0.342 | 100 | 22.0 | LOS C | 8.6 | 69.5 | Full | 1010 | 0.0 | 0.0 |
| Lane 3 | 61 | 4.9 | 61 | 4.9 | 238 | 0.256 | 100 | 67.3 | LOS E | 4.1 | 29.6 | Short | 30 | 0.0 | NA |
| Approach | 566 | 16.4 | 566 | 16.4 | | 0.342 | | 26.9 | LOS C | 9.2 | 73.9 | | | | |
| West: Ti Rakau Drive (West) | | | | | | | | | | | | | | | |
| Lane 1 | 170 | 0.6 | 163 | 0.5 | 822 | 0.198 | 28[5] | 19.3 | LOS B | 4.6 | 32.1 | Short | 30 | 0.0 | NA |
| Lane 2 | 347 | 2.8 | 333 | 2.8 | 467[1] | 0.712 | 100 | 43.9 | LOS D | 19.7 | 140.9 | Full | 479 | 0.0 | 0.0 |
| Lane 3 | 442 | 2.8 | 423 | 2.8 | 594[1] | 0.712 | 100 | 47.0 | LOS D | 26.7 | 191.6 | Full | 479 | 0.0 | 0.0 |
| Lane 4 | 17 | 0.0 | 16 | 0.0 | 312 | 0.052 | 100 | 59.9 | LOS E | 1.0 | 6.9 | Short | 48 | 0.0 | NA |
| Approach | 976 | 2.4 | 934[N1] | 2.3 | | 0.712 | | 41.3 | LOS D | 26.7 | 191.6 | | | | |
| Intersection | 4069 | 7.3 | 4027[N1] | 7.4 | | 1.084 | | 71.9 | LOS E | 82.1 | 606.8 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
5 Lane under-utilisation found by the program
6 Lane under-utilisation due to downstream effects
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

### Approach Lane Flows (veh/h)

South: Fremantle Place

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 13 | 10 | 17 | 40 | 5.0 | 97 | 0.413 | 100 | NA | NA |
| Approach | 13 | 10 | 17 | 40 | 5.0 | | 0.413 | | | |
| East: Ti Rakau Drive (East) | | | | | | | | | | |

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 23 | 883 | - | 906 | 6.5 | 901 | 1.005 | 100 | NA | NA |
| Lane 2 | - | 775 | - | 775 | 6.6 | 771[1] | 1.005 | 100 | NA | NA |
| Lane 3 | - | - | 258 | 258 | 8.6 | 505 | 0.511 | 47[6] | 98.9 | 2 |
| Lane 4 | - | - | 548 | 548 | 8.6 | 505 | 1.084 | 100 | 100.0 | 3 |
| Approach | 23 | 1658 | 806 | 2487 | 7.2 | | 1.084 | | | |

North: Gossamer Drive

| Mov. From N To Exit: | L2 E | T1 S | R2 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 259 | - | - | 259 | 17.8 | 757 | 0.342 | 100 | NA | NA |
| Lane 2 | 246 | - | - | 246 | 17.8 | 719[1] | 0.342 | 100 | NA | NA |
| Lane 3 | - | 12 | 49 | 61 | 4.9 | 238 | 0.256 | 100 | 3.8 | 2 |
| Approach | 505 | 12 | 49 | 566 | 16.4 | | 0.342 | | | |

West: Ti Rakau Drive (West)

| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 163 | - | - | 163 | 0.5 | 822 | 0.198 | 28[5] | 11.1 | 2 |
| Lane 2 | - | 333 | - | 333 | 2.8 | 467[1] | 0.712 | 100 | NA | NA |
| Lane 3 | - | 423 | - | 423 | 2.8 | 594[1] | 0.712 | 100 | NA | NA |
| Lane 4 | - | - | 16 | 16 | 0.0 | 312 | 0.052 | 100 | 0.0 | 3 |
| Approach | 163 | 755 | 16 | 934 | 2.3 | | 0.712 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| Intersection | 4027 | 7.4 | 1.084 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
5 Lane under-utilisation found by the program
6 Lane under-utilisation due to downstream effects

## Merge Analysis

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: Fremantle Place<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: Ti Rakau Drive (East)<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: Gossamer Drive<br>Merge Type: **Zipper** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 80 | 50.0 | 258 | 269 | 2.50 | 2.00 | 421 | 1474 | 0.285 | 0.0 | 0.2 |
| Merge Lane | 2 | - | 50.0 | 210 | 216 | 2.50 | 2.00 | 515 | 1543 | 0.334 | 0.0 | 0.1 |
| West Exit: Ti Rakau Drive (West)<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| Full Length Lane | 2 | Merge Analysis not applied. | | | | | | | | | | |

# Appendix Q

**Construction Scenario 1.4 – Phasing Diagrams**

# PHASING SUMMARY

## Site: 1.0 [1.0 Pakuranga Rd / Ti Rakau Rd (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated  Cycle Time = 84 seconds (Site Practical Cycle Time)

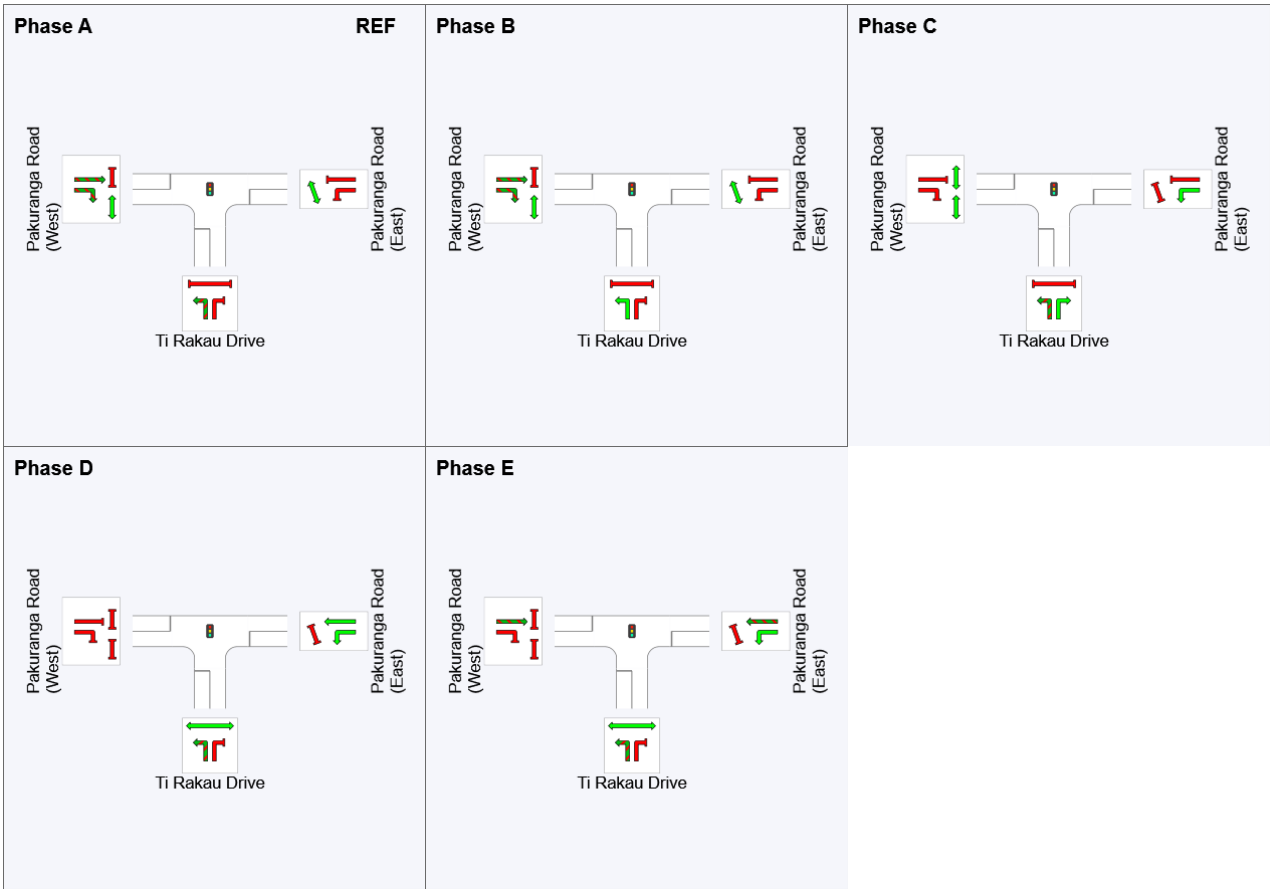
**Timings based on settings in the Site Phasing & Timing dialog**
**Phase Times determined by the program**
**Downstream lane blockage effects included in determining phase times**
**Phase Sequence: Map Extract Default**
**Reference Phase: Phase A**
**Input Phase Sequence: A, B, C, D, E**
**Output Phase Sequence: A, B, C, D, E**

### Phase Timing Summary

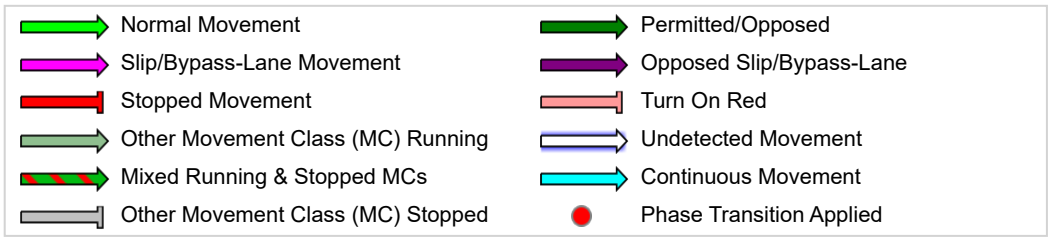
| Phase | A | B | C | D | E |
|---|---|---|---|---|---|
| Phase Change Time (sec) | 0 | 13 | 25 | 47 | 59 |
| Green Time (sec) | 7 | 6 | 16 | 6 | 19 |
| Phase Time (sec) | 13 | 12 | 22 | 12 | 25 |
| Phase Split | 15% | 14% | 26% | 14% | 30% |

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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Project: C:\Users\jacques.vandenheever\Eastern Busway Alliance\PAA - 05 DESIGN MGMNT\12 Transport\3-3. Integrated Transport Assessment\ITA 2 - EB2,3R\Version 9 (Addendum)\AIMSUN and SIDRA\CS 1.4\CS 1.4 AM - V1.sip9

# PHASING SUMMARY

## Site: 1.4v [1.4 William Roberts/ Pakuranga Rd - PD - Conversion (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 61 seconds (Site Practical Cycle Time)

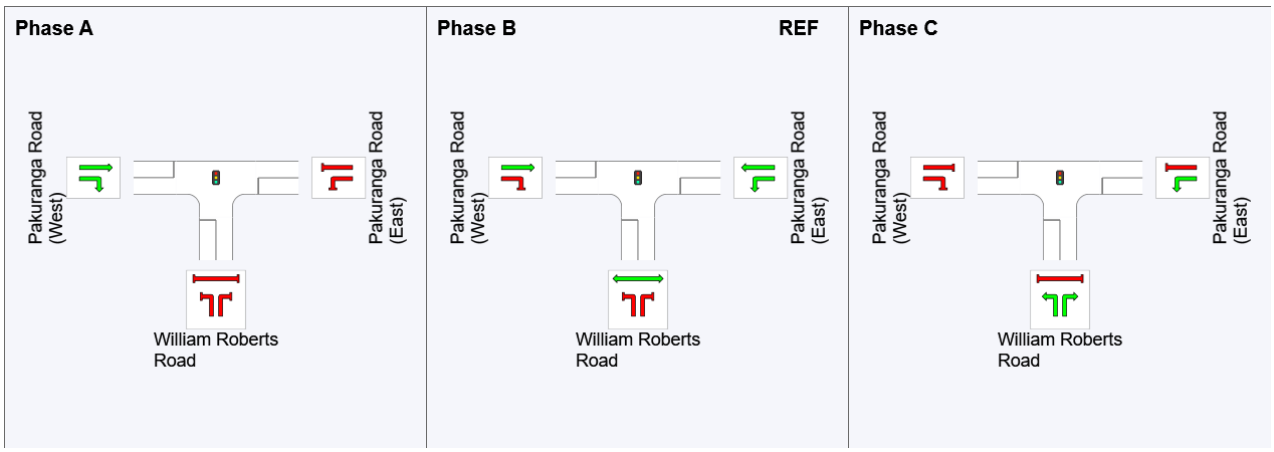
**Timings based on settings in the Site Phasing & Timing dialog**
**Phase Times determined by the program**
**Downstream lane blockage effects included in determining phase times**
**Phase Sequence: Convert Function Default**
**Reference Phase: Phase B**
**Input Phase Sequence: A, B, C**
**Output Phase Sequence: A, B, C**

### Phase Timing Summary

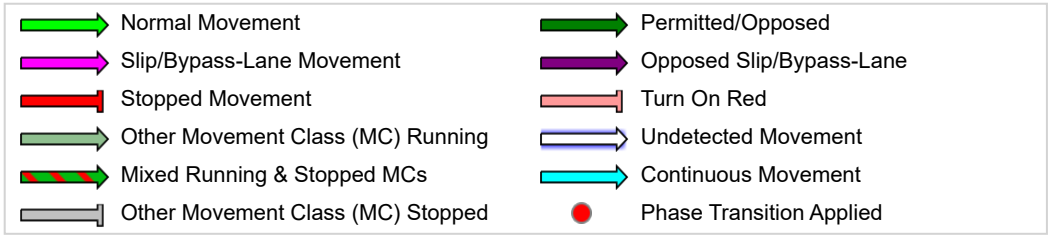
| Phase | A | B | C |
|---|---|---|---|
| Phase Change Time (sec) | 49 | 0 | 32 |
| Green Time (sec) | 6 | 26 | 11 |
| Phase Time (sec) | 12 | 32 | 17 |
| Phase Split | 20% | 52% | 28% |

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



# PHASING SUMMARY

## Site: 1.5 [1.5 Saint Kentigern/ Pakuranga Rd - PD (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 87 seconds (Site Practical Cycle Time)

**Timings based on settings in the Site Phasing & Timing dialog**
**Phase Times determined by the program**
**Downstream lane blockage effects included in determining phase times**
**Phase Sequence: Leading Right Turn**
**Reference Phase: Phase A**
**Input Phase Sequence: A, B, C, D**
**Output Phase Sequence: A, B, C, D**

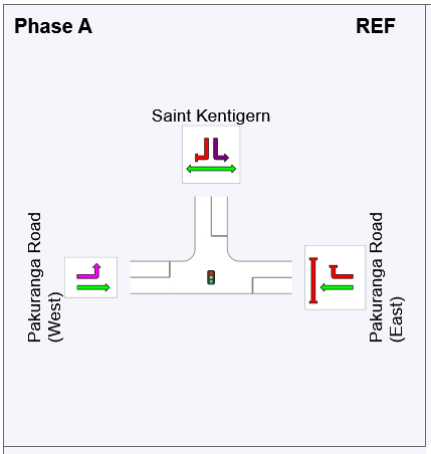
### Phase Timing Summary

| Phase | A | B | C | D |
|---|---|---|---|---|
| Phase Change Time (sec) | 0 | 35 | 47 | 75 |
| Green Time (sec) | 29 | 6 | 22 | 6 |
| Phase Time (sec) | 35 | 12 | 28 | 12 |
| Phase Split | 40% | 14% | 32% | 14% |

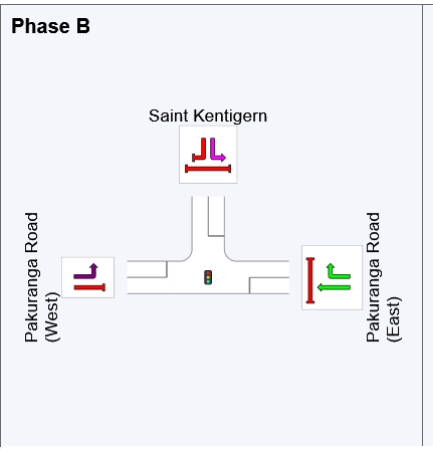
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified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

### Output Phase Sequence

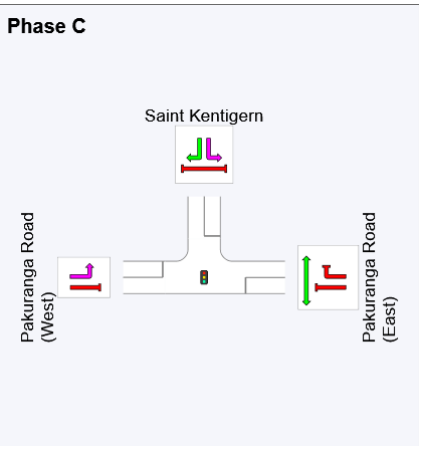
**Phase A** **REF**



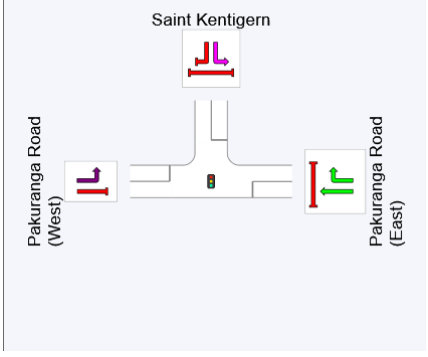

**Phase B**



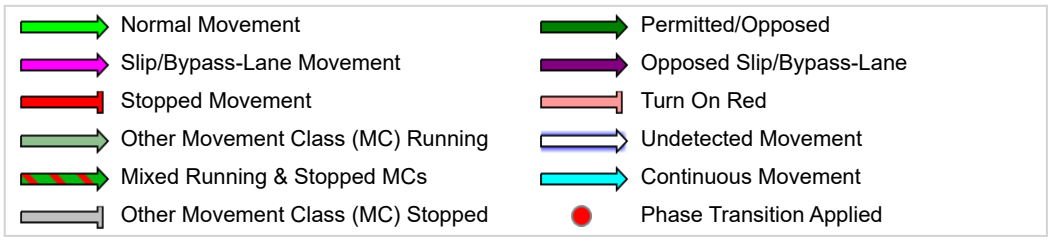

**Phase C**




**Phase D**




REF: Reference Phase
VAR: Variable Phase





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# PHASING SUMMARY

## Site: 4.0 [4.0 Palm Ave / Aylesbury St - Import (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated  Cycle Time = 82 seconds (Site Practical Cycle Time)

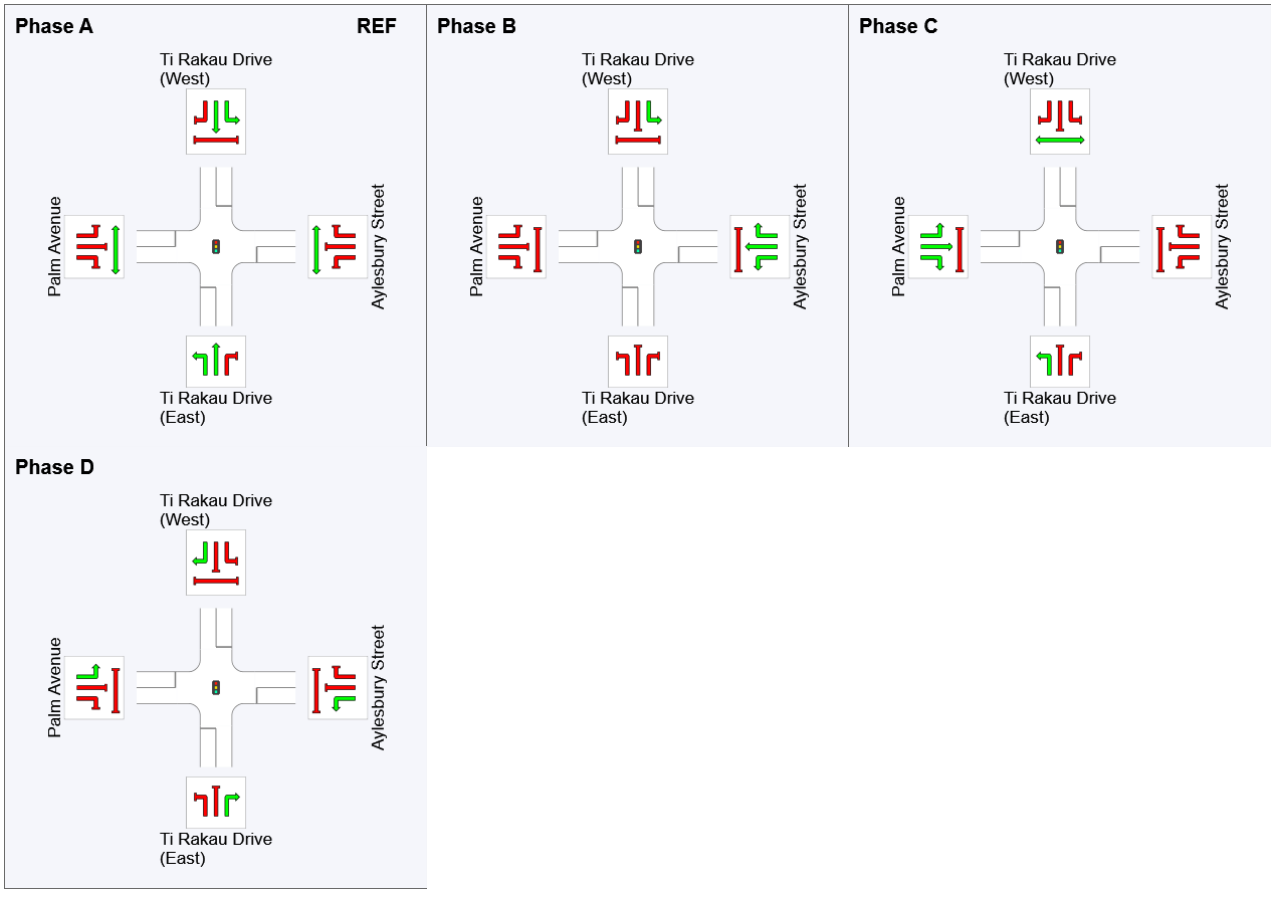
**Timings based on settings in the Site Phasing & Timing dialog**
**Phase Times determined by the program**
**Downstream lane blockage effects included in determining phase times**
**Green Split Priority has been specified**
**Phase Sequence: Variable Phasing**
**Reference Phase: Phase A**
**Input Phase Sequence: A, B, C, D**
**Output Phase Sequence: A, B, C, D**

### Phase Timing Summary

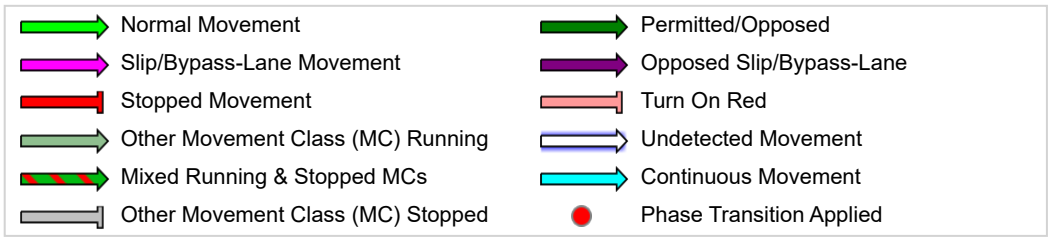
| Phase | A | B | C | D |
|---|---|---|---|---|
| Phase Change Time (sec) | 0 | 35 | 47 | 70 |
| Green Time (sec) | 29 | 6 | 17 | 6 |
| Phase Time (sec) | 35 | 12 | 23 | 12 |
| Phase Split | 43% | 15% | 28% | 15% |

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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Project: C:\Users\jacques.vandenheever\Eastern Busway Alliance\PAA - 05 DESIGN MGMNT\12 Transport\3-3. Integrated Transport Assessment\ITA 2 - EB2,3R\Version 9 (Addendum)\AIMSUN and SIDRA\CS 1.4\CS 1.4 AM - V1.sip9

# PHASING SUMMARY

## Site: 5.0 [5.0 Pakuranga HWY/ Reeves Rd (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 89 seconds (Site Practical Cycle Time)

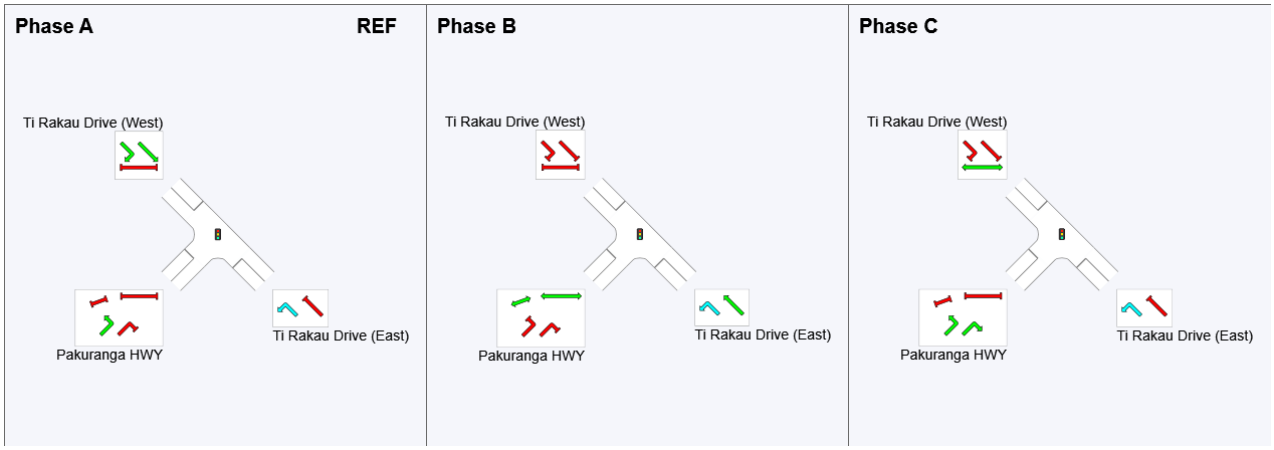
**Timings based on settings in the Site Phasing & Timing dialog**
**Phase Times determined by the program**
**Downstream lane blockage effects included in determining phase times**
**Phase Sequence: Map Extract Default**
**Reference Phase: Phase A**
**Input Phase Sequence: A, B, C**
**Output Phase Sequence: A, B, C**

### Phase Timing Summary

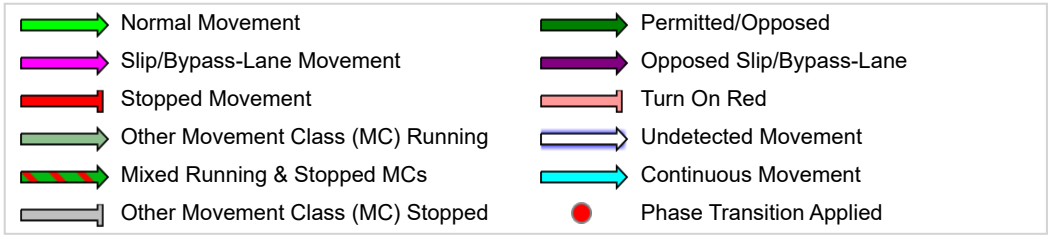
| Phase | A | B | C |
|---|---|---|---|
| Phase Change Time (sec) | 0 | 33 | 58 |
| Green Time (sec) | 27 | 19 | 25 |
| Phase Time (sec) | 33 | 25 | 31 |
| Phase Split | 37% | 28% | 35% |

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



# PHASING SUMMARY

## Site: 7.0 [7.0 Mattson Rd/ Ti Rakau Dr (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 81 seconds (Site Practical Cycle Time)

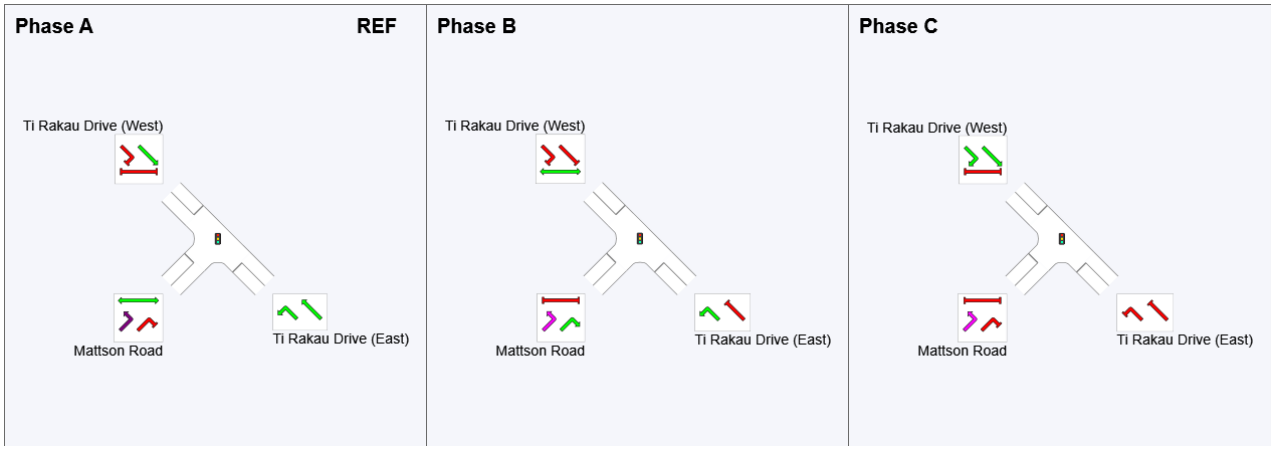
**Timings based on settings in the Site Phasing & Timing dialog**
**Phase Times determined by the program**
**Downstream lane blockage effects included in determining phase times**
**Phase Sequence: Map Extract Default**
**Reference Phase: Phase A**
**Input Phase Sequence: A, B, C**
**Output Phase Sequence: A, B, C**

### Phase Timing Summary

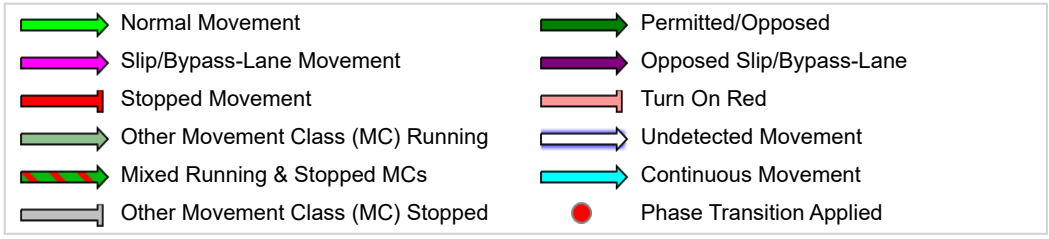
| Phase | A | B | C |
|---|---|---|---|
| Phase Change Time (sec) | 0 | 51 | 69 |
| Green Time (sec) | 45 | 12 | 6 |
| Phase Time (sec) | 51 | 18 | 12 |
| Phase Split | 63% | 22% | 15% |

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



# PHASING SUMMARY

## Site: 10.0 [10.0 Edgewater Dr (West) / Chevis Pl (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 91 seconds (Site Practical Cycle Time)

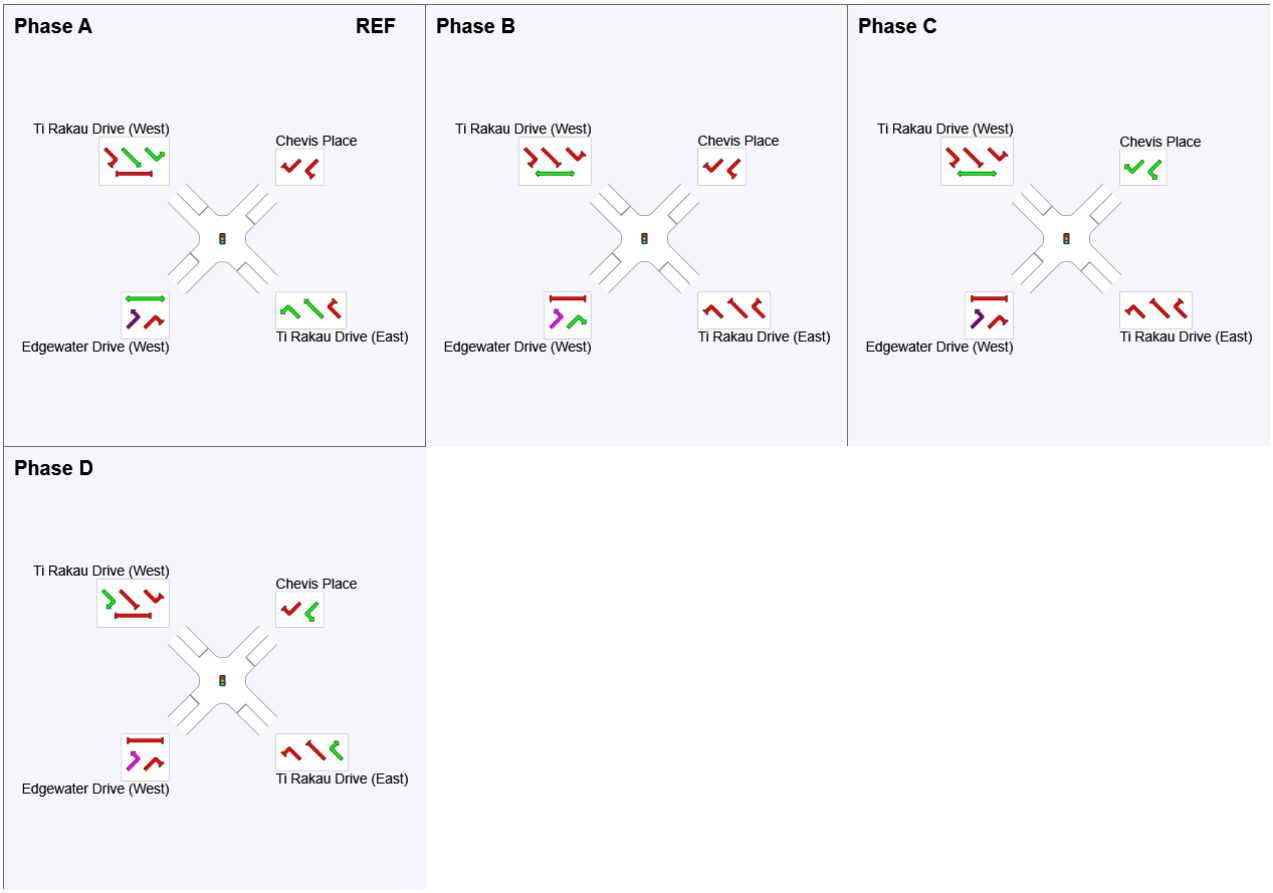
**Timings based on settings in the Site Phasing & Timing dialog**
**Phase Times determined by the program**
**Downstream lane blockage effects included in determining phase times**
**Phase Sequence: Variable Phasing**
**Reference Phase: Phase A**
**Input Phase Sequence: A, B, C, D**
**Output Phase Sequence: A, B, C, D**

### Phase Timing Summary

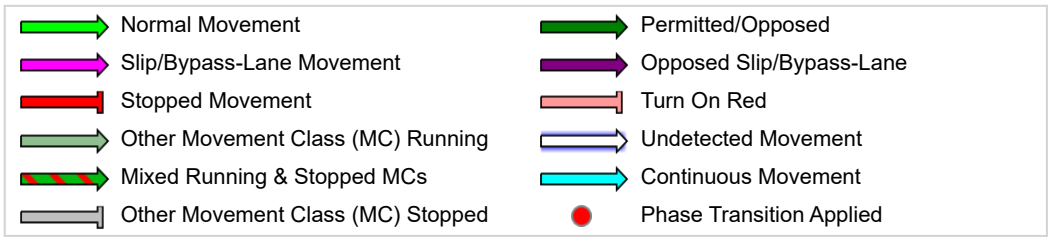
| Phase | A | B | C | D |
|---|---|---|---|---|
| Phase Change Time (sec) | 0 | 55 | 67 | 79 |
| Green Time (sec) | 49 | 6 | 6 | 6 |
| Phase Time (sec) | 55 | 12 | 12 | 12 |
| Phase Split | 60% | 13% | 13% | 13% |

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





Organisation: AECOM AUSTRALIA PTY LTD | Licence: NETWORK / Enterprise | Processed: Tuesday, 7 February 2023 10:06:48 am
Project: C:\Users\jacques.vandenheever\Eastern Busway Alliance\PAA - 05 DESIGN MGMNT\12 Transport\3-3. Integrated Transport Assessment\ITA 2 - EB2,3R\Version 9 (Addendum)\AIMSUN and SIDRA\CS 1.4\CS 1.4 AM - V1.sip9

# PHASING SUMMARY

## Site: 13.0 [13.0 Gossamer Dr / Ti Rakau Dr (Site Folder: General)]

## Network: N101 [AM (Network Folder: General)]

Scheme Design
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 132 seconds (Site User-Given Phase Times)

**Timings based on settings in the Site Phasing & Timing dialog**
**Phase Times specified by the user**
**Phase Sequence: Variable Phasing**
**Reference Phase: Phase A**
**Input Phase Sequence: A, B, C, D, E**
**Output Phase Sequence: A, B, C, D, E**

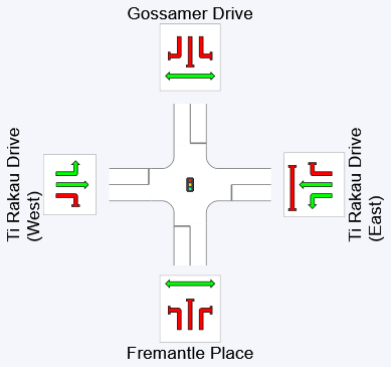
## Phase Timing Summary

| Phase | A | B | C | D | E |
|---|---|---|---|---|---|
| Phase Change Time (sec) | 0 | 47 | 61 | 97 | 109 |
| Green Time (sec) | 41 | 8 | 30 | 6 | 17 |
| Phase Time (sec) | 47 | 14 | 36 | 12 | 23 |
| Phase Split | 36% | 11% | 27% | 9% | 17% |

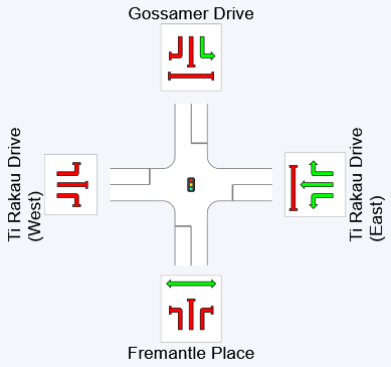
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified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

## Output Phase Sequence

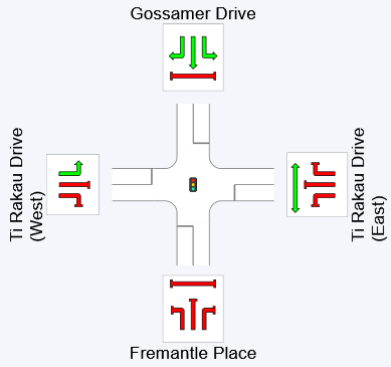
**Phase A** **REF**



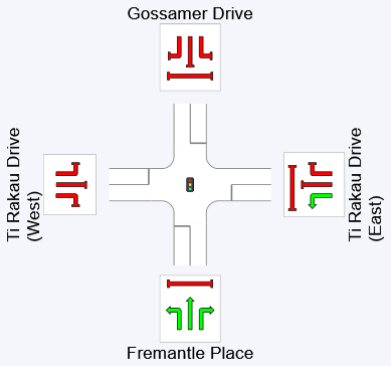

**Phase B**



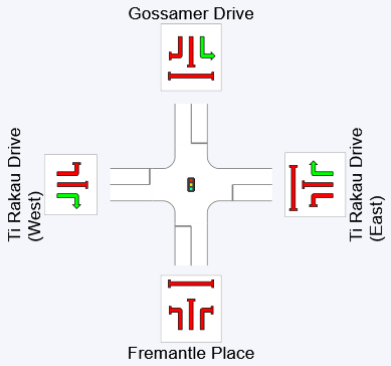

**Phase C**



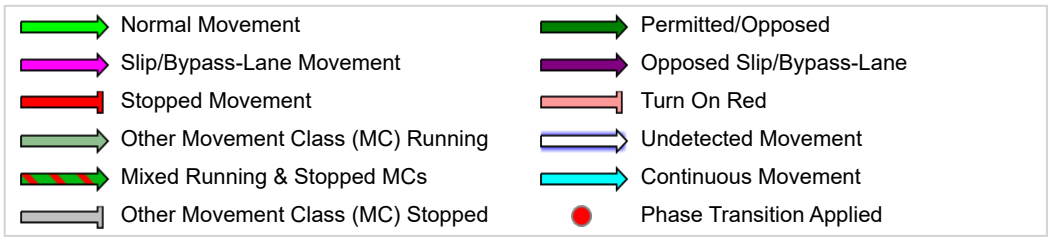

**Phase D**




**Phase E**




REF: Reference Phase
VAR: Variable Phase





Organisation: AECOM AUSTRALIA PTY LTD | Licence: NETWORK / Enterprise | Processed: Tuesday, 7 February 2023 10:06:48 am
Project: C:\Users\jacques.vandenheever\Eastern Busway Alliance\PAA - 05 DESIGN MGMNT\12 Transport\3-3. Integrated Transport Assessment\ITA 2 - EB2,3R\Version 9 (Addendum)\AIMSUN and SIDRA\CS 1.4\CS 1.4 AM - V1.sip9

# TIME - DISTANCE DIAGRAM

## Time – Distance Diagram for the Selected Route

## Movement Class: Light Vehicles

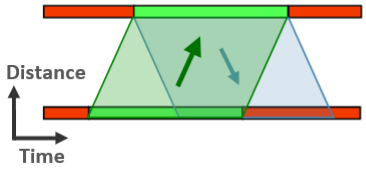
### Route: R101 [Route1]

### Network: N101 [PM (Network Folder: General)]

New Route
Network Category: (None)
Network Cycle Time = 150 seconds (Network User-Given Cycle Time)

Signal Offsets option used: User

Interactive Offsets


Main Route Direction: Up (Vertical)
Main Route
Reverse Route

# PHASING SUMMARY

## Site: 1.0 [1.0 Pakuranga Rd / Ti Rakau Rd (Site Folder: General)]

## Network: N101 [PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated  Cycle Time = 80 seconds (Site Practical Cycle Time)

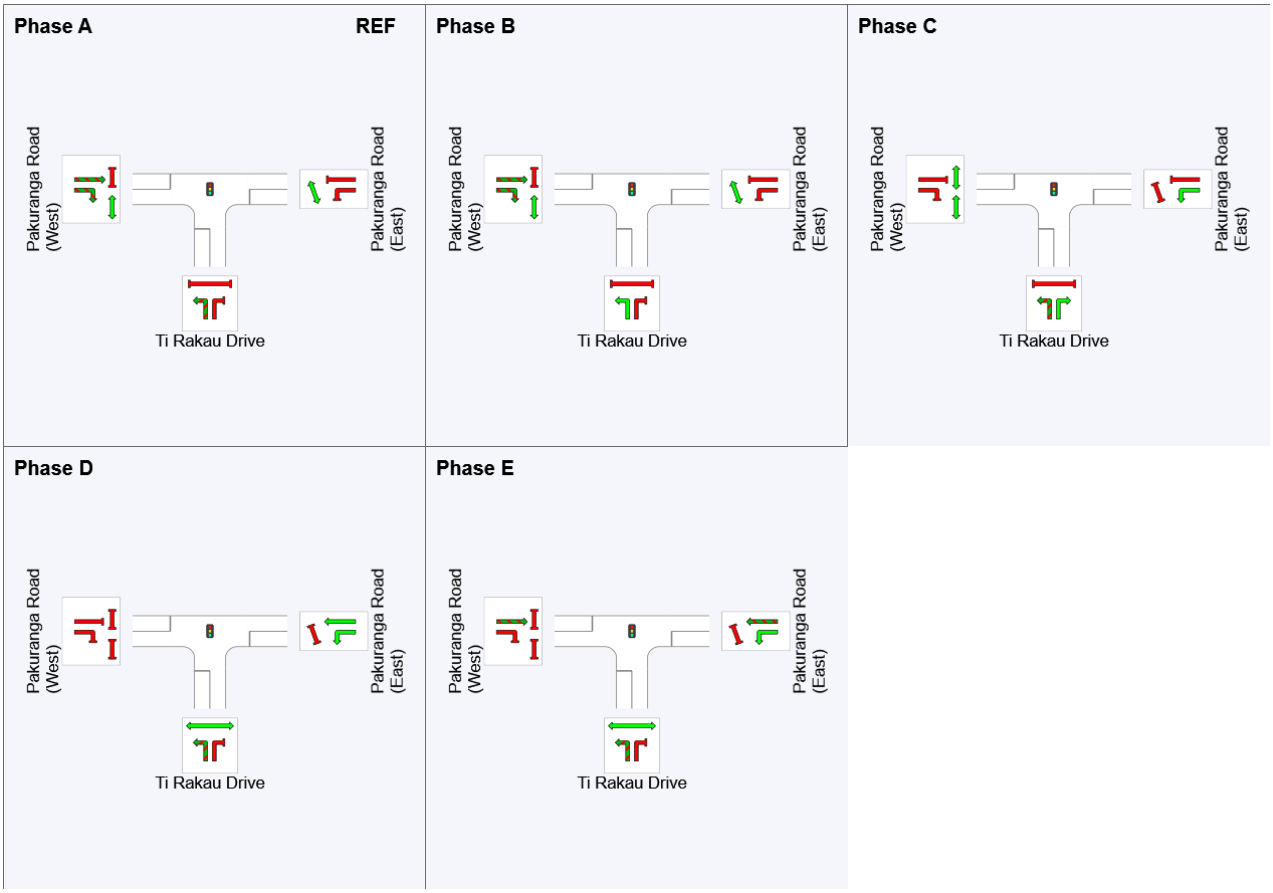
**Timings based on settings in the Site Phasing & Timing dialog**
**Phase Times determined by the program**
**Downstream lane blockage effects included in determining phase times**
**Phase Sequence: Map Extract Default**
**Reference Phase: Phase A**
**Input Phase Sequence: A, B, C, D, E**
**Output Phase Sequence: A, B, C, D, E**

### Phase Timing Summary

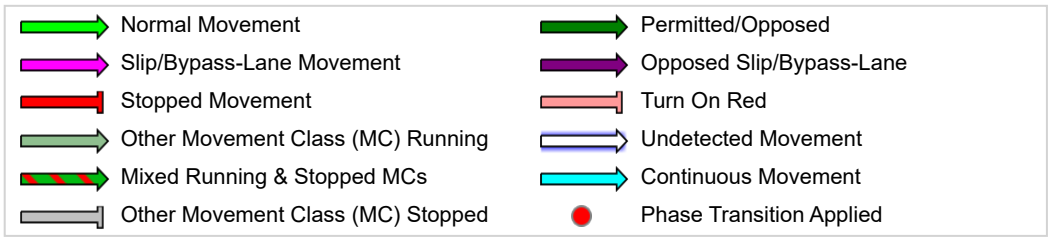
| Phase | A | B | C | D | E |
|---|---|---|---|---|---|
| Phase Change Time (sec) | 0 | 18 | 30 | 55 | 67 |
| Green Time (sec) | 12 | 6 | 19 | 6 | 7 |
| Phase Time (sec) | 18 | 12 | 25 | 12 | 13 |
| Phase Split | 23% | 15% | 31% | 15% | 16% |

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



# PHASING SUMMARY

## Site: 1.4v [1.4 William Roberts/ Pakuranga Rd - PD - Conversion (Site Folder: General)]

## Network: N101 [PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated  Cycle Time = 150 seconds (Network User-Given Cycle Time)

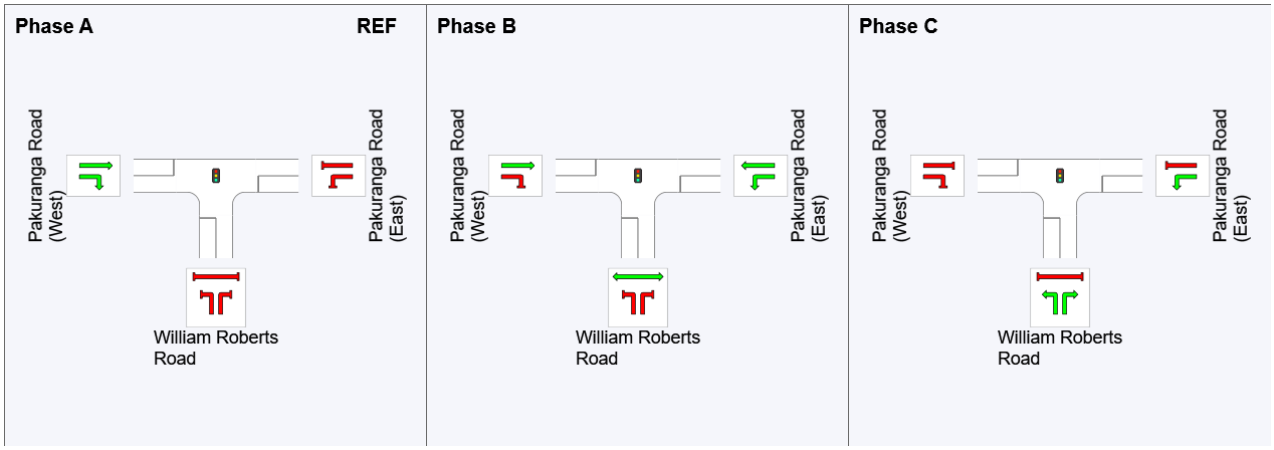
**Timings based on settings in the Network Timing dialog**
**Phase Times determined by the program**
**Downstream lane blockage effects included in determining phase times**
**Phase Sequence: Convert Function Default**
**Reference Phase: Phase A**
**Input Phase Sequence: A, B, C**
**Output Phase Sequence: A, B, C**

### Phase Timing Summary

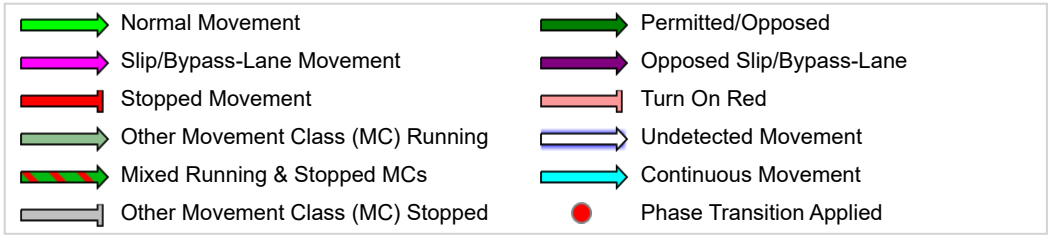
| Phase | A | B | C |
|---|---|---|---|
| Phase Change Time (sec) | 0 | 17 | 114 |
| Green Time (sec) | 11 | 91 | 30 |
| Phase Time (sec) | 17 | 97 | 36 |
| Phase Split | 11% | 65% | 24% |

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



# PHASING SUMMARY

## Site: 1.5 [1.5 Saint Kentigern/ Pakuranga Rd - PD (Site Folder: General)] Network: N101 [PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated  Cycle Time = 150 seconds (Network User-Given Cycle Time)

**Timings based on settings in the Network Timing dialog**
**Phase Times determined by the program**
**Downstream lane blockage effects included in determining phase times**
**Phase Sequence: Leading Right Turn**
**Reference Phase: Phase A**
**Input Phase Sequence: A, B, C, D**
**Output Phase Sequence: A, B, C, D**

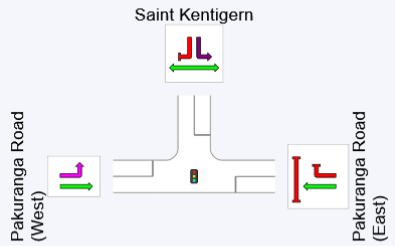
### Phase Timing Summary

| Phase | A | B | C | D |
|---|---|---|---|---|
| Phase Change Time (sec) | 13 | 111 | 123 | 1 |
| Green Time (sec) | 92 | 6 | 22 | 6 |
| Phase Time (sec) | 98 | 12 | 28 | 12 |
| Phase Split | 65% | 8% | 19% | 8% |

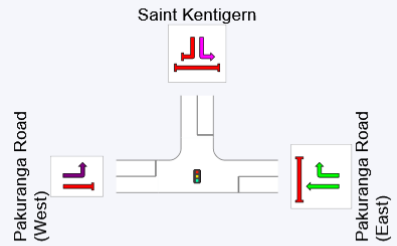
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified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

### Output Phase Sequence

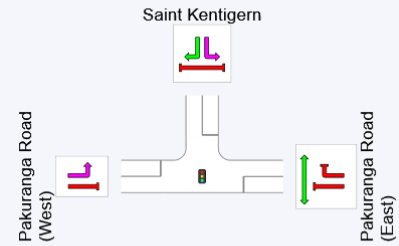
**Phase A** **REF**



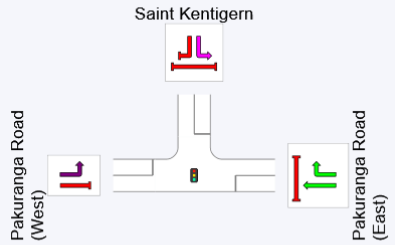

**Phase B**



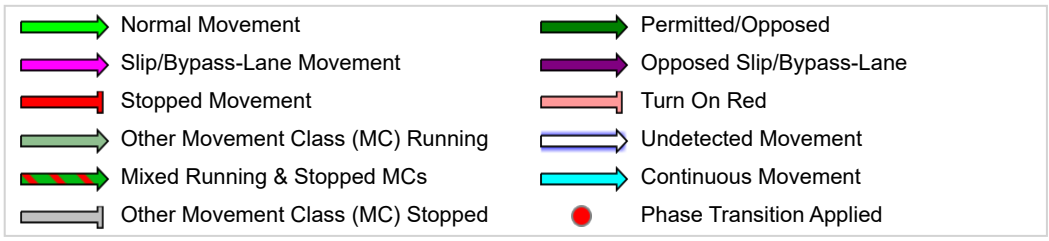

**Phase C**




**Phase D**




REF: Reference Phase
VAR: Variable Phase



# PHASING SUMMARY

## Site: 4.0 [4.0 Palm Ave / Aylesbury St - Import (Site Folder: General)]

## Network: N101 [PM (Network Folder: General)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated  Cycle Time = 150 seconds (Site User-Given Phase Times)

**Timings based on settings in the Site Phasing & Timing dialog**
**Phase Times specified by the user**
**Phase Sequence: Variable Phasing**
**Reference Phase: Phase A**
**Input Phase Sequence: A, B, C, D**
**Output Phase Sequence: A, B, C, D**

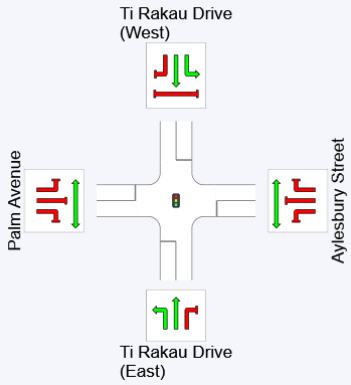
### Phase Timing Summary

| Phase | A | B | C | D |
|---|---|---|---|---|
| Phase Change Time (sec) | 0 | 111 | 123 | 141 |
| Green Time (sec) | 105 | 6 | 12 | 6 |
| Phase Time (sec) | 111 | 12 | 15 | 12 |
| Phase Split | 74% | 8% | 10% | 8% |

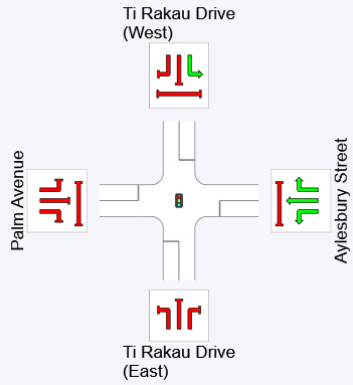
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified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

### Output Phase Sequence

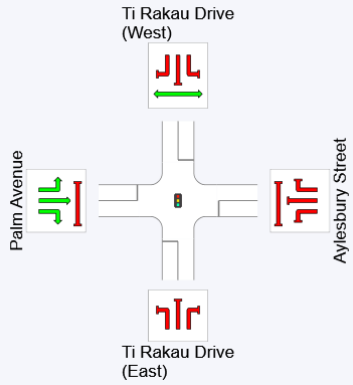
**Phase A** **REF**



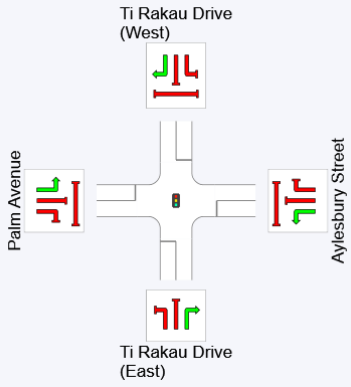

**Phase B**



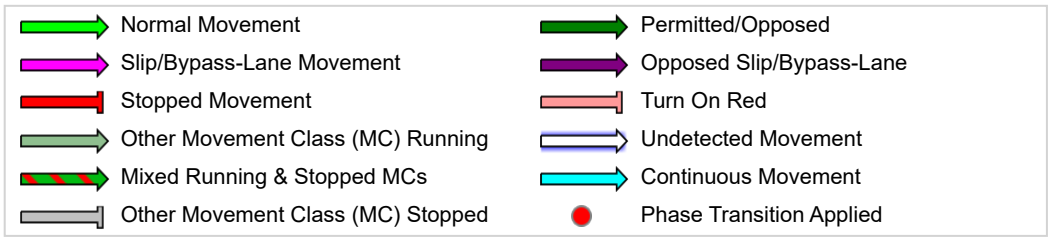

**Phase C**




**Phase D**




REF: Reference Phase
VAR: Variable Phase



# PHASING SUMMARY

## Site: 5.0 [5.0 Pakuranga HWY/ Reeves Rd (Site Folder: General)]

## Network: N101 [PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 150 seconds (Site User-Given Phase Times)

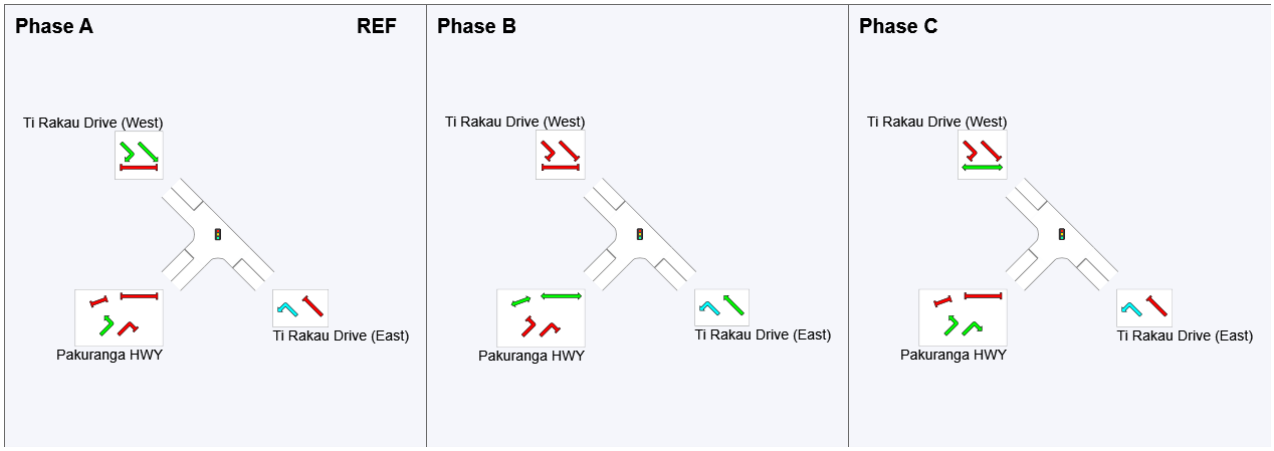
**Timings based on settings in the Site Phasing & Timing dialog**
**Phase Times specified by the user**
**Phase Sequence: Map Extract Default**
**Reference Phase: Phase A**
**Input Phase Sequence: A, B, C**
**Output Phase Sequence: A, B, C**

### Phase Timing Summary

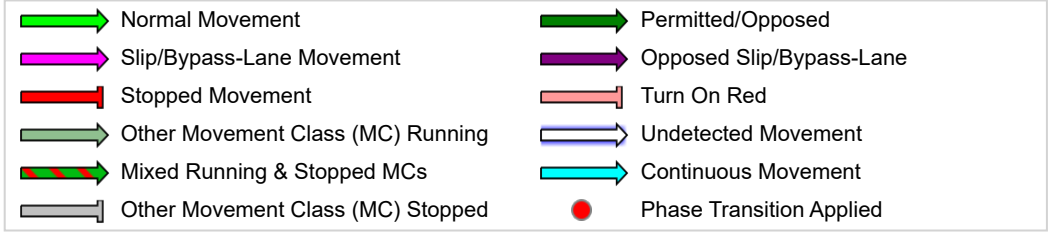
| Phase | A | B | C |
|---|---|---|---|
| Phase Change Time (sec) | 0 | 50 | 100 |
| Green Time (sec) | 44 | 44 | 44 |
| Phase Time (sec) | 50 | 50 | 50 |
| Phase Split | 33% | 33% | 33% |

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



# PHASING SUMMARY

## Site: 7.0 [7.0 Mattson Rd/ Ti Rakau Dr (Site Folder: General)]

## Network: N101 [PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 68 seconds (Site Practical Cycle Time)

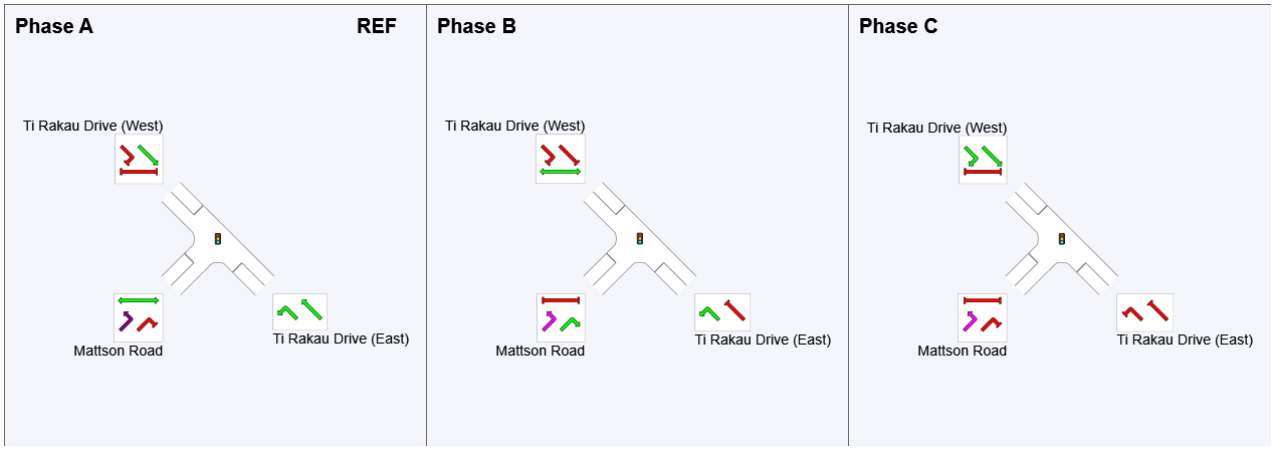
**Timings based on settings in the Site Phasing & Timing dialog**
**Phase Times determined by the program**
**Downstream lane blockage effects included in determining phase times**
**Phase Sequence: Map Extract Default**
**Reference Phase: Phase A**
**Input Phase Sequence: A, B, C**
**Output Phase Sequence: A, B, C**

### Phase Timing Summary

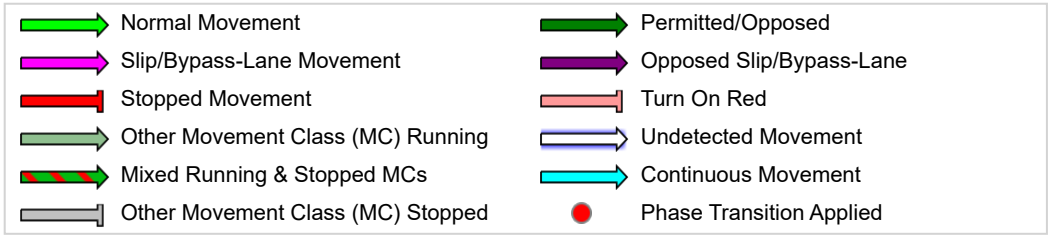
| Phase | A | B | C |
|---|---|---|---|
| Phase Change Time (sec) | 0 | 40 | 56 |
| Green Time (sec) | 34 | 10 | 6 |
| Phase Time (sec) | 40 | 16 | 12 |
| Phase Split | 59% | 24% | 18% |

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



# PHASING SUMMARY

## Site: 10.0 [10.0 Edgewater Dr (West) / Chevis Pl (Site Folder: General)]

## Network: N101 [PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 105 seconds (Site Practical Cycle Time)

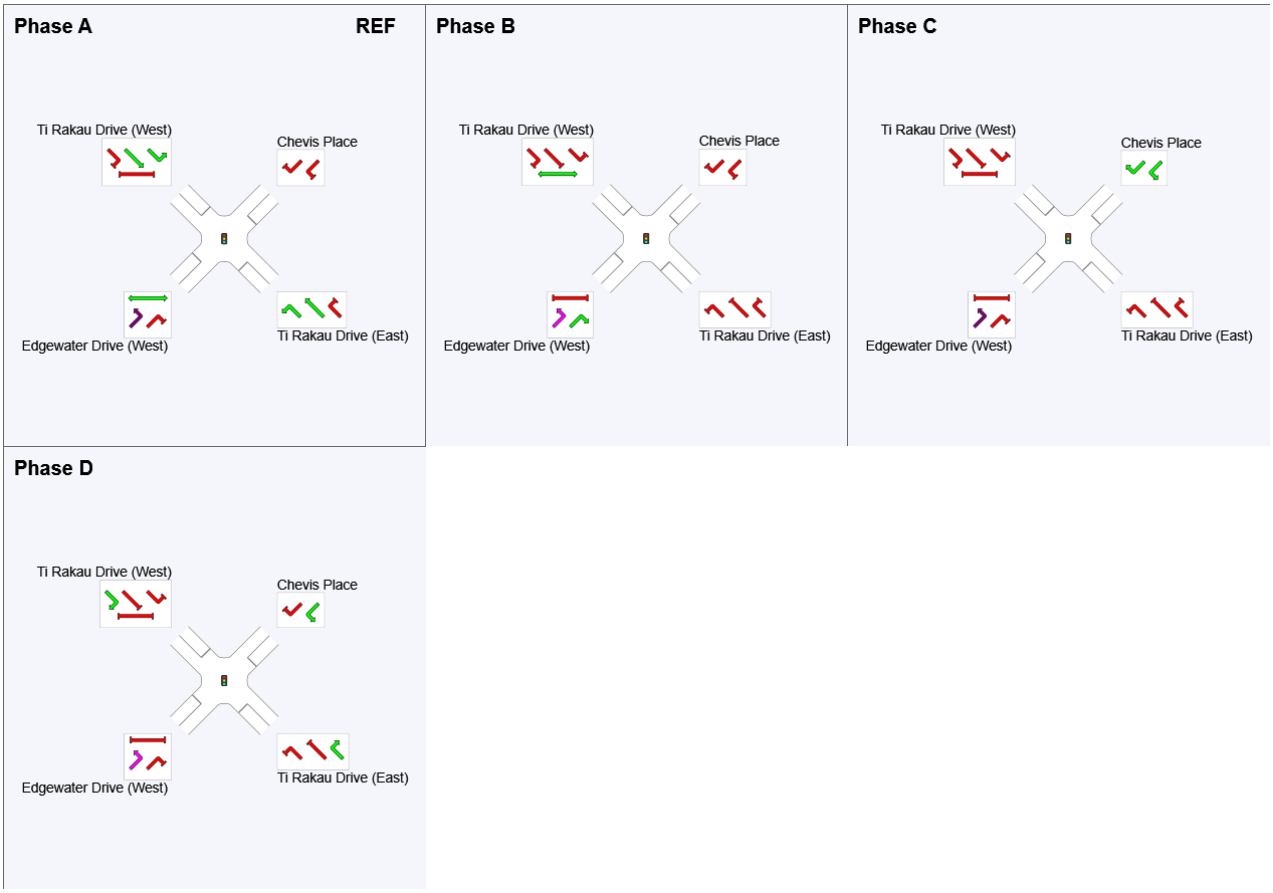
**Timings based on settings in the Site Phasing & Timing dialog**
**Phase Times determined by the program**
**Downstream lane blockage effects included in determining phase times**
**Phase Sequence: Variable Phasing**
**Reference Phase: Phase A**
**Input Phase Sequence: A, B, C, D**
**Output Phase Sequence: A, B, C, D**

### Phase Timing Summary

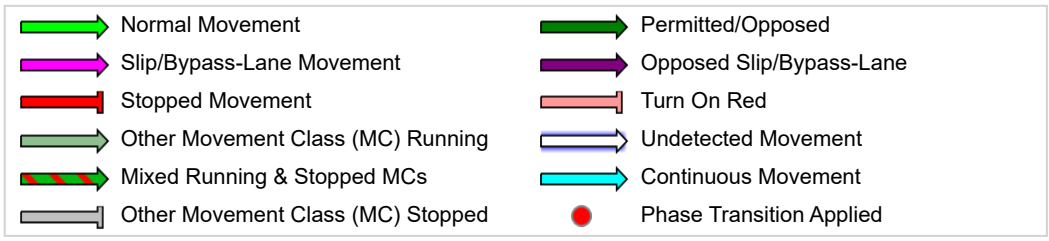
| Phase | A | B | C | D |
|---|---|---|---|---|
| Phase Change Time (sec) | 0 | 61 | 81 | 93 |
| Green Time (sec) | 55 | 14 | 6 | 6 |
| Phase Time (sec) | 61 | 20 | 12 | 12 |
| Phase Split | 58% | 19% | 11% | 11% |

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



# PHASING SUMMARY

## Site: 13.0 [13.0 Gossamer Dr / Ti Rakau Dr (Site Folder: General)]

## Network: N101 [PM (Network Folder: General)]

Scheme Design
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 150 seconds (Site User-Given Phase Times)

**Timings based on settings in the Site Phasing & Timing dialog**
**Phase Times specified by the user**
**Phase Sequence: Variable Phasing**
**Reference Phase: Phase A**
**Input Phase Sequence: A, B, C, D, E**
**Output Phase Sequence: A, B, C, D, E**

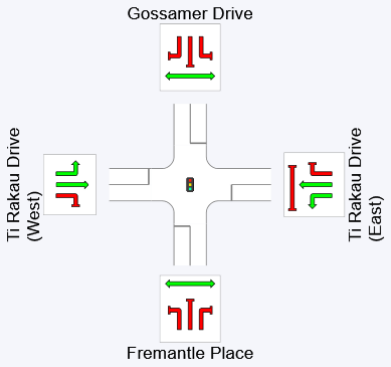
## Phase Timing Summary

| Phase | A | B | C | D | E |
|---|---|---|---|---|---|
| Phase Change Time (sec) | 0 | 55 | 79 | 105 | 118 |
| Green Time (sec) | 49 | 18 | 20 | 8 | 26 |
| Phase Time (sec) | 55 | 24 | 25 | 14 | 32 |
| Phase Split | 37% | 16% | 17% | 9% | 21% |

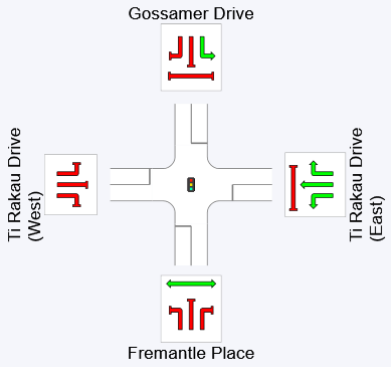
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified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

## Output Phase Sequence

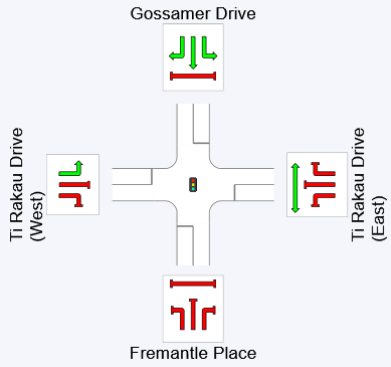
**Phase A** **REF**



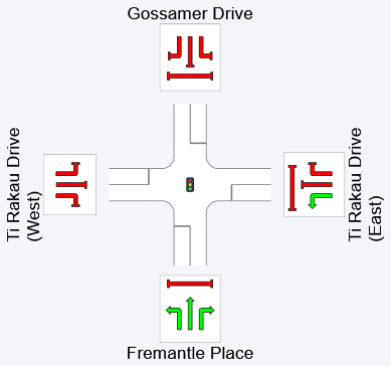

**Phase B**



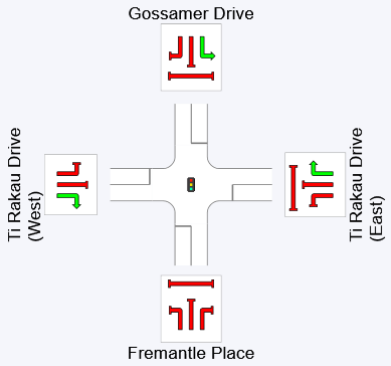

**Phase C**




**Phase D**




**Phase E**




REF: Reference Phase
VAR: Variable Phase