

Traffic Engineering Report

To	Norbert Kaess c/- Urban Space Consulting	Date	30 June 2025
Prepared by	Afaf El Harda, Modus Traffic Engineer	Approved by	Harj Singh, Modus Executive Director (RPEQ 22364)
Location	500 Ross River Road, Cranbrook		
Subject	Proposed Multiple Dwelling Development - Traffic Engineering Report		
Status	Final	Attachments	Appendix A: Development Plans Appendix B: Swept Path Assessment Appendix C: Car Parking Concept Plan Appendix D: Traffic Count Surveys Appendix E: Network Flow Diagram Appendix F: SIDRA Results and Layouts

1 Introduction

1.1 Overview

Modus has been commissioned by Norbert Kaess, care of Urban Space Consulting, to provide traffic and transport advice in relation to the proposed Multiple Dwelling development located at 500 Ross River Road, Cranbrook.

This Traffic Engineering Report has been produced by Modus to assess the traffic and transport engineering items in support of the proposed development. A copy of the development plans is provided at **Appendix A**.

1.2 References

The following documents and guidelines have been referenced in the assessment herein:

- ▶ City of Townsville City Plan (2024),
- ▶ AS2890.1 Australian Standards Parking Facilities Part 1: Off-Street Car Parking, 2004,
- ▶ TfNSW Guide to Transport Impact Assessment (2024) document,
- ▶ GTIA Guide to Traffic Impact Assessment (2018) document.

1.3 Limitations

Modus has completed this traffic report in accordance with the usual care and thoroughness of the consulting profession. The assessment is based on accepted traffic engineering practises and standards applicable at the time of undertaking the assessment. Modus disclaims responsibility for any changes to project planning or road conditions that may occur after completion of the assessment.

2 Existing Conditions

2.1 Site Location

The development site is located at 500 Ross River Road, Cranbrook and is bounded by Jannila Avenue to the south-east, Ross River Road to the north-west, in addition to Residential uses to the north-east and west. The site is located within the Low Density Residential Zone and is surrounded by similar zones in all directions. The site location is shown on Figure 2-1.

Figure 2-1 Site Location



2.2 Existing Road Network

Table 2-1 outlines the characteristics of the existing road network in proximity to the development site.

Table 2-1 Key Road Characteristics

Road	Hierarchy	Speed Limit	Typical Form
Ross River Road	Main Road (TMR)	60km/h	Four lanes, divided
Jannila Avenue	Trafficable Road (Council)	50km/h	Two lanes, undivided
Gilli Crescent	Trafficable Road (Council)	50km/h	Two lanes, undivided

2.3 Active and Public Transport Facilities

A dedicated pedestrian pathway is currently provided along the eastern and western verge of Ross River Road and no dedicated pedestrian pathway is provided along Jannila Avenue and Gilli Crescent.

Furthermore, the development site is within a 400m radius (comfortable 5-minute walk) of four (4) TransLink bus stops. These four (4) TransLink bus stops service a variety of bus routes to connect to the wider surrounding suburbs.

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3 Proposed Development

3.1 Overview

The proposed development will comprise a Multiple Dwelling use, accommodating the following yields:

- ▶ 16 x 2-bedroom dwellings,
- ▶ 16 x 3-bedroom dwellings,
- ▶ 32 dwellings total.

Figure 3-1 illustrates the site plan for the proposed development. A copy of the development plans can be found at **Appendix A**.

Figure 3-1 Proposed Development Site Plan



3.2 Development Access

The proposed development will achieve vehicular access on the following basis:

- ▶ One (1) entry only crossover onto Jannila Avenue of width 5.0m,
- ▶ One (1) exit only crossover onto Jannila Avenue of width 4.5m.

4 Traffic and Transport Advice

4.1 Access Design

4.1.1 Driveway Design

In accordance with Australian Standards AS2890.1, the minimum driveway requirements for the proposed development are outlined in Table 4-1.

Table 4-1 Driveway Design Compliance

AS2890.1 Driveway Design Compliance	Conditions
Site Conditions	Local Frontage Road User Class 2 25-100 Spaces
Access Facility Category	Class 1
Required Driveway Widths	Min 3.0m to 5.5m if combined, or: Min 3.0m entry and Min 3.0m exit width if separate
Proposed Driveway Widths	4.5m entry and 3.0m exit width

Therefore, the proposed driveway widths comply with Australian Standards AS2890.1.

4.1.2 Crossover Design

The proposed development accommodates a 4.5m wide General Wide Flared crossover and a 4.5m wide General Wide crossover in line with the IPWEA Standard Drawings. Modus has undertaken a swept path assessment (provided at **Appendix B**) confirming the proposed crossover designs are acceptable in accommodating inbound and outbound vehicle movements.

4.1.3 Driveway Location

In accordance with Australian Standards AS2890.1, development accesses with a Class 1 or 2 Access Facility Category are to achieve a 6.0m separation to any formal intersections. Provided that the proposed access location is not located within a 6.0m distance to any formal intersections, the proposed access location is considered acceptable.

4.1.4 Pedestrian Sight Splays

In accordance with Australian Standards AS2890.1, pedestrian sight splays should be provided at the egress point of a driveway and measure 2.5m in length and 2.0m in width from the property boundary.

The proposed exit crossover ensures sufficient visibility between outbound vehicles and pedestrians along the frontage of the site and therefore complies with the requirements of Australian Standards AS2890.1.

4.2 Parking Provision

4.2.1 Car Parking Layout

Modus has developed a Car Parking Concept Plan, provided at **Appendix C**, outlining the recommended car parking arrangements on site.

This Car Parking Concept Plan demonstrates the capability to accommodate a minimum of 42 Resident car parking spaces and seven (7) Visitor car parking spaces, resulting in a total of 49 car parking spaces.

4.2.2 Council Car Parking Requirements

The minimum car parking requirements in accordance with the Townsville City Council Planning Scheme are outlined in Table 4-2.

Table 4-2 Proposed Development Car Parking Compliance

Land Use	Yield	Car Parking Rate	Car Parking Required	Car Parking Provided	Compliant
Multiple Dwelling	16 x 2-bedroom dwellings 16 x 3-bedroom dwellings 32 dwellings total	1.7 Resident Spaces per dwelling 0.2 Visitor Spaces per dwelling	55 Resident Spaces 7 Visitor Spaces	42 Resident spaces 7 Visitor Spaces	X

Therefore, the proposed development results in a car parking shortfall of 13 Resident car parking spaces in accordance with the Townsville City Council Planning Scheme.

4.2.3 Alternative Car Parking Requirements

Modus has undertaken a review of the recommended car parking requirements within the TfNSW Guide to Transport Impact Assessment (2024) document to assess the car parking requirements of an alternative document.

The minimum car parking requirements for the proposed development in accordance with the TfNSW Guide to Transport Impact Assessment (2024) document are outlined in Table 4-3 on the subsequent page.

Table 4-3 Proposed Development Car Parking Compliance - TfNSW Guide to Transport Impact Assessment (2024)

Land Use	Yield	Car Parking Rate	Car Parking Required	Car Parking Provided	Compliant
Multiple Dwelling	16 x 2-bedroom dwellings 16 x 3-bedroom dwellings 32 dwellings total	1.0 Resident Spaces per 2 bedroom dwelling, 1.6 Resident Spaces per 3 bedroom dwelling, 1 Visitor Space per 5 dwellings.	42 Resident Spaces 7 Visitor Spaces	42 Resident spaces 7 Visitor Spaces	✓

Therefore, the proposed development meets the minimum car parking requirements outlined within the TfNSW Guide to Transport Impact Assessment (2024) document.

4.2.4 Car Parking Management Plan

Furthermore, Modus recommends that a car parking management plan be accommodated on-site to manage the car parking allocations assigned to individual dwellings.

This car parking management plan is to be detailed in full during future design stages, though Modus recommends that the car parking management plan accommodate the following:

- ▶ A minimum of one (1) Resident car parking space per dwelling,
- ▶ Higher priority for more than one (1) Resident car parking space for the 3-bedroom dwellings.

This car parking management plan is to be managed by Body Corporate and / or an on-site manager such that all Residents are made aware of the car parking arrangements prior to signing a Residential lease.

4.3 Car Parking Layout

Modus has conducted a design review of the car park against the design guidelines within Australian Standards AS2890.1. The compliance has been summarised in Table 4-4.

Table 4-4 Car Parking Layout Compliance

Design Criteria	AS2890.1 Requirement	Proposed Design	Compliant
Parking Bays			
Bay Length – General Spaces	5.4m	5.4m	✓
Bay Width – General Spaces	2.4m	Min 2.4m	✓
Bay Width – Visitor Spaces	2.5m	Min 2.5m	✓
Parking Aisles			
Parking Aisle Width	5.8m	Min 4.5m	See below
Terminating Aisle Extension	1.0m	>.01m	✓
Parking Clearance (any obstruction exceeding 0.15m)	0.3m	> 0.3m	✓

Therefore, the proposed car parking layout is largely compliant with the Australian Standards AS2890.1, except for the parking aisle width.

While the proposed parking aisle width of 4.5m at certain locations is less than the minimum 5.8m requirement under Australian Standards AS2890.1, the design provides parking bays that exceed the minimum width requirement of 2.4m by up to 0.4m in the areas where a 4.5m wide aisle is accommodated. The additional bay width provides greater manoeuvring space within each parking space, which offsets the reduced aisle width and facilitates safe and practical vehicle movements.

Furthermore, Modus has conducted a swept path assessment for a B85 design vehicle which confirms that a B85 design vehicle is able to safely and efficiently park and manoeuvre. This swept path assessment is provided at **Appendix B**.

4.4 Servicing Requirements

4.4.1 Delivery Service Vehicles

The largest design service vehicle anticipated for on-site general servicing arrangements is a Heavy Rigid Vehicle (HRV).

Therefore, Modus has conducted a swept path assessment, which confirms the HRV design vehicle is able to safely and efficiently manoeuvre within the proposed development. This swept path assessment is provided at **Appendix B**.

5 External Traffic Assumptions

5.1 Study Intersections

The study intersections are outlined on Figure 5-1 and are detailed in Table 5-1.

Figure 5-1 Study Intersections



Table 5-1 Study Intersections

Intersection ID	Intersection	Formation
1	Louise Street / Victor Street	Priority Controlled
2	Jannila Avenue / Site Access	Priority Controlled
3	Alice Street / Jannila Avenue	Priority Controlled
4	Ross River Road / Alice Street	Signalised

5.2 Background Traffic Volumes

To understand the existing traffic conditions at the study intersections, traffic surveys were undertaken by Austraffic during the 3-hour AM and PM peak periods on Thursday 1st May 2025 for the following intersections:

- ▶ Ross River Road / Alice Street,
- ▶ Alice Street / Jannila Avenue,
- ▶ Louise Street / Victor Street.

The network surveyed peak periods (cumulative of all surveyed intersections) were determined to be the following:

- ▶ AM Peak: 7:45AM – 8:45AM,
- ▶ PM Peak: 3:00PM – 4:00PM.

A copy of the traffic survey data is provided at **Appendix D**.

5.3 Traffic Growth

Modus has adopted the TMR annual segment report for Ross River Road within proximity to the subject site to inform the historic growth rate.

Based on the TMR annual segment report for the Ross River Road sites (TMR Segment Sites 90083 and 90073), the average linear growth rate observed within the previous 10 year period for both sites was -1.75% per annum, indicating a negative trend in traffic growth.

Therefore, Modus has conservatively applied an average linear growth rate of 0.0% per annum to inform future background traffic volumes.

5.4 Development Traffic Generation Volumes

To determine the anticipated traffic generation of the proposed development, Modus has referenced traffic generation rates from the TfNSW Guide to Transport Impact Assessment (2024) document.

The traffic generation rates and volumes adopted for the assessment herein are outlined in Table 5-2.

Table 5-2 Development Traffic Generation Volumes

Land Use	Yield	Peak Hour Traffic Generation Rates		Peak Hour Traffic Generation Volumes	
		AM Peak	PM Peak	AM Peak	PM Peak
Medium Density Residential Dwellings	32 Units	0.41 trips per Dwelling	0.60 trips per Dwelling	13 vehicles per hour	19 vehicles per hour

5.5 Inbound / Outbound Distribution

The inbound / outbound distributions outlined in Table 5-3 have been adopted for the assessment herein.

Table 5-3 Inbound / Outbound Distributions

Land Use	AM Peak Period		PM Peak Period	
	IN	OUT	IN	OUT
Medium Density Residential Dwellings	20%	80%	80%	20%

5.6 External Directional Distribution

For the purposes of the assessment herein, Modus has applied external directional distributions based on the intersection count data obtained, which is considered to be an accurate representation of the typical traffic movements to and from the surrounding attractors.

Furthermore, Modus has not considered the Ross River Road / Louise Street intersection for the assessment herein as Google Direction Data indicates that inbound / outbound vehicles will have a shorter travel distance utilising the Ross River Road / Alice Street intersection.

The adopted external directional distributions are detailed within the Traffic Network Flow Diagrams provided at **Appendix E**.

6 Operational Assessment Conditions

6.1 Assessment Scenarios

To determine the impact of the development on the existing road network, each study intersection has been analysed for the AM and PM peak periods, assessing the development-related traffic outlined in the previous report section.

In accordance with the TMR *Guide to Traffic Impact Assessments* (GTIA), the impact assessment year for the site access should be the year of opening and 10 years after the year of opening, where all other intersections are to be assessed in the year of opening.

For the assessment herein, Modus has assumed that the proposed development will be operational in 2028. Furthermore, as detailed within Section 5.3, Modus has conservatively adopted an average linear growth rate of 0.0% per annum given the historically observed decrease in traffic along Ross River Road.

On this basis, Modus has not assessed the 10 year design horizon as the traffic volumes for this design horizon will be consistent with the year of opening traffic volumes.

Table 6-1 summarises the impact assessment scenarios.

Table 6-1 Assessment Scenarios

Impact Assessment Scenario	Study Intersections
2028 BG	1, 2, 3, 4
2028 BG + DEV	1, 2, 3, 4

6.2 Assessment Criteria

6.2.2 Intersection Degree of Saturation

The performance of each study intersection has been analysed using SIDRA Intersection 9.0 (SIDRA). SIDRA is the primary industry modelling software that estimates the capacity and performance of intersections. SIDRA analyses an intersection's Degree of Saturation (DOS), queues and delays. DOS is a measure of the proportion of traffic entering an intersection relative to the intersection's capacity.

Provided that the study intersections are signalized and priority-controlled intersections, **the DOS threshold as defined by TMR is 0.90 and 0.80 respectively**. If DOS exceeds the abovementioned threshold, it indicates the intersection is nearing its practical capacity and upgrade works may be required. Above these threshold values, users of the intersection are likely to experience increased delays and queueing.

6.2.3 Intersection Delay

The TMR *Guide to Traffic Impact Assessments* (GTIA) recognises the intersection delay as a greater indicator of intersection performance in comparison to the previous TMR *Guidelines for Assessment of Road Impacts of Development* (GARID) significance on the degree of saturation (DOS). For priority-controlled intersections (including roundabouts), where the average peak hour delays for any movement exceeds 42 seconds, as outlined in the GTIA, the intersection should be upgraded for safety reasons.

6.2.4 Intersection Queue Lengths

The 95th percentile queue relates to the queue length which 95% of all observed queue lengths during the assessment hour fall under. This provides an indication of the maximum queue length which should be designed for such that upstream lanes are not adversely impacted.

7 Operational Assessment Results

7.1 Intersection ID 1: Louise Street / Victor Street

The Louise Street / Victor Street intersection is a three-way priority-controlled intersection, where Louise Street is the major road. Figure 7-1 illustrates the SIDRA layout for this study intersection.

Figure 7-1 Louise Street / Victor Street Intersection SIDRA Layout

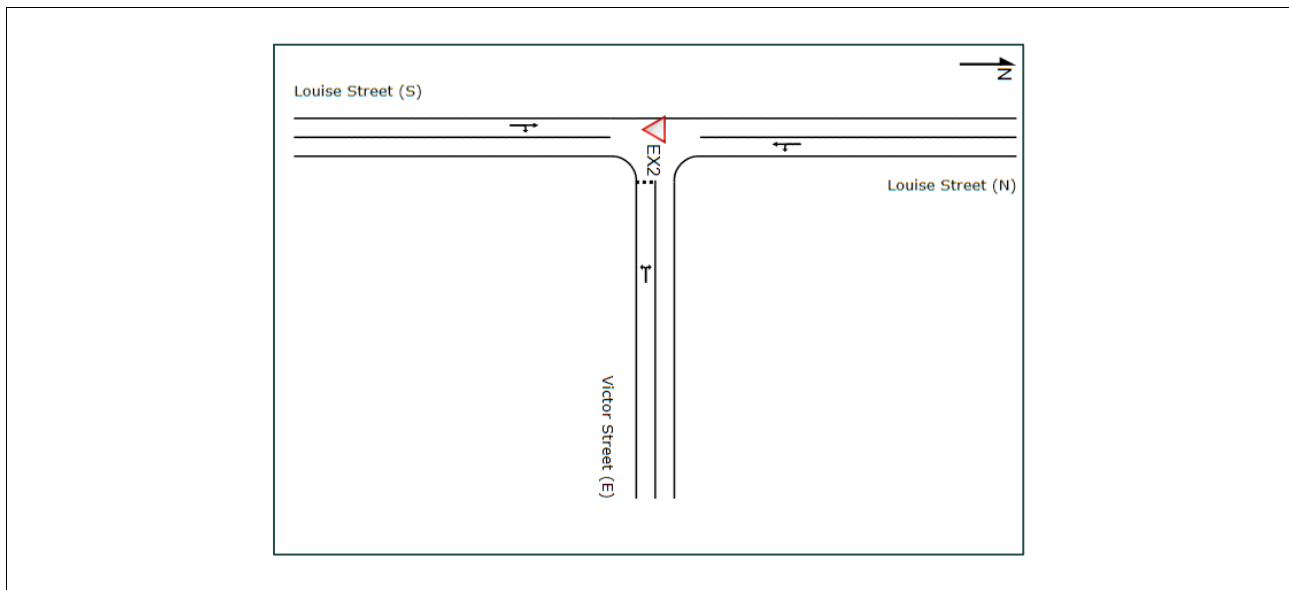


Table 7-1 outlines the SIDRA Assessment results for the Louise Street / Victor Street Intersection for the assessment scenarios. Full SIDRA Results and layouts are provided in **Appendix F**.

Table 7-1 Louise Street / Victor Street Intersection SIDRA Results

Scenario	DOS	Critical Delay	95th %ile Queue	Critical Movement
AM Peak Period				
2028 BG	0.077	5.9 sec	1.9m	Victor Street (E)
2028 BG + DEV	0.077	5.9 sec	1.9m	Victor Street (E)
PM Peak Period				
2028 BG	0.089	5.8 sec	2.2m	Victor Street (E)
2028 BG + DEV	0.089	5.8 sec	2.2m	Victor Street (E)

Therefore, Table 7-1 indicates that the Louise Street / Victor Street intersection operates within acceptable operational capacity thresholds for the year of opening background and proposed development scenarios.

7.2 Intersection ID 2: Jannila Avenue / Site Access

The Jannila Avenue / Site Access intersection is a three-way priority-controlled intersection, where Jannila Avenue is the major road. Figure 7-2 illustrates the SIDRA layout for this study intersection.

Figure 7-2 Jannila Avenue / Site Access Intersection SIDRA Layout

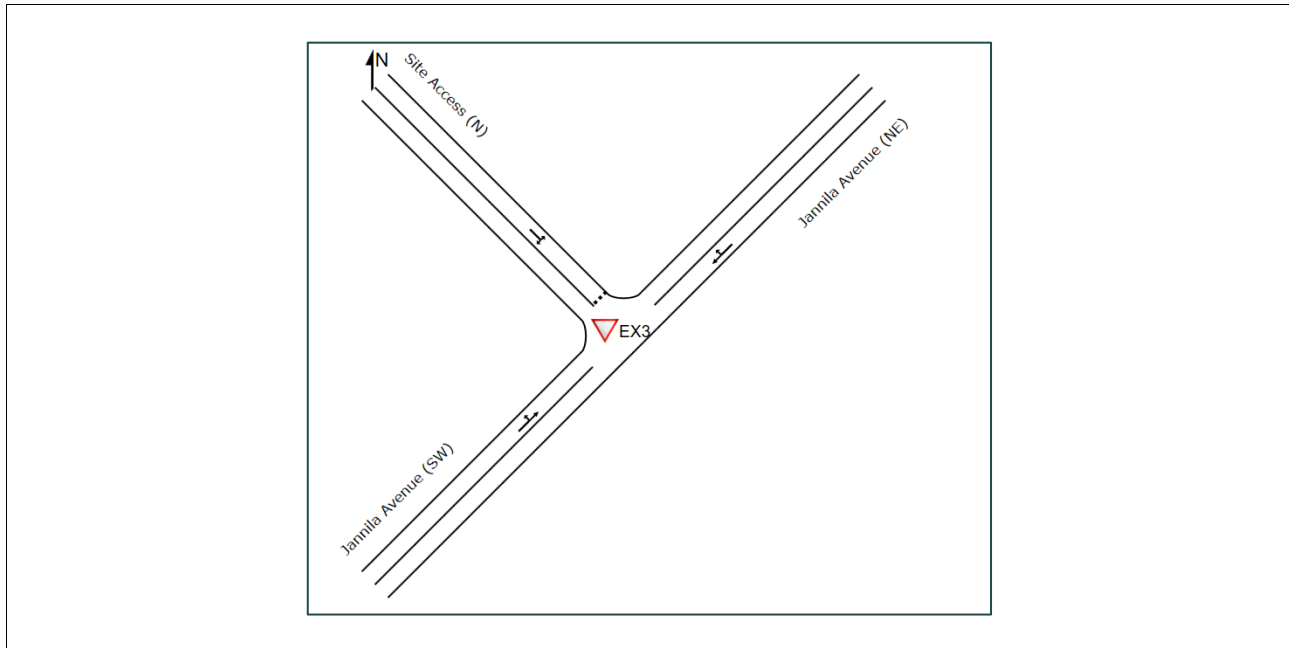


Table 7-2 outlines the SIDRA Assessment results for the Jannila Avenue / Site Access Intersection for the assessment scenarios. Full SIDRA Results and layouts are provided in **Appendix F**.

Table 7-2 Jannila Avenue / Site Access Intersection SIDRA Results

Scenario	DOS	Critical Delay	95th %ile Queue	Critical Movement
AM Peak Period				
2028 BG	0.017	5.7 sec	0.0m	Jannila Avenue (SW)
2028 BG + DEV	0.017	5.7 sec	0.2m	Jannila Avenue (SW)
PM Peak Period				
2028 BG	0.013	5.7 sec	0.0m	Jannila Avenue (NE)
2028 BG + DEV	0.022	5.7 sec	0.6m	Jannila Avenue (NE)

Therefore, Table 7-2 indicates that the Jannila Avenue / Site Access intersection operates within acceptable operational capacity thresholds for the year of opening background and proposed development scenarios.

7.3 Intersection ID 3: Alice Street / Jannila Avenue

The Alice Street / Jannila Avenue intersection is a three-way priority-controlled intersection, where Alice Street is the major road. Figure 7-3 illustrates the SIDRA layout for this study intersection.

Figure 7-3 Alice Street / Jannila Avenue Intersection SIDRA Layout

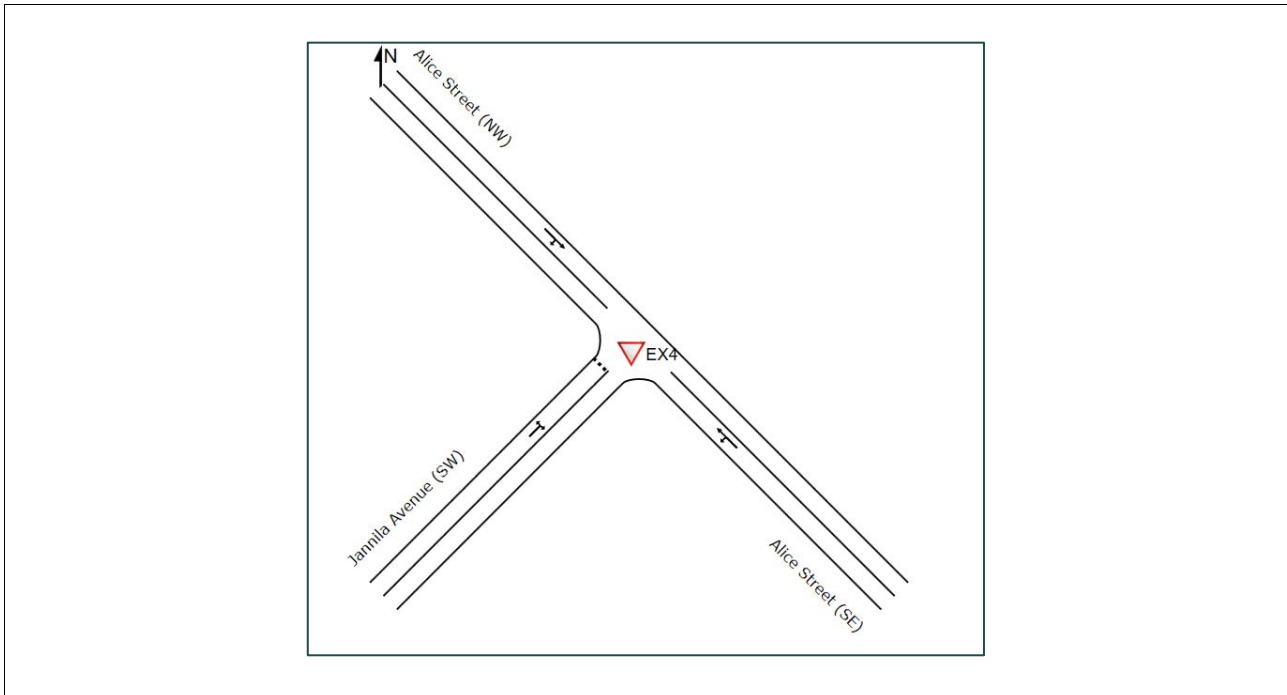


Table 7-3 outlines the SIDRA Assessment results for the Alice Street / Jannila Avenue Intersection for the assessment scenarios. Full SIDRA Results and layouts are provided in **Appendix F**.

Table 7-3 Alice Street / Jannila Avenue Intersection SIDRA Results

Scenario	DOS	Critical Delay	95th %ile Queue	Critical Movement
AM Peak Period				
2028 BG	0.107	7.1 sec	0.8m	Alice Street (SE)
2028 BG + DEV	0.107	7.1 sec	0.9m	Alice Street (SE)
PM Peak Period				
2028 BG	0.116	6.8 sec	0.9m	Alice Street (SE)
2028 BG + DEV	0.117	6.9 sec	1.6m	Alice Street (SE)

Therefore, Table 7-3 indicates that the Alice Street / Jannila Avenue intersection operates within acceptable operational capacity thresholds for the year of opening background and proposed development scenarios.

7.4 Intersection ID 4: Ross River Road / Alice Street

The Ross River Road / Alice Street intersection is a three-way signalised intersection, where Ross River Road is the major road. Figure 7-4 illustrates the SIDRA layout for this study intersection.

Figure 7-4 Ross River Road / Alice Street Intersection SIDRA Layout

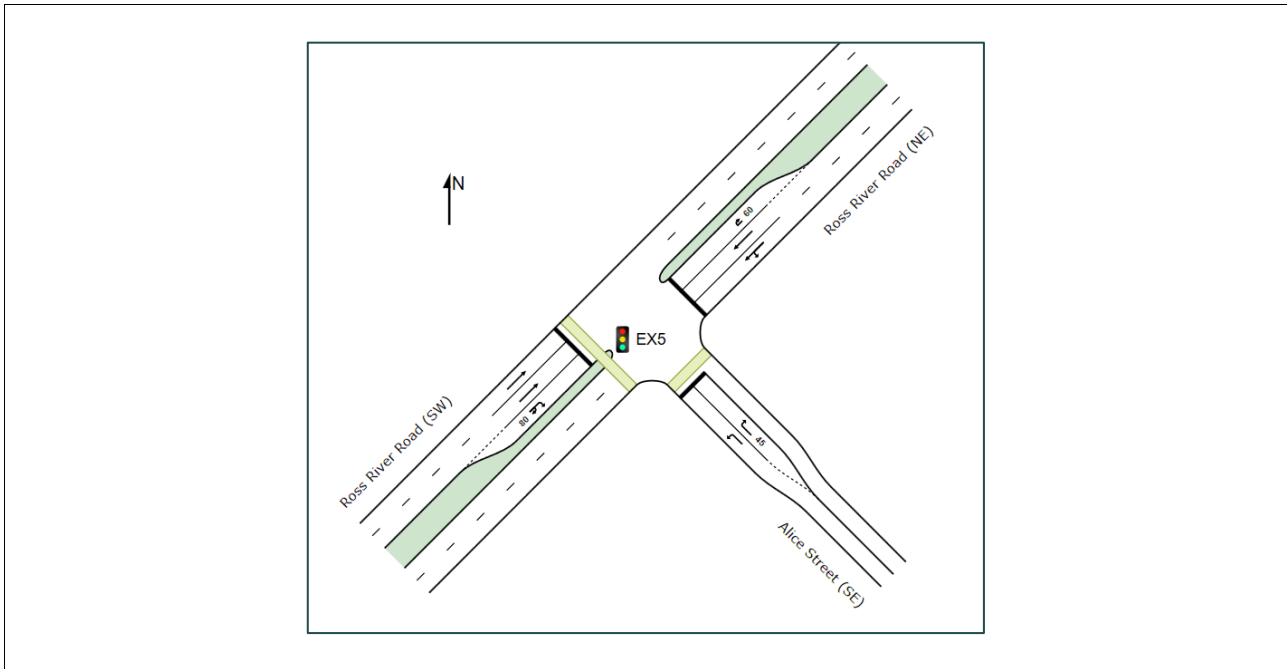


Table 7-4 outlines the SIDRA Assessment results for the Ross River Road / Alice Street Intersection for the assessment scenarios. Full SIDRA Results and layouts are provided in **Appendix F**.

Table 7-4 Ross River Road / Alice Street Intersection SIDRA Results

Scenario	DOS	Critical Delay	95th %ile Queue	Critical Movement
AM Peak Period (Cycle Time: 120 Seconds)				
2028 BG	0.605	25.0 sec	179.9m	Ross River Road (SW)
2028 BG + DEV	0.613	25.2 sec	180.0m	Ross River Road (SW)
PM Peak Period (Cycle Time: 120 Seconds)				
2028 BG	0.523	21.2 sec	143.8m	Ross River Road (NE)
2028 BG + DEV	0.534	22.0 sec	148.6m	Ross River Road (NE)

Therefore, Table 7-4 indicates that the Ross River Road / Alice Street intersection operates within acceptable operational capacity thresholds for the year of opening background and proposed development scenarios.

7.5 Intersection Delay Assessment

In accordance with the GTIA requirements for no net worsening to baseline road network operations, this assessment has investigated the delay impact of the development traffic on the network at the Ross River Road / Alice Street intersection.

The assessment has reviewed whether the increase in average delay at the development intersection exceeds 5%. The average delay has been calculated in accordance with the GTIA by taking the aggregate average delay across the intersections for both the baseline scenario (2028 BG) and the With Development scenario (2028 BG + DEV).

$$ID = \sum_{i=1}^n WD - \sum_{i=1}^n BC$$

where:

- ID is aggregate intersection-delay impact vehicle-minutes.
- WD is 'with development' intersection vehicle-minutes for design peak periods. This is calculated by multiplying the 'with development' average delay by movement to the base case volume on each movement, thus not counting the impact as delays to development traffic, only to pre-existing traffic that is affected by these additional delays.
- BC is base case intersection vehicle-minutes for design peak periods
- n is the number of intersections in the impact assessment area
- i is each intersection within the impact assessment area.

The results of the network impact assessment for the Ross River Road / Alice Street intersection is summarised below in Table 7-5. The detailed movement delays and veh-min values have been detailed on the Network Flow Diagram provided at **Appendix D**.

Table 7-5 Ross River Road / Alice Street Intersection – Delay Assessment

Assessment Scenario	Aggregate Delay (veh-min)	
	AM Peak	PM Peak
2028 Background	950	752
2028 Background + Dev	951	775
Difference (Dev Impact)	1	23
Dev Delay Impact (%)	0.11%	3.06%
Average Delay Impact (%)	1.59%	

The Network Average Delay Impact is 1.59% which is below the 5% delay threshold stipulated in the GTIA and therefore does not trigger mitigation upgrades for the intersection.

8 Summary

Therefore, Modus is of the opinion that the proposed development is acceptable from a traffic engineering perspective and will not have a substantial impact on the safety or efficiency of the external road network.

Should there be any issue with the above, please contact the undersigned.

Yours sincerely,

HSingh

MODUS TRANSPORT AND TRAFFIC ENGINEERING

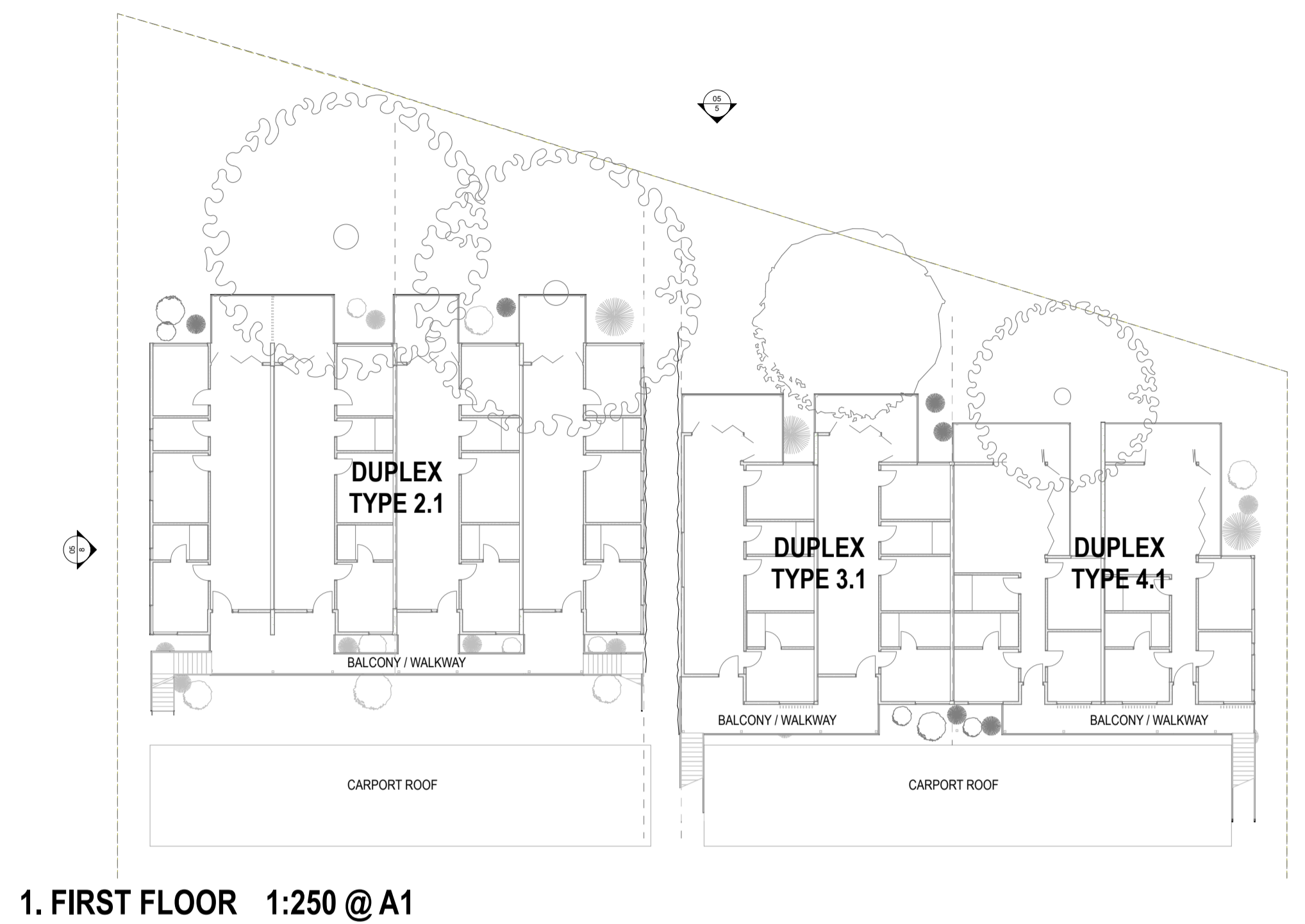
Harj Singh
Executive Director (RPEQ 22364)

APPENDIX A

Development Plans



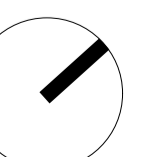
1. SITE PLAN 1:250 @ A1



AREA SCHEDULE

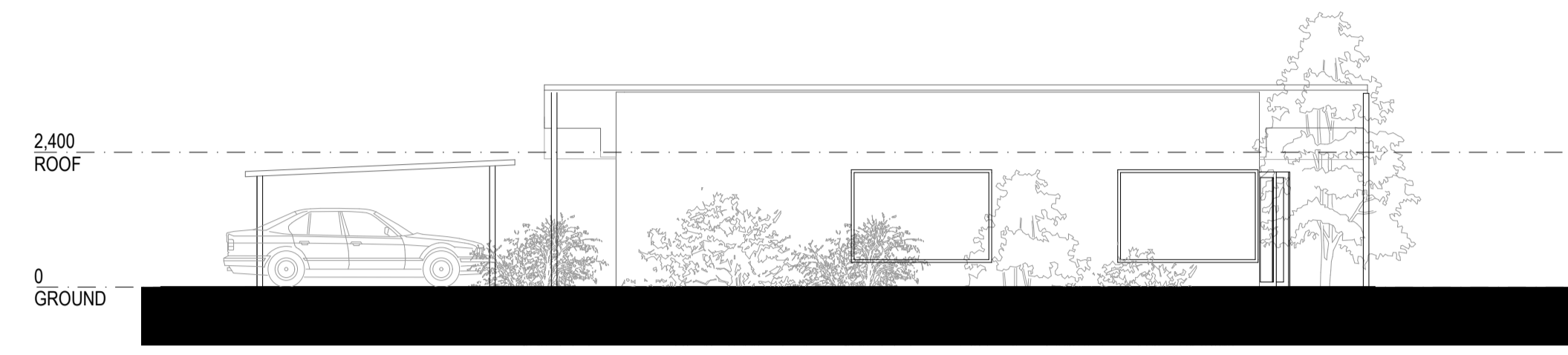
TOTAL AREA	6,106 M2		
GFA			
DUPLEX TYPE 1 (X8)	1,387.7M2	(173.5M2 EA)	22%
DUPLEX TYPE 2 (X4)	882M2	(220.8M2 EA)	14%
DUPLEX TYPE 3 (X2)	442M2	(221M2 EA)	8%
DUPLEX TYPE 4 (X2)	424M2	(212M2 EA)	6%
TOTAL DUPLEX	3,127.7M2		51%
PRIVATE OPEN SPACE			
DUPLEX TYPE 1 (X8)	30M2 EA		
DUPLEX TYPE 2 (X4)	49M2 + EA		
DUPLEX TYPE 3 (X2)	50M2 + EA		
DUPLEX TYPE 4 (X2)	55M2+ EA		
ROAD	1057M2		17.5%
SHARED PATH	107M2		1%
PARKING	860M2		14%
GRASS AREA	1,423M2 (388M2 SHARED COMMUNITY)		25%
GRAVEL GARDEN BEDS	330M2		5.5%
TOTAL RESIDENTS	80		
TOTAL CARPARKS	49 (INCLUDING VISITOR)		

*SURPLUS EFFICIENCY DUE TO 2ND STORY DUPLEX - EXCEEDS 100% OF GROUND SPACE





1. DUPLEX TYPE 1 - SOUTH ELEVATION
1:100 @ A1



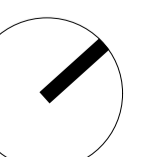
2. DUPLEX TYPE 1 - NORTH ELEVATION
1:100 @ A1



3. DUPLEX TYPE 1 - EAST ELEVATION
1:100 @ A1

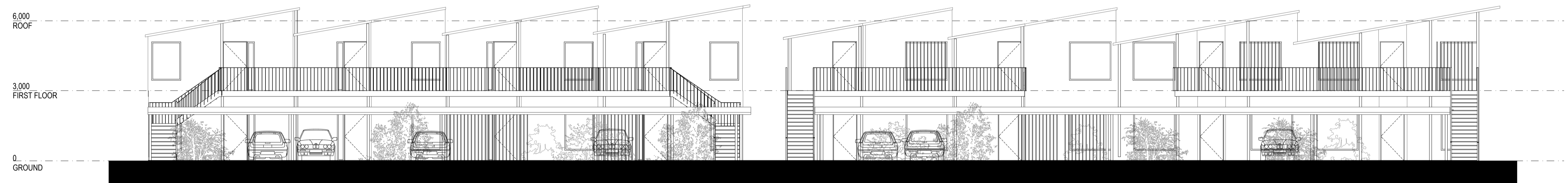


4. DUPLEX TYPE 1 - WEST ELEVATION
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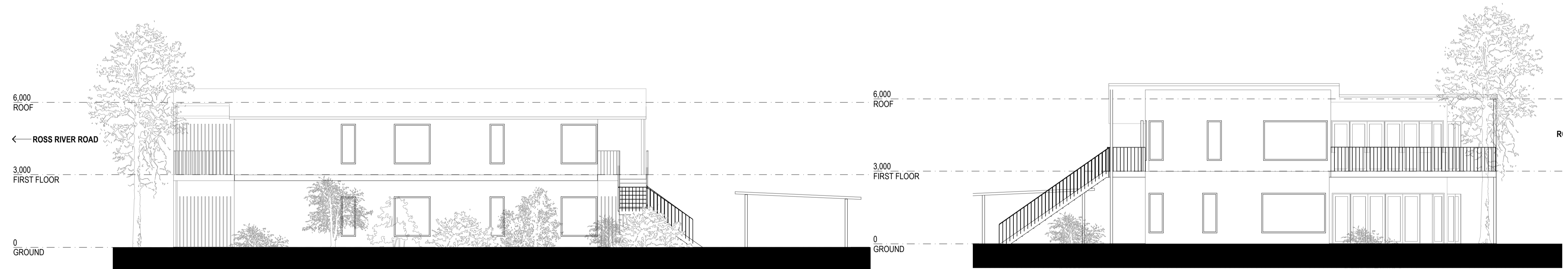




1. DUPLEX TYPE 2, 3, 4 NORTH ELEVATION
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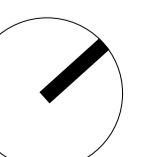


2. DUPLEX TYPE 2, 3, 4, SOUTH ELEVATION
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3. DUPLEX TYPE 4, WEST ELEVATION
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4. DUPLEX TYPE 4, EAST ELEVATION
1:100 @ A1

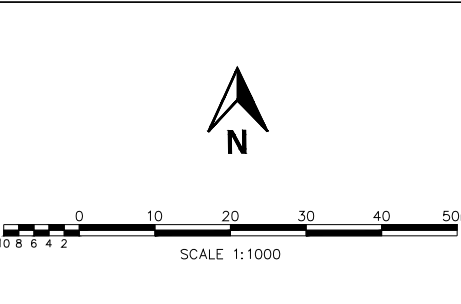
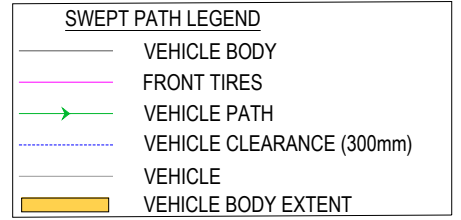
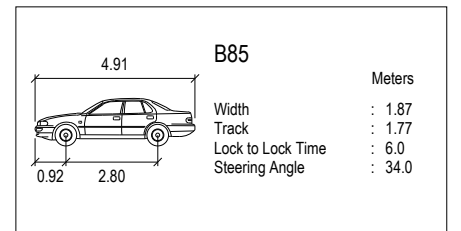


APPENDIX B

Swept Path Assessment



VEHICLE USED IN SIMULATION



PROJECT
**500 ROSS RIVER ROAD,
 CRANBROOK**

CLIENT
KAENETTO INVESTMENTS

DRAWING TITLE
**B85 SWEPT PATH
 ASSESSMENT**

DRAWING NUMBER
MOD24616QLD - SK04

DATE 30 JUNE 2025	REVISION D
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REV	DRAWN BY	APPROVED	DATE	AMENDMENT DETAILS

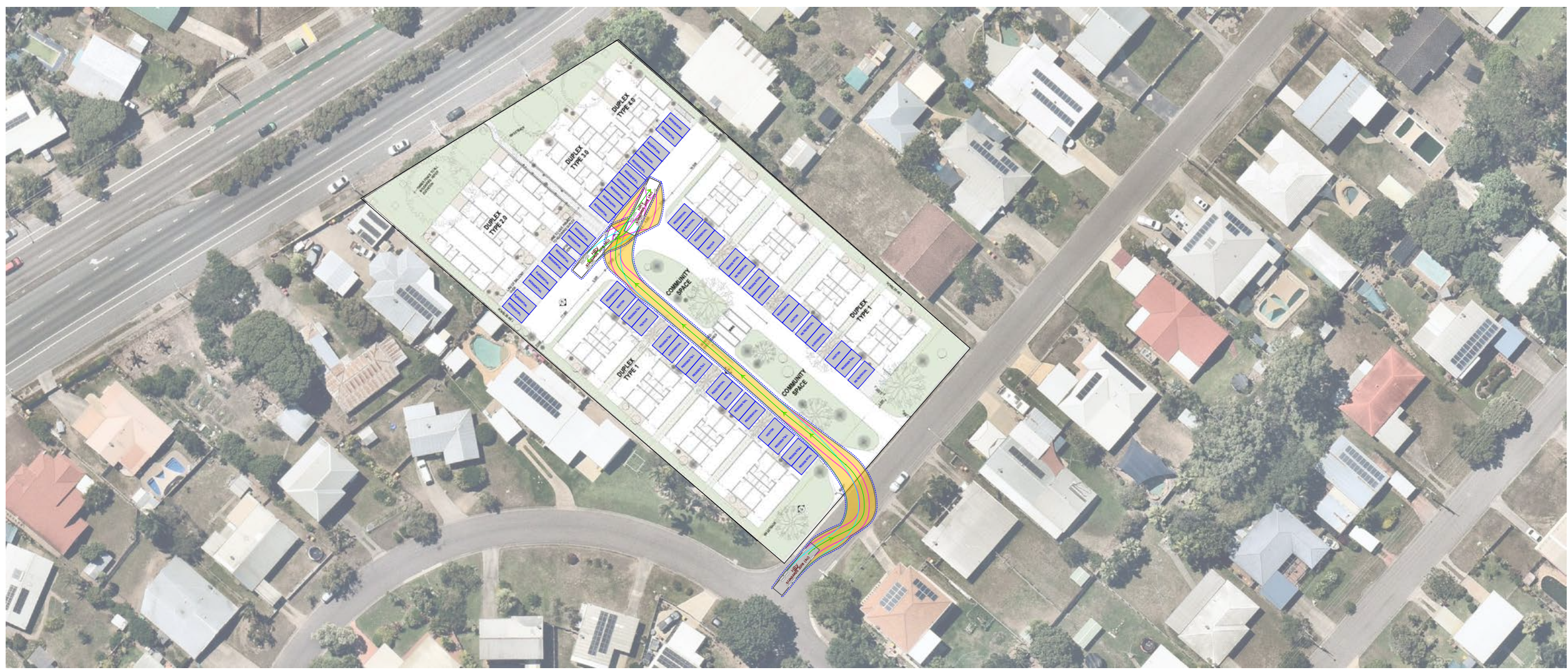


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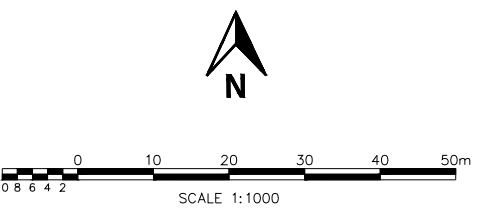
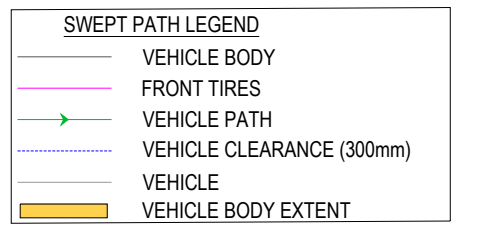
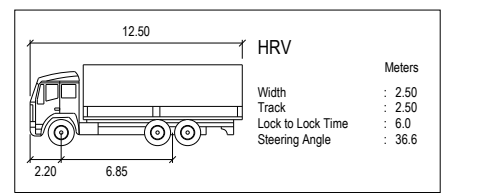


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VEHICLE USED IN SIMULATION



PROJECT

**500 ROSS RIVER ROAD,
CRANBROOK**

CLIENT

KAENETTO INVESTMENTS

DRAWING TITLE

**HRV SWEPT PATH
ASSESSMENT**

DRAWING NUMBER

MOD24616QLD - SK05

DATE	REVISION
30 JUNE 2025	D

REV	DRAWN BY	APPROVED	DATE	AMENDMENT DETAILS



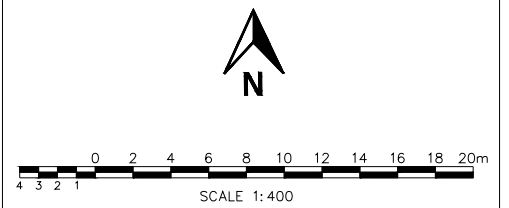
ABN 84 102 758 061
310 Edward Street, BRISBANE CITY QLD 4000
T: 1300 606 408 E: marketing@moduseng.com.au
W: www.modusengineering.com.au

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APPENDIX C

Car Parking Concept Plan



PROJECT

**500 ROSS RIVER ROAD,
CRANBROOK**

CLIENT

KAENETTO INVESTMENTS

DRAWING TITLE

**MODUS CAR PARKING
CONCEPT PLAN**

DRAWING NUMBER

MOD24616QLD - SK02

DATE

30 JUNE 2025

REVISION

D

REV	DRAWN BY	APPROVED	DATE	AMENDMENT DETAILS



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APPENDIX D

Traffic Count Surveys

TURNING MOVEMENT SURVEY

Intersection of Ross River Rd and Alice St, Cranbrook

GPS: 19.307046, 66.720947

Date: Thu 01/05/2025
 Weather: F:PM
 Suburban: Cranbrook
 Customer: Velocity

North: Ross River Rd
 East: Alice St
 South: Ross River Rd
 West: N/A

Survey Period: AM 10:00 AM-12:00 PM
 PM 1:00 PM-3:00 PM
 Traffic Period: AM 7:45 AM-9:00 AM
 PM 3:00 PM-4:00 PM
 Peak: PM

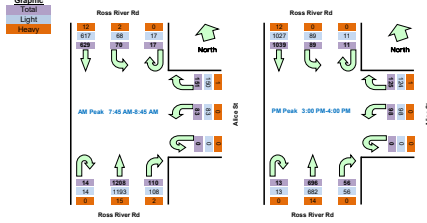
All Vehicles

Time		North Approach Ross River R			East Approach Alice St			South Approach Ross River R			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Peak	
6:00	6:15	2	43	2	0	4	2	0	0	64	662	
6:15	6:30	0	50	2	0	2	2	0	4	72	796	
6:30	6:45	0	44	4	0	12	5	0	2	92	944	
6:45	7:00	0	70	3	0	18	6	4	7	146	1175	
7:00	7:15	1	52	9	0	12	11	2	8	156	1444	
7:15	7:30	0	66	6	0	19	1	1	15	172	1853	
7:30	7:45	2	83	8	0	16	10	1	8	262	2138	
7:45	8:00	5	124	17	0	29	12	2	25	309	2282	
8:00	8:15	3	148	22	0	44	15	4	48	376	2180	
8:15	8:30	4	181	10	0	44	20	2	19	285	2138	
8:30	8:45	5	176	21	0	34	36	6	18	238	2282	
8:45	9:00	2	162	8	0	18	20	5	11	195	2180	
9:00	9:15	3	208	25	0	52	39	2	13	197	2127	
9:15	9:30	1	290	26	0	29	33	2	14	177	1973	
9:30	9:45	7	281	19	0	25	16	3	14	172	1865	
9:45	10:00	0	200	19	0	19	10	6	10	150	1759	
10:00	10:15	3	212	23	0	16	25	3	13	155	1908	
10:15	10:30	1	228	15	0	11	21	10	16	162	1901	
10:30	10:45	1	261	14	0	9	17	4	9	156	2040	
10:45	11:00	0	280	26	0	21	13	5	16	162	2050	
11:00	11:15	1	280	17	0	16	15	4	8	162	1902	
11:15	11:30	1	279	26	0	14	21	1	10	191	2040	
11:30	11:45	2	250	25	0	16	20	4	12	152	1802	
11:45	12:00	0	185	18	0	12	13	4	15	128	1802	

Hour	North	Peak
11:00	117	662
11:15	132	862
11:30	159	796
11:45	254	1175
12:00	251	1444
12:15	280	944
12:30	390	1175
12:45	523	1444
13:00	660	1853
13:15	565	2138
13:30	534	2282
13:45	421	2180
14:00	604	2127
14:15	572	1973
14:30	537	1865
14:45	414	1759
15:00	450	1973
15:15	464	1965
15:30	471	1759
15:45	523	1908
16:00	503	1961
16:15	543	2040
16:30	481	2050
16:45	375	1802

Peak Time	North Approach Ross River R	East Approach Alice St	South Approach Ross River R	Peak total
7:45	17	629	70	716
8:45	11	1039	89	1239
15:00	11	1039	89	1239

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



1.15%	0.00%	0.00%	0.68%	0.80%
1.91%	2.86%	0.00%	0.00%	0.00%
0.00%	1.24%	1.82%	0.00%	0.00%
0.00%	2.01%	0.00%		

Light Vehicles

Time		North Approach Ross River R			East Approach Alice St			South Approach Ross River R			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Peak	
6:00	6:15	2	41	1	0	4	1	0	0	61	61	
6:15	6:30	0	45	2	0	2	2	0	4	66	66	
6:30	6:45	0	42	4	0	12	5	0	2	87	87	
6:45	7:00	0	66	3	0	18	6	4	7	138	138	
7:00	7:15	1	52	9	0	11	10	2	8	152	152	
7:15	7:30	0	63	6	0	19	1	1	15	169	169	
7:30	7:45	2	79	8	0	16	10	1	8	259	259	
7:45	8:00	5	121	17	0	29	12	2	25	304	304	
8:00	8:15	3	144	21	0	43	15	4	46	372	372	
8:15	8:30	4	179	10	0	44	20	2	19	285	285	
8:30	8:45	5	173	20	0	34	36	6	18	234	234	
8:45	9:00	2	158	8	0	18	19	5	11	192	192	
9:00	9:15	3	208	25	0	52	39	2	16	193	193	
9:15	9:30	1	286	26	0	28	33	2	14	173	173	
9:30	9:45	7	276	19	0	25	16	3	14	170	170	
9:45	10:00	0	198	19	0	19	10	6	10	146	146	
10:00	10:15	3	210	23	0	16	25	3	13	148	148	
10:15	10:30	1	227	15	0	11	21	9	15	161	161	
10:30	10:45	1	259	14	0	9	17	4	9	152	152	
10:45	11:00	0	279	26	0	21	13	5	16	162	162	
11:00	11:15	1	277	17	0	16	15	4	8	161	161	
11:15	11:30	1	278	26	0	14	21	1	10	190	190	
11:30	11:45	2	249	25	0	16	20	4	12	150	150	
11:45	12:00	0	183	18	0	12	13	4	15	128	128	

Peak Time	North Approach Ross River R	East Approach Alice St	South Approach Ross River R	Peak total
7:45	17	617	66	700
8:45	11	1027	89	1227
15:00	11	1027	89	1227

Heavy Vehicles

Time		North Approach Ross River R			East Approach Alice St			South Approach Ross River R			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Peak	
6:00	6:15	0	2	1	0	0	1	0	0	3	3	
6:15	6:30	0	5	0	0	0	0	0	0	4	4	
6:30	6:45	0	2	0	0	0	0	0	0	5	5	
6:45	7:00	0	4	0	0	0	0	0	0	8	8	
7:00	7:15	0	0	0	0	1	1	0	0	4	4	
7:15	7:30	0	3	0	0	0	0	0	0	3	3	
7:30	7:45	0	4	0	0	0	0	0	0	3	3	
7:45	8:00	0	3	0	0	0	0	0	0	5	5	
8:00	8:15	0	4	1	0	1	0	0	2	4	4	
8:15	8:30	0	2	0	0	0	0	0	0	2	2	
8:30	8:45	0	3	1	0	0	0	0	0	4	4	
8:45	9:00	0	4	0	0	0	1	0	0	3	3	
9:00	9:15	0	0	0	0	0	0	0	0	4	4	
9:15	9:30	0	5	0	0	1	0	0	0	4	4	
9:30	9:45	0	5	0	0	0	0	0	0	2	2	
9:45	10:00	0	2	0	0	0	0	0	0	4	4	
10:00	10:15	0	2	0	0	0	0	0	0	7	7	
10:15	10:30	0	1	0	0	0	0	1	1	1	1	
10:30	10:45	0	2	0	0	0	0	0	0	4	4	
10:45	11:00	0	1	0	0	0	0	0	0	0	0	
11:00	11:15	0	3	0	0	0	0	0	0	1	1	
11:15	11:30	0	1	0	0	0	0	0	0	1	1	
11:30	11:45	0	1	0	0	0	0	0	0	2	2	
11:45	12:00	0	2	0	0	0	0	0	0	0	0	

Peak Time	North Approach Ross River R	East Approach Alice St	South Approach Ross River R	Peak total
7:45	0	2	0	2
8:45	0	12	2	14
15:00	0	12	0	12

TURNING MOVEMENT SURVEY

Intersection of Ross River Rd and Louise St, Cranbrook

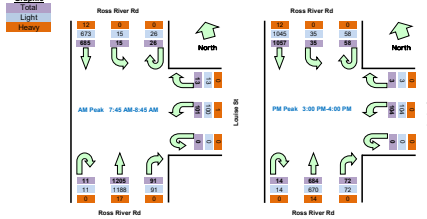
GPS 19.31006, 142.74720

Date:	Thu 07/02/20	North:	Ross River Rd	Survey:	AM 7:00 AM-9:00 AM
Weather:	FWR	East:	Louise St	Period:	PM 3:00 PM-4:00 PM
Subcontractor:	Cranbrook	South:	Ross River Rd	Travelling:	AM 7:00 AM-9:00 AM
Customer:	Velocity	West:	N/A	Peak:	PM 3:00 PM-4:00 PM

Time		North Approach Ross River R			East Approach Louise St			Jth Approach Ross River			Hourly Total
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Peak
6:00	6:15	1	43	1	0	3	6	0	0	57	621
6:15	6:30	2	49	1	0	2	4	1	0	68	734
6:30	6:45	1	48	0	0	1	6	0	7	81	879
6:45	7:00	6	71	3	0	2	7	3	5	142	1112
7:00	7:15	3	59	3	0	7	5	4	6	137	1398
7:15	7:30	1	64	3	0	3	14	4	9	174	1751
7:30	7:45	5	87	2	0	6	17	3	16	241	2043
7:45	8:00	6	128	4	0	2	22	2	20	341	2147
8:00	8:15	8	154	5	0	4	30	4	26	346	2042
8:15	8:30	6	194	3	0	4	29	3	28	297	
8:30	8:45	6	209	3	0	3	20	2	17	221	
8:45	9:00	4	179	4	0	1	14	2	9	207	
15:00	15:15	12	288	9	0	1	48	7	24	204	2027
15:15	15:30	15	299	11	0	0	26	1	21	199	1985
15:30	15:45	15	270	15	0	2	13	3	16	196	1781
15:45	16:00	16	200	0	0	0	17	3	11	145	1771
16:00	16:15	15	214	11	0	3	17	7	16	148	1864
16:15	16:30	13	233	13	0	2	13	4	14	196	1933
16:30	16:45	18	258	6	0	3	18	1	13	173	2002
16:45	17:00	15	271	12	0	1	17	0	18	151	1975
17:00	17:15	16	263	20	0	4	16	7	15	159	1841
17:15	17:30	13	273	15	0	1	13	1	16	196	
17:30	17:45	9	258	6	0	3	17	1	18	150	
17:45	18:00	23	164	15	0	3	10	2	12	122	

Peak Time	North Approach Ross River R	East Approach Louise St	Jth Approach Ross River	Peak total							
Period Start	Period End	U	SB	L	U	R	NB	total			
7:45	8:45	26	685	15	0	13	101	11	81	1206	2147
15:00	16:00	58	1057	35	0	3	104	14	72	684	2027

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



1.75%	0.00%	0.00%	0.00%	1.14%	0.00%	0.00%
0.00%	1.41%	0.00%	0.00%	0.00%	2.05%	0.00%

Time		North Approach Ross River R			East Approach Louise St			Jth Approach Ross River		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
6:00	6:15	1	40	1	0	3	6	0	0	52
6:15	6:30	2	44	1	0	2	4	1	0	65
6:30	6:45	1	46	0	0	1	6	0	7	76
6:45	7:00	6	67	3	0	2	7	3	5	136
7:00	7:15	3	58	3	0	7	5	4	6	133
7:15	7:30	1	61	3	0	3	14	4	9	171
7:30	7:45	4	84	2	0	6	17	3	16	236
7:45	8:00	6	125	4	0	2	21	2	20	306
8:00	8:15	8	150	5	0	4	30	4	26	342
8:15	8:30	6	192	3	0	4	29	3	28	286
8:30	8:45	6	206	3	0	3	20	2	17	217
8:45	9:00	3	175	4	0	1	14	2	9	204
15:00	15:15	12	298	9	0	1	48	7	24	200
15:15	15:30	15	294	11	0	0	26	1	21	195
15:30	15:45	15	265	15	0	2	13	3	16	164
15:45	16:00	16	198	0	0	0	17	3	11	141
16:00	16:15	15	212	11	0	3	17	7	16	145
16:15	16:30	13	231	13	0	2	13	4	14	163
16:30	16:45	18	256	6	0	3	18	1	13	170
16:45	17:00	15	270	12	0	1	17	0	18	151
17:00	17:15	16	260	20	0	4	16	7	15	158
17:15	17:30	13	272	15	0	1	13	1	16	196
17:30	17:45	9	258	6	0	3	17	1	18	148
17:45	18:00	23	162	15	0	3	10	2	12	122

Peak Time	North Approach Ross River R	East Approach Louise St	Jth Approach Ross River	Peak total							
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
7:45	8:45	26	673	15	0	13	100	11	91	1158	2117
15:00	16:00	58	1045	35	0	3	104	14	72	670	2051

Time		North Approach Ross River R			East Approach Louise St			Jth Approach Ross River		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
6:00	6:15	0	3	0	0	0	0	0	0	3
6:15	6:30	0	5	0	0	0	0	0	0	3
6:30	6:45	0	2	0	0	0	0	0	0	5
6:45	7:00	0	4	0	0	0	0	0	0	7
7:00	7:15	0	1	0	0	0	0	0	0	4
7:15	7:30	0	3	0	0	0	0	0	0	3
7:30	7:45	1	3	0	0	0	0	0	0	3
7:45	8:00	0	3	0	0	0	1	0	0	5
8:00	8:15	0	4	0	0	0	0	0	0	6
8:15	8:30	0	2	0	0	0	0	0	0	2
8:30	8:45	0	3	0	0	0	0	0	0	4
8:45	9:00	1	4	0	0	0	0	0	0	3
15:00	15:15	0	0	0	0	0	0	0	0	4
15:15	15:30	0	5	0	0	0	0	0	0	4
15:30	15:45	0	5	0	0	0	0	0	0	2
15:45	16:00	0	2	0	0	0	0	0	0	4
16:00	16:15	0	2	0	0	0	0	0	0	3
16:15	16:30	0	2	0	0	0	0	0	0	3
16:30	16:45	0	2	0	0	0	0	0	0	3
16:45	17:00	0	1	0	0	0	0	0	0	0
17:00	17:15	0	3	0	0	0	0	0	0	1
17:15	17:30	0	1	0	0	0	0	0	0	0
17:30	17:45	0	1	0	0	0	0	0	0	2
17:45	18:00	0	2	0	0	0	0	0	0	0

Peak Time	North Approach Ross River R	East Approach Louise St	Jth Approach Ross River	Peak total							
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
7:45	8:45	0	12	0	0	0	1	0	0	14	26
15:00	16:00	0	12	0	0	0	0	0	0	14	26

TURNING MOVEMENT SURVEY

Intersection of Alice St and Janmia Ave, Cranbrook

GPS 19-07-17 146:25:093

Date: 18/07/2022
 Weather: FINE
 Suburban: Cranbrook
 Customer: Velocity

North: N/A
 East: Prince St
 South: Janmia Ave
 West: Alice St

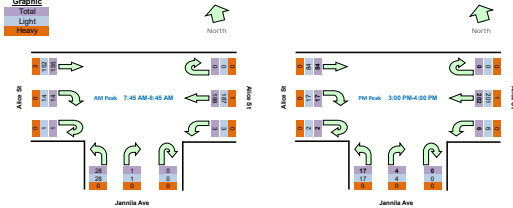
Survey Period: AM 8:00 AM-9:00 AM
 PM 3:00 PM-4:00 PM
 Traffic: AM 7:45 AM-8:45 AM
 PM 3:00 PM-4:00 PM

All Vehicles

Time		East Approach Alice St			South Approach Janmia Ave			West Approach Alice St			Hourly Total
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	Peak
6:00	6:15	0	4	0	0	0	0	0	0	0	74
6:15	6:30	0	4	0	0	1	0	0	1	5	100
6:30	6:45	0	14	0	0	0	3	0	1	5	132
6:45	7:00	0	24	0	0	1	2	0	1	8	151
7:00	7:15	0	18	0	0	0	2	0	2	8	183
7:15	7:30	0	18	1	0	0	4	0	2	18	281
7:30	7:45	0	21	1	0	0	3	0	1	16	331
7:45	8:00	0	27	0	0	0	5	1	4	31	390
8:00	8:15	0	55	0	0	1	9	0	3	60	382
8:15	8:30	0	52	1	0	0	7	0	2	31	93
8:30	8:45	0	54	2	0	0	7	0	5	33	101
8:45	9:00	0	39	1	0	0	2	0	1	17	60
15:00	15:15	0	105	2	0	1	4	0	4	32	332
15:15	15:30	0	44	1	0	3	6	2	4	19	244
15:30	15:45	0	35	1	0	0	3	0	4	20	218
15:45	16:00	0	18	2	0	0	4	0	5	13	203
16:00	16:15	0	30	1	0	2	3	0	2	22	217
16:15	16:30	0	22	1	0	1	4	0	3	22	209
16:30	16:45	0	21	2	0	0	3	1	6	15	215
16:45	17:00	0	25	0	0	0	4	0	2	25	218
17:00	17:15	0	26	0	0	0	3	0	4	19	210
17:15	17:30	0	30	0	0	0	5	0	9	15	59
17:30	17:45	0	21	1	0	0	5	0	1	23	51
17:45	18:00	0	21	2	0	0	1	0	5	19	48

Peak Time		East Approach Alice St			South Approach Janmia Ave			West Approach Alice St			Peak total
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	Peak
7:45	8:45	0	188	3	0	1	28	1	14	150	390
15:00	16:00	0	202	6	0	4	17	2	17	84	332

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



1.94%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Light Vehicles

Time		East Approach Alice St			South Approach Janmia Ave			West Approach Alice St		
Period Start	Period End	U	WB	L	U	R	L	U	R	EB
6:00	6:15	0	4	0	0	0	0	0	0	0
6:15	6:30	0	4	0	0	1	0	0	1	5
6:30	6:45	0	14	0	0	0	3	0	1	5
6:45	7:00	0	24	0	0	1	2	0	1	8
7:00	7:15	0	18	0	0	0	2	0	2	8
7:15	7:30	0	18	1	0	0	4	0	2	18
7:30	7:45	0	21	1	0	0	3	0	1	16
7:45	8:00	0	27	0	0	0	5	1	4	31
8:00	8:15	0	54	0	0	1	9	0	3	57
8:15	8:30	0	52	1	0	0	7	0	2	31
8:30	8:45	0	54	2	0	0	7	0	5	33
8:45	9:00	0	39	1	0	0	2	0	1	17
15:00	15:15	0	104	2	0	1	4	0	4	32
15:15	15:30	0	44	1	0	3	6	2	4	19
15:30	15:45	0	35	1	0	0	3	0	4	20
15:45	16:00	0	18	2	0	0	4	0	5	13
16:00	16:15	0	30	1	0	2	3	0	2	22
16:15	16:30	0	22	1	0	1	4	0	3	21
16:30	16:45	0	21	2	0	0	3	1	6	15
16:45	17:00	0	25	0	0	0	4	0	2	25
17:00	17:15	0	26	0	0	0	3	0	4	19
17:15	17:30	0	30	0	0	0	5	0	9	15
17:30	17:45	0	21	1	0	0	5	0	1	23
17:45	18:00	0	21	2	0	0	1	0	5	19

Peak Time		East Approach Alice St			South Approach Janmia Ave			West Approach Alice St			Peak total
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	Peak
7:45	8:45	0	187	3	0	1	28	1	14	150	386
15:00	16:00	0	201	6	0	4	17	2	17	84	331

Heavy Vehicles

Time		East Approach Alice St			South Approach Janmia Ave			West Approach Alice St		
Period Start	Period End	U	WB	L	U	R	L	U	R	EB
6:00	6:15	0	0	0	0	0	0	0	0	0
6:15	6:30	0	0	0	0	0	0	0	0	0
6:30	6:45	0	0	0	0	0	0	0	0	0
6:45	7:00	0	0	0	0	0	0	0	0	0
7:00	7:15	0	2	0	0	0	0	0	0	0
7:15	7:30	0	0	0	0	0	0	0	0	0
7:30	7:45	0	0	0	0	0	0	0	0	0
7:45	8:00	0	0	0	0	0	0	0	0	0
8:00	8:15	0	1	0	0	0	0	0	0	3
8:15	8:30	0	0	0	0	0	0	0	0	0
8:30	8:45	0	0	0	0	0	0	0	0	0
8:45	9:00	0	0	0	0	0	0	0	0	0
15:00	15:15	0	1	0	0	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0	0	0
15:30	15:45	0	0	0	0	0	0	0	0	0
15:45	16:00	0	0	0	0	0	0	0	0	0
16:00	16:15	0	0	0	0	0	0	0	0	0
16:15	16:30	0	0	0	0	0	0	0	0	1
16:30	16:45	0	0	0	0	0	0	0	0	0
16:45	17:00	0	0	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0	0	0
17:15	17:30	0	0	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0	0	0

Peak Time		East Approach Alice St			South Approach Janmia Ave			West Approach Alice St			Peak total
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	Peak
7:45	8:45	0	1	0	0	0	0	0	0	3	4
15:00	16:00	0	1	0	0	0	0	0	0	0	1

TURNING MOVEMENT SURVEY
Intersection of Louise St and Victor St, Cranbrook

GRF 19-21-2020 146.7032-9
 Date: 11/01/2020
 Weather: FINE
 Observer: Cranbrook
 Customer: Velocity

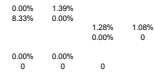
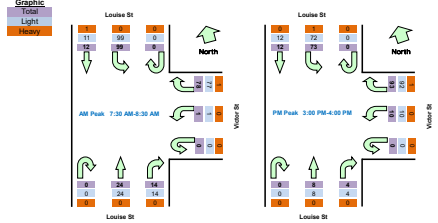
North: Louise St
 East: Victor St
 South: Louise St
 West: N/A

Survey Period: AM: 10:00 AM-1:00 PM
 PM: 3:00 PM-6:00 PM
 Traffic Peak: AM: 10:00 AM-1:00 PM
 PM: 3:00 PM-6:00 PM

Time		North Approach Louise St			East Approach Victor St			South Approach Louise St			Hourly Total
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Peak
6:00	6:15	0	0	1	0	5	1	0	2	3	48
6:15	6:30	0	1	0	0	2	0	0	1	3	58
6:30	6:45	0	0	6	0	5	1	0	0	1	75
6:45	7:00	0	1	7	0	5	0	0	1	2	109
7:00	7:15	0	1	11	0	4	0	0	1	5	142
7:15	7:30	0	2	8	0	10	0	0	2	2	192
7:30	7:45	0	6	16	0	11	0	0	4	10	228
7:45	8:00	0	2	21	0	17	1	0	4	4	224
8:00	8:15	0	2	33	0	26	0	0	3	8	210
8:15	8:30	0	2	29	0	24	0	0	3	2	60
8:30	8:45	0	3	17	0	17	0	0	3	3	43
8:45	9:00	0	9	11	0	11	0	0	1	3	35
15:00	15:15	0	0	25	0	48	2	0	0	1	200
15:15	15:30	0	4	21	0	22	6	0	1	3	166
15:30	15:45	0	6	19	0	11	1	0	2	3	148
15:45	16:00	0	2	8	0	12	1	0	1	1	140
16:00	16:15	0	2	17	0	15	3	0	1	4	166
16:15	16:30	0	11	14	0	7	1	0	1	5	167
16:30	16:45	0	2	12	0	13	0	0	1	6	171
16:45	17:00	0	9	18	0	20	0	0	4	0	174
17:00	17:15	0	12	15	0	11	2	0	1	2	155
17:15	17:30	0	7	20	0	12	1	0	1	2	171
17:30	17:45	0	5	16	0	12	1	0	2	1	174
17:45	18:00	0	7	12	0	8	0	0	1	4	155

Peak Time	North Approach Louise St	East Approach Victor St	South Approach Louise St	Peak total
7:30 - 8:30	12	99	78	189
15:00 - 16:00	12	73	93	178

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



Time		North Approach Louise St			East Approach Victor St			South Approach Louise St		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
6:00	6:15	0	0	1	0	5	1	0	2	3
6:15	6:30	0	1	0	0	2	0	0	1	3
6:30	6:45	0	0	6	0	5	1	0	0	1
6:45	7:00	0	1	7	0	5	0	0	1	2
7:00	7:15	0	1	11	0	4	0	0	1	5
7:15	7:30	0	2	8	0	10	0	0	2	2
7:30	7:45	0	6	16	0	11	0	0	4	10
7:45	8:00	0	2	21	0	16	1	0	4	4
8:00	8:15	0	1	33	0	26	0	0	3	8
8:15	8:30	0	2	29	0	24	0	0	3	2
8:30	8:45	0	3	17	0	17	0	0	3	3
8:45	9:00	0	9	11	0	11	0	0	1	3
15:00	15:15	0	0	24	0	48	2	0	0	1
15:15	15:30	0	4	21	0	22	6	0	1	3
15:30	15:45	0	6	19	0	10	1	0	2	3
15:45	16:00	0	2	8	0	12	1	0	1	1
16:00	16:15	0	2	17	0	15	3	0	1	4
16:15	16:30	0	11	14	0	7	1	0	1	5
16:30	16:45	0	2	12	0	13	0	0	1	6
16:45	17:00	0	9	18	0	20	0	0	4	0
17:00	17:15	0	12	15	0	11	2	0	1	2
17:15	17:30	0	7	20	0	12	1	0	1	2
17:30	17:45	0	5	16	0	12	1	0	2	1
17:45	18:00	0	7	12	0	8	0	0	1	4

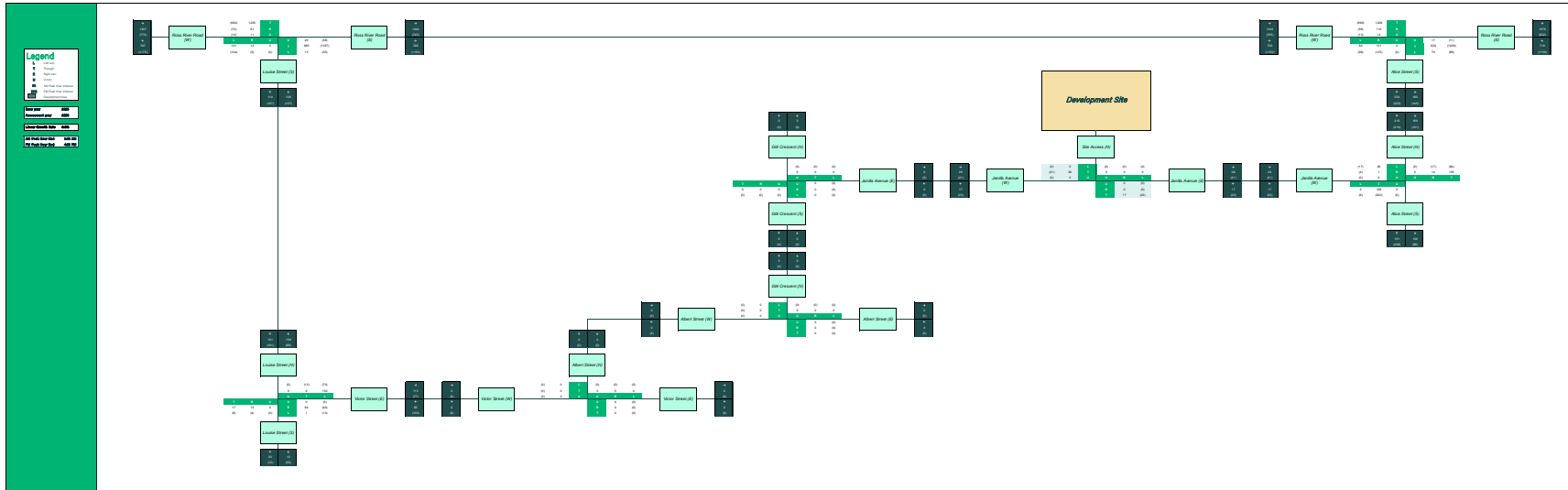
Peak Time	North Approach Louise St	East Approach Victor St	South Approach Louise St	Peak total
7:30 - 8:30	12	99	77	188
15:00 - 16:00	12	72	92	176

Time		North Approach Louise St			East Approach Victor St			South Approach Louise St		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
6:00	6:15	0	0	0	0	0	0	0	0	0
6:15	6:30	0	0	0	0	0	0	0	0	0
6:30	6:45	0	0	0	0	0	0	0	0	0
6:45	7:00	0	0	0	0	0	0	0	0	0
7:00	7:15	0	0	0	0	0	0	0	0	0
7:15	7:30	0	0	0	0	0	0	0	0	0
7:30	7:45	0	0	0	0	0	0	0	0	0
7:45	8:00	0	0	0	0	1	0	0	0	0
8:00	8:15	0	1	0	0	0	0	0	0	0
8:15	8:30	0	0	0	0	0	0	0	0	0
8:30	8:45	0	0	0	0	0	0	0	0	0
8:45	9:00	0	0	0	0	0	0	0	0	0
15:00	15:15	0	0	1	0	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0	0	0
15:30	15:45	0	0	0	0	1	0	0	0	0
15:45	16:00	0	0	0	0	0	0	0	0	0
16:00	16:15	0	0	0	0	0	0	0	0	0
16:15	16:30	0	0	0	0	0	0	0	0	0
16:30	16:45	0	0	0	0	0	0	0	0	0
16:45	17:00	0	0	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0	0	0
17:15	17:30	0	0	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0	0	0

Peak Time	North Approach Louise St	East Approach Victor St	South Approach Louise St	Peak total
7:30 - 8:30	0	1	0	1
15:00 - 16:00	0	0	1	1

APPENDIX E

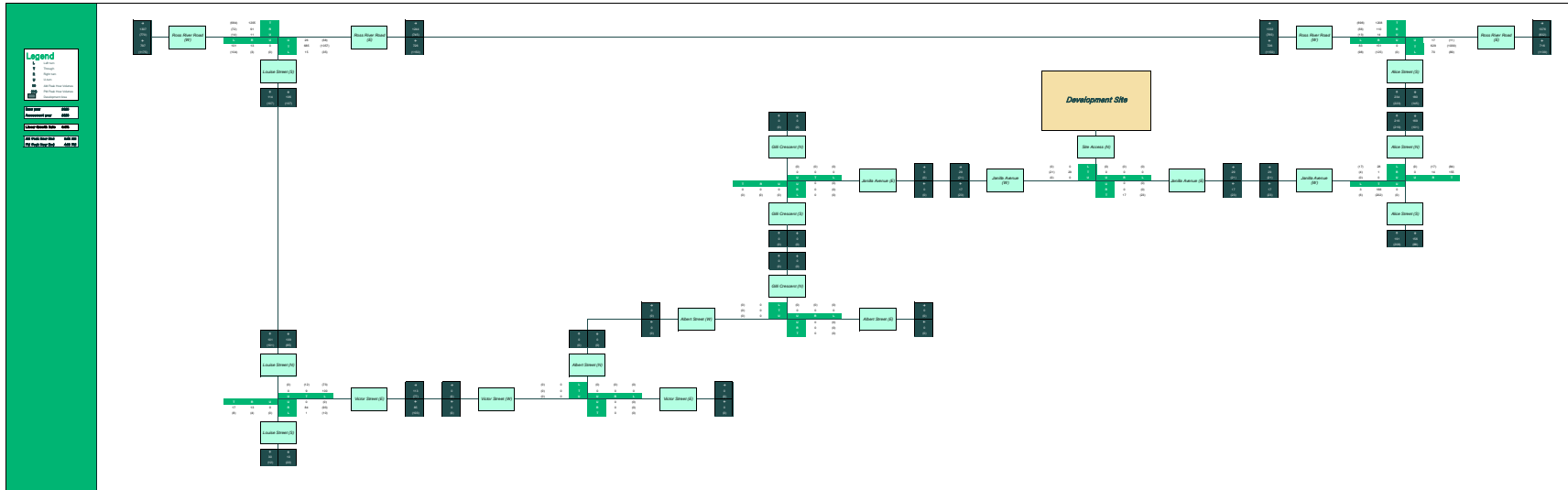
Network Flow Diagrams



MODUS
Transport and Traffic Engineering

Project: 600 Rose River Road, Cranbrook
 Client: Norbert Kassas
 Date: 27/08/2025
 Prepared by: Amir El Hachri
 Reviewed by: Bradley Fuller

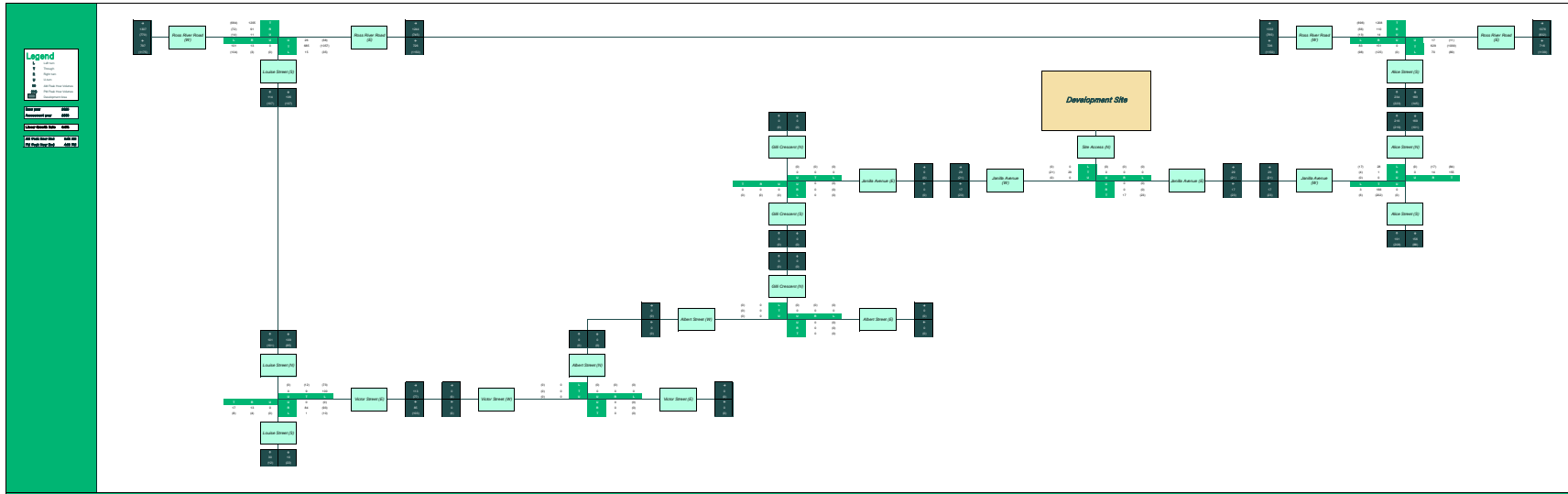
2025 Background Traffic Volumes



MODUS
Transport and Traffic Engineering

Project: 600 Rose River Road, Cranbrook
 Client: Norbert Kass
 Date: 27/08/2025
 Prepared by: Amir El Hachimi
 Reviewed by: Bradley Fuller

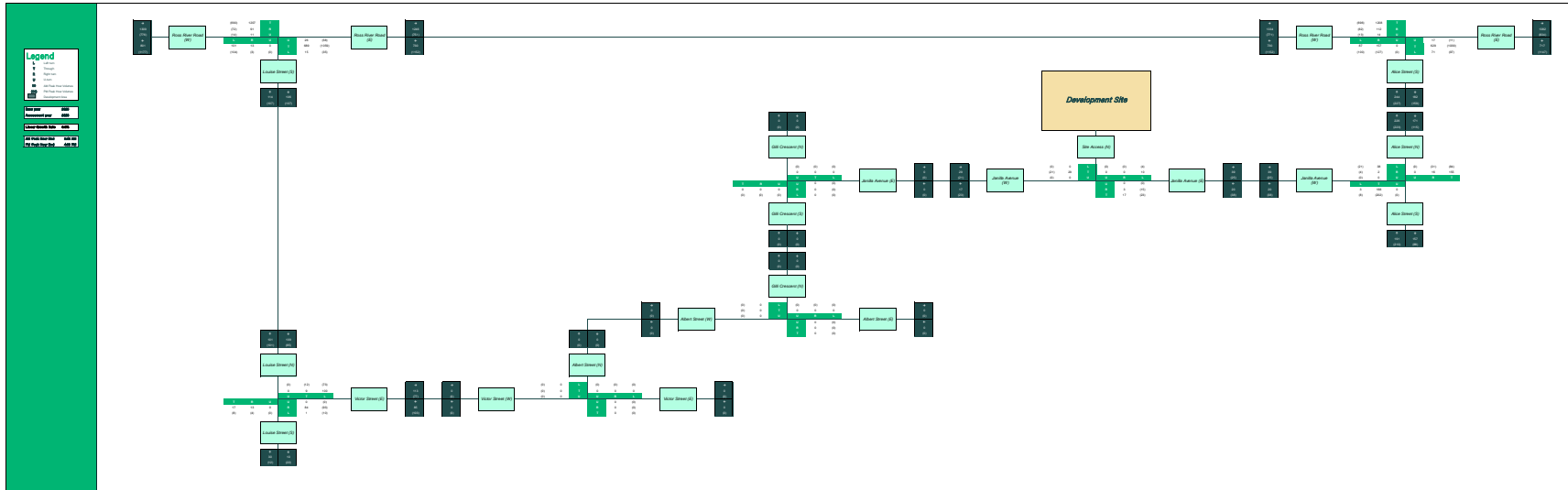
2028 Background Traffic Volumes



MODUS
Transport and Traffic Engineering

Project: 600 Rose River Road, Cranbrook
 Client: Norbert Kassas
 Date: 27/08/2025
 Prepared by: Amir El Hachil
 Reviewed by: Bradley Fuller

2038 Background Traffic Volumes



APPENDIX F

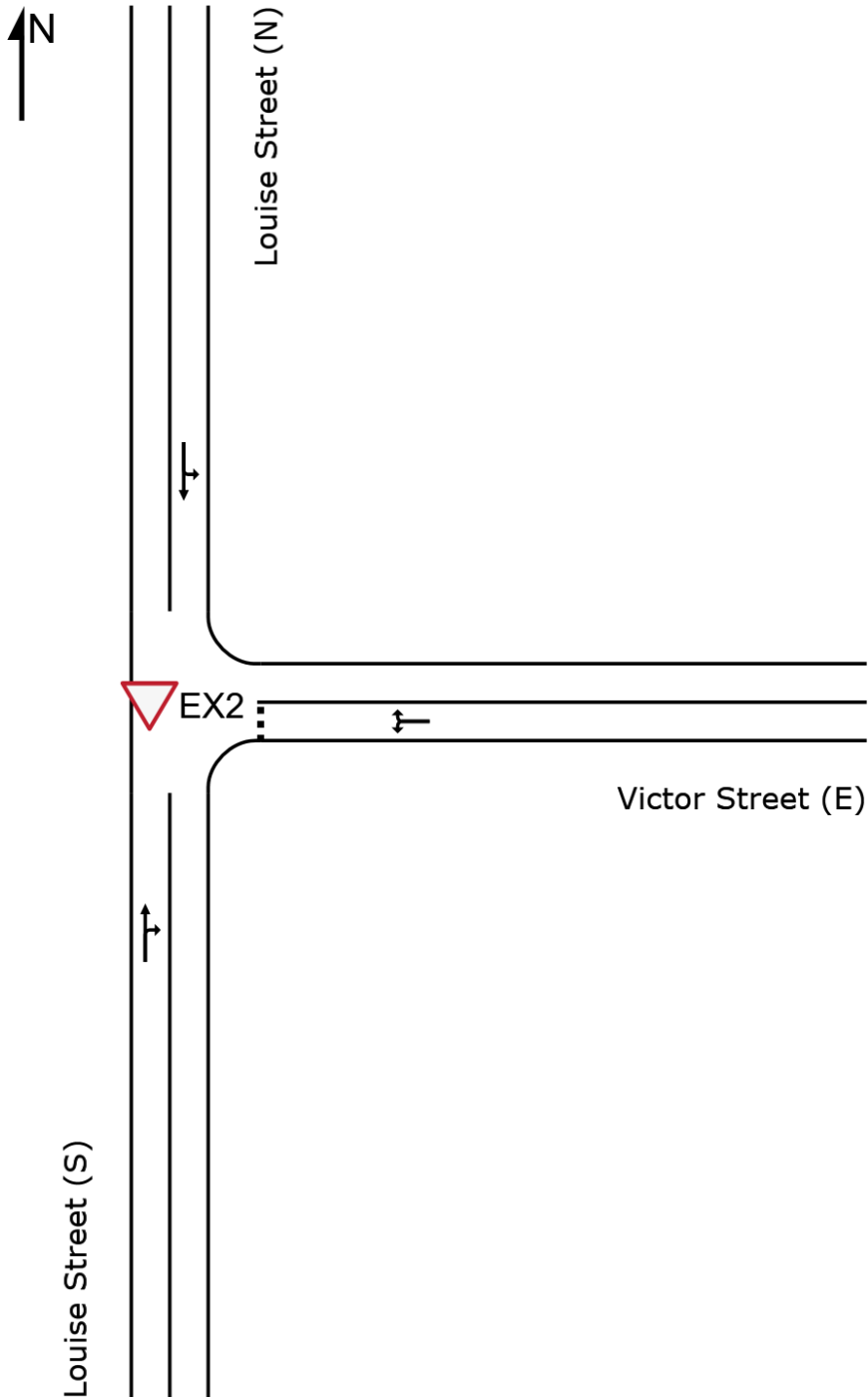
SIDRA Results and Layouts

SITE LAYOUT

Site: [EX2] BG2028 AM (BG2028)

Louise Street / Victor Street
Year 2028 Background
AM Peak: 7:45AM - 8:45AM
Site Category: Existing Conditions
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

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

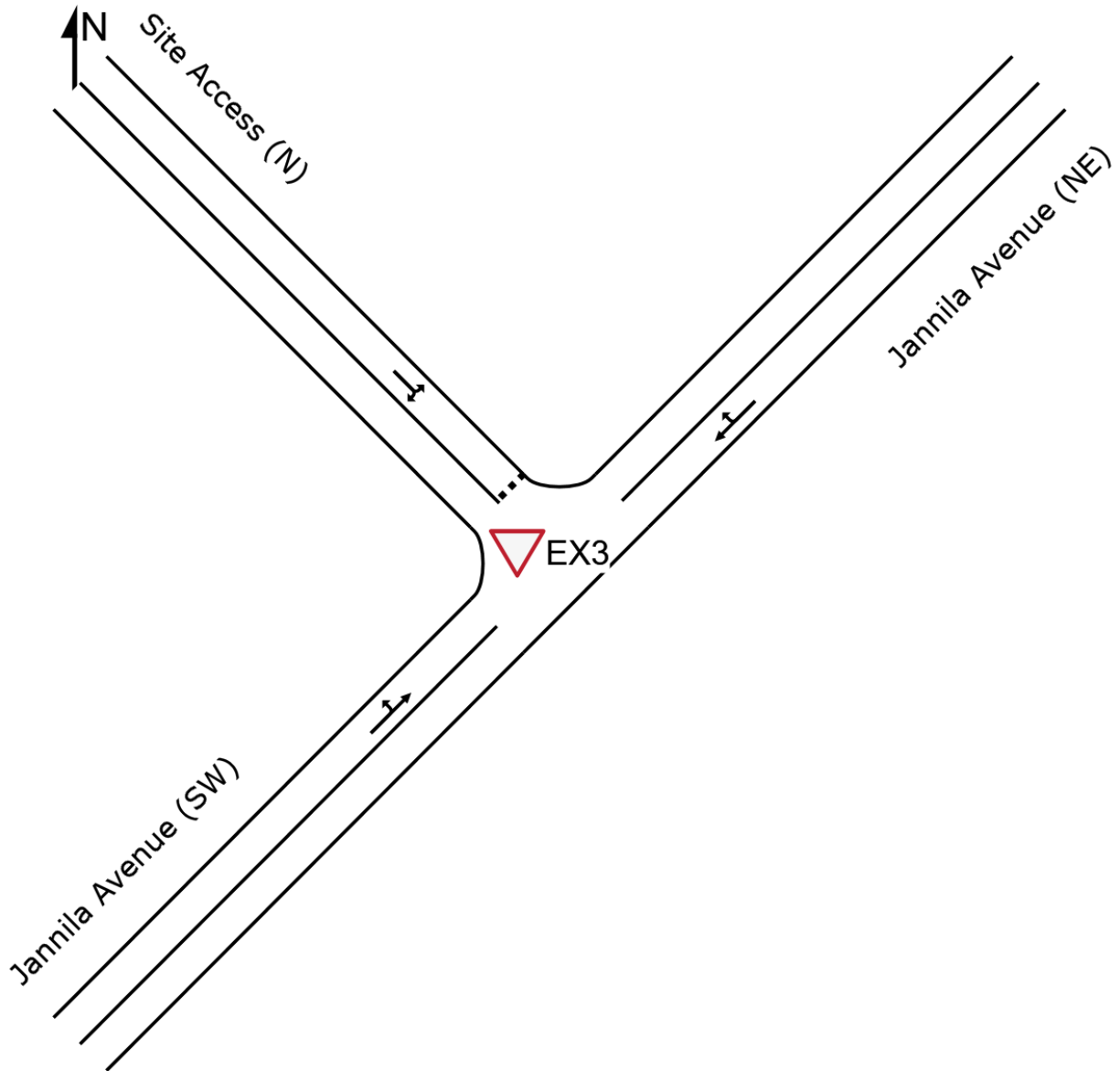


SITE LAYOUT

▽ Site: [EX3] BG2028 AM (BG2028)

Jannila Avenue / Site Access
Year 2028 Background
AM Peak: 7:45AM - 8:45AM
Site Category: Existing Conditions
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

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



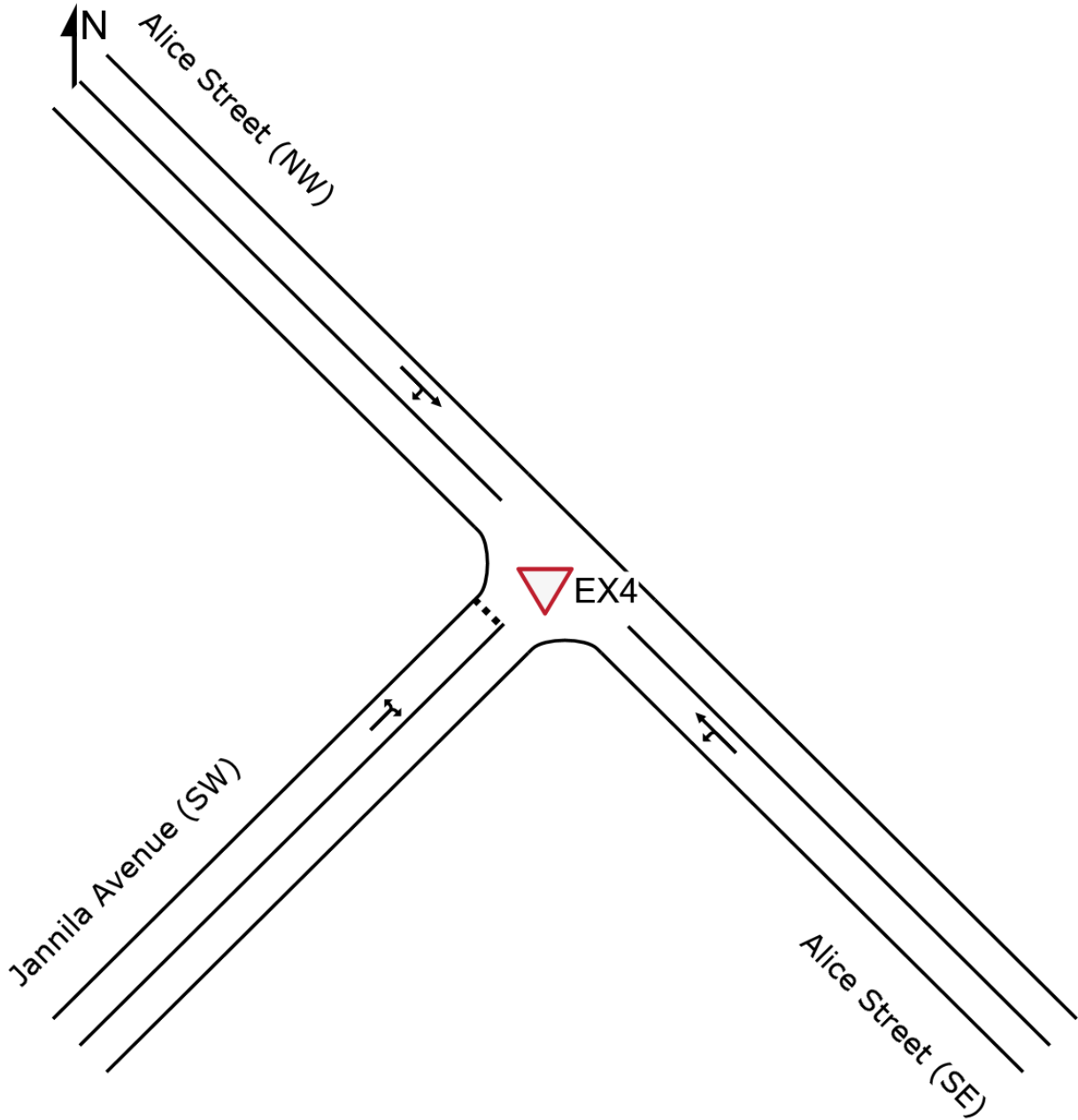
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Project: Not Saved

SITE LAYOUT

Site: [EX4] BG2028 AM (BG2028)

Alice Street / Jannila Avenue
Year 2028 Background
AM Peak: 7:45AM - 8:45AM
Site Category: Existing Conditions
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

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



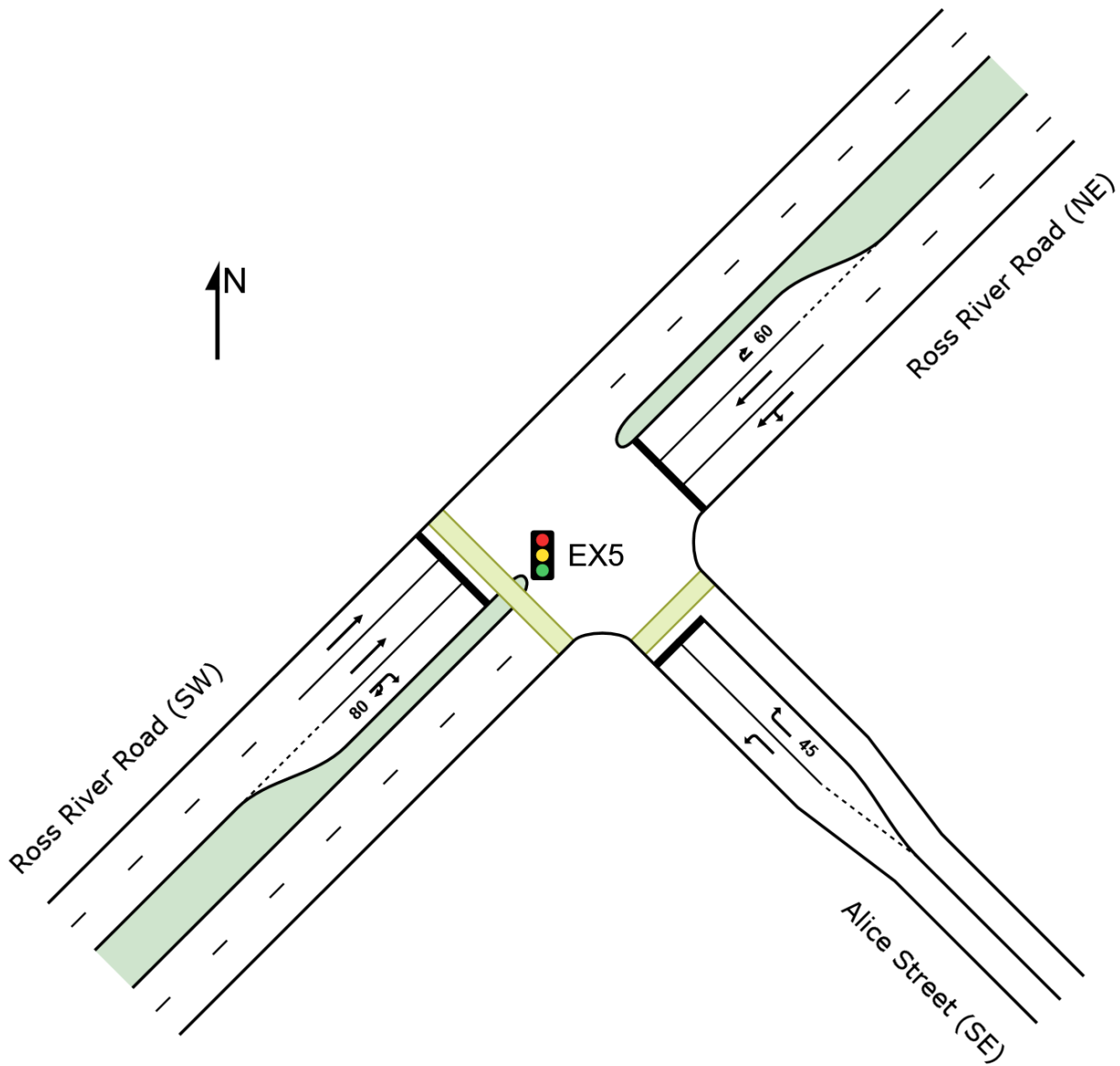
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Project: Not Saved

SITE LAYOUT

 Site: [EX5] BG2028 AM (BG2028)

Ross River Road / Alice Street
Year 2028 Background
AM Peak: 7:45AM - 8:45AM
Site Category: Existing Conditions
Signals - EQUISAT (Fixed-Time/SCATS) Isolated
Site Scenario: 1 | Local Volumes

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



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Project: Not Saved

PHASING SUMMARY

 Site: [EX5] BG2028 AM (BG2028)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Ross River Road / Alice Street

Year 2028 Background

AM Peak: 7:45AM - 8:45AM

Site Category: Existing Conditions

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120.0 seconds (Site Optimum Cycle Time - Minimum Degree of Saturation)

Site Scenario: 1 | Local Volumes

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Four-Phase Leading Right Turns

Input Phase Sequence: A, B, C

Output Phase Sequence: A, B, C

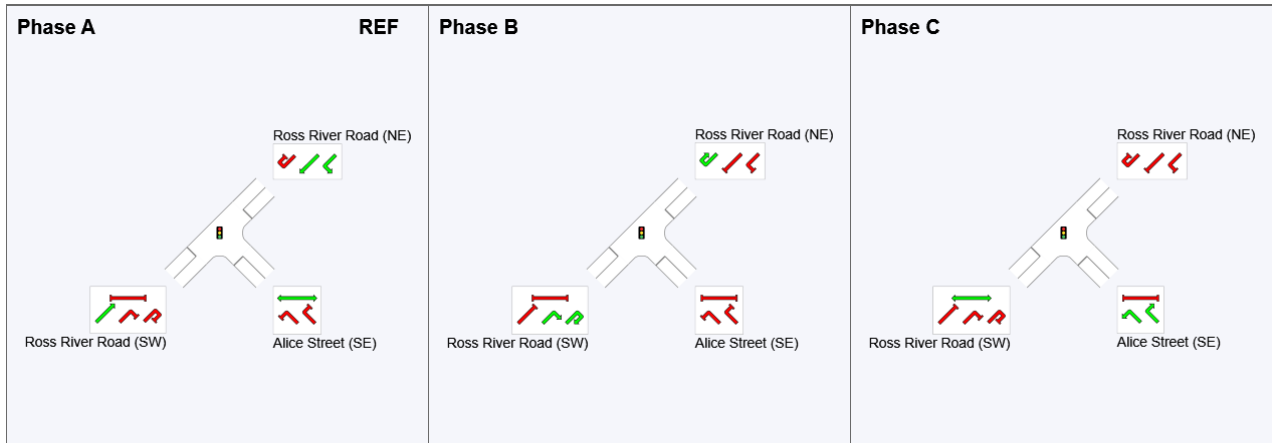
Reference Phase: Phase A

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0.0	75.0	96.2
Green Time (sec)	69.0	15.2	17.8
Phase Time (sec)	75.0	21.2	23.8
Phase Split	62%	18%	20%
Phase Frequency (%)	100.0	100.0	100.0





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

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

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Project: Not Saved

PHASING SUMMARY

 Site: [EX9] BG2028 PM (BG2028)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Ross River Road / Alice Street

Year 2028 Background

AM Peak: 7:45AM - 8:45AM

Site Category: Existing Conditions

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120.0 seconds (Site Optimum Cycle Time - Minimum Degree of Saturation)

Site Scenario: 1 | Local Volumes

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Four-Phase Leading Right Turns

Input Phase Sequence: A, B, C

Output Phase Sequence: A, B, C

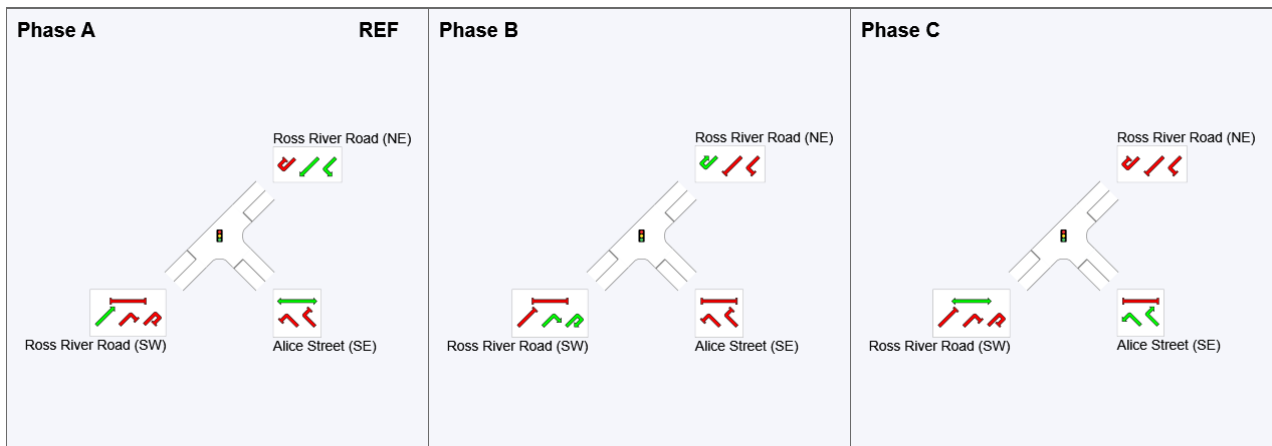
Reference Phase: Phase A

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0.0	80.5	96.5
Green Time (sec)	74.5	10.1	17.5
Phase Time (sec)	80.5	16.1	23.5
Phase Split	67%	13%	20%
Phase Frequency (%)	100.0	100.0	100.0













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

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

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 Project: Not Saved

MOVEMENT SUMMARY

Site: [EX2] BG2028 AM (BG2028)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Louise Street / Victor Street
 Year 2028 Background
 AM Peak: 7:45AM - 8:45AM
 Site Category: Existing Conditions
 Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycles	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]	v/c	sec		[Veh.]	[Dist]		Rate		km/h
			veh/h	%	veh/h	%				veh	m				
South: Louise Street (S)															
2	T1	All MCs	18	5.0	18	5.0	0.018	0.2	LOSA	0.1	0.5	0.18	0.28	0.18	57.1
3	R2	All MCs	14	5.0	14	5.0	0.018	5.9	LOSA	0.1	0.5	0.18	0.28	0.18	54.3
Approach			32	5.0	32	5.0	0.018	2.7	NA	0.1	0.5	0.18	0.28	0.18	55.8
East: Victor Street (E)															
4	L2	All MCs	1	5.0	1	5.0	0.077	5.6	LOSA	0.3	1.9	0.17	0.57	0.17	52.3
6	R2	All MCs	88	5.0	88	5.0	0.077	5.9	LOSA	0.3	1.9	0.17	0.57	0.17	52.0
Approach			89	5.0	89	5.0	0.077	5.9	LOSA	0.3	1.9	0.17	0.57	0.17	52.0
North: Louise Street (N)															
7	L2	All MCs	105	5.0	105	5.0	0.064	5.6	LOSA	0.0	0.0	0.00	0.53	0.00	53.0
8	T1	All MCs	9	5.0	9	5.0	0.064	0.0	LOSA	0.0	0.0	0.00	0.53	0.00	55.4
Approach			115	5.0	115	5.0	0.064	5.2	NA	0.0	0.0	0.00	0.53	0.00	53.2
All Vehicles			236	5.0	236	5.0	0.077	5.1	NA	0.3	1.9	0.09	0.51	0.09	53.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [EX3] BG2028 AM (BG2028)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Jannila Avenue / Site Access
 Year 2028 Background
 AM Peak: 7:45AM - 8:45AM
 Site Category: Existing Conditions
 Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]	v/c	sec		[Veh.]	[Dist]				km/h
			veh/h	%	veh/h	%				veh	m				
NorthEast: Jannila Avenue (NE)															
5	T1	All MCs	18	5.0	18	5.0	0.010	0.0	LOS A	0.0	0.0	0.01	0.03	0.01	59.6
6	R2	All MCs	1	5.0	1	5.0	0.010	5.5	LOS A	0.0	0.0	0.01	0.03	0.01	56.6
Approach			19	5.0	19	5.0	0.010	0.3	NA	0.0	0.0	0.01	0.03	0.01	59.5
NorthWest: Site Access (N)															
7	L2	All MCs	1	5.0	1	5.0	0.002	5.7	LOS A	0.0	0.0	0.10	0.55	0.10	52.4
9	R2	All MCs	1	5.0	1	5.0	0.002	5.7	LOS A	0.0	0.0	0.10	0.55	0.10	52.1
Approach			2	5.0	2	5.0	0.002	5.7	LOS A	0.0	0.0	0.10	0.55	0.10	52.3
SouthWest: Jannila Avenue (SW)															
10	L2	All MCs	1	5.0	1	5.0	0.017	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	57.1
11	T1	All MCs	31	5.0	31	5.0	0.017	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach			32	5.0	32	5.0	0.017	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.7
All Vehicles			53	5.0	53	5.0	0.017	0.5	NA	0.0	0.0	0.01	0.05	0.01	59.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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 Project: Not Saved

MOVEMENT SUMMARY

Site: [EX4] BG2028 AM (BG2028)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Alice Street / Jannila Avenue
 Year 2028 Background
 AM Peak: 7:45AM - 8:45AM
 Site Category: Existing Conditions
 Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]	v/c	sec		[Veh.]	[Dist]				km/h
			veh/h	%	veh/h	%				veh	m				
SouthEast: Alice Street (SE)															
7	L2	All MCs	3	5.0	3	5.0	0.107	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	57.1
8	T1	All MCs	198	5.0	198	5.0	0.107	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach			201	5.0	201	5.0	0.107	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
NorthWest: Alice Street (NW)															
2	T1	All MCs	163	5.0	163	5.0	0.097	0.1	LOS A	0.1	0.8	0.06	0.08	0.06	59.3
3	R2	All MCs	15	5.0	15	5.0	0.097	6.2	LOS A	0.1	0.8	0.06	0.08	0.06	56.3
Approach			178	5.0	178	5.0	0.097	0.6	NA	0.1	0.8	0.06	0.08	0.06	59.0
SouthWest: Jannila Avenue (SW)															
4	L2	All MCs	29	5.0	29	5.0	0.023	6.2	LOS A	0.1	0.7	0.29	0.56	0.29	51.8
6	R2	All MCs	1	5.0	1	5.0	0.023	7.1	LOS A	0.1	0.7	0.29	0.56	0.29	51.5
Approach			31	5.0	31	5.0	0.023	6.3	LOS A	0.1	0.7	0.29	0.56	0.29	51.8
All Vehicles			409	5.0	409	5.0	0.107	0.8	NA	0.1	0.8	0.05	0.08	0.05	58.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 Site: [EX5] BG2028 AM (BG2028)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Ross River Road / Alice Street

Year 2028 Background

AM Peak: 7:45AM - 8:45AM

Site Category: Existing Conditions

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120.0 seconds (Site Optimum Cycle Time - Minimum Degree of Saturation)

Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]	v/c	sec		[Veh.]	[Dist]				km/h
			veh/h	%	veh/h	%				veh	m				
SouthEast: Alice Street (SE)															
4	L2	All MCs	87	5.0	87	5.0	0.395	59.3	LOS E	4.9	35.5	0.96	0.77	0.96	29.7
6	R2	All MCs	159	5.0	159	5.0	* 0.596	58.4	LOS E	8.9	65.2	0.98	0.81	0.98	30.0
Approach			246	5.0	246	5.0	0.596	58.7	LOS E	8.9	65.2	0.98	0.80	0.98	29.9
NorthEast: Ross River Road (NE)															
7	L2	All MCs	74	5.0	74	5.0	0.343	21.7	LOS C	11.2	81.9	0.57	0.55	0.57	45.9
8	T1	All MCs	662	5.0	662	5.0	0.343	14.3	LOS B	11.3	82.6	0.57	0.52	0.57	48.2
9u	U	All MCs	18	5.0	18	5.0	0.105	58.4	LOS E	1.0	7.0	0.92	0.71	0.92	29.9
Approach			754	5.0	754	5.0	0.343	16.1	LOS B	11.3	82.6	0.58	0.53	0.58	47.2
SouthWest: Ross River Road (SW)															
2	T1	All MCs	1272	5.0	1272	5.0	* 0.596	18.9	LOS B	24.1	176.1	0.70	0.63	0.70	46.6
3	R2	All MCs	116	5.0	116	5.0	* 0.596	63.6	LOS E	7.5	54.6	0.99	0.80	0.99	29.4
3u	U	All MCs	15	5.0	15	5.0	0.596	65.0	LOS E	7.5	54.6	0.99	0.80	0.99	29.2
Approach			1402	5.0	1402	5.0	0.596	23.1	LOS C	24.1	176.1	0.73	0.65	0.73	43.4
All Vehicles			2402	5.0	2402	5.0	0.596	24.5	LOS C	24.1	176.1	0.71	0.63	0.71	42.5

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

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

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

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped]	[Dist]			sec	m	m/sec
						ped	m					
SouthEast: Alice Street (SE)												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
SouthWest: Ross River Road (SW)												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All		100	105	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96

Pedestrians

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: [EX7] BG2028 PM (BG2028)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Louise Street / Victor Street
 Year 2028 Background
 AM Peak: 7:45AM - 8:45AM
 Site Category: Existing Conditions
 Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycles	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]	v/c	sec		[Veh.]	[Dist]		Rate		km/h
			veh/h	%	veh/h	%				veh	m				
South: Louise Street (S)															
2	T1	All MCs	8	5.0	8	5.0	0.007	0.1	LOS A	0.0	0.2	0.13	0.22	0.13	57.8
3	R2	All MCs	4	5.0	4	5.0	0.007	5.8	LOS A	0.0	0.2	0.13	0.22	0.13	54.9
Approach			13	5.0	13	5.0	0.007	2.0	NA	0.0	0.2	0.13	0.22	0.13	56.8
East: Victor Street (E)															
4	L2	All MCs	11	5.0	11	5.0	0.089	5.6	LOS A	0.3	2.2	0.12	0.57	0.12	52.4
6	R2	All MCs	98	5.0	98	5.0	0.089	5.7	LOS A	0.3	2.2	0.12	0.57	0.12	52.1
Approach			108	5.0	108	5.0	0.089	5.7	LOS A	0.3	2.2	0.12	0.57	0.12	52.1
North: Louise Street (N)															
7	L2	All MCs	77	5.0	77	5.0	0.050	5.6	LOS A	0.0	0.0	0.00	0.50	0.00	53.3
8	T1	All MCs	13	5.0	13	5.0	0.050	0.0	LOS A	0.0	0.0	0.00	0.50	0.00	55.6
Approach			89	5.0	89	5.0	0.050	4.8	NA	0.0	0.0	0.00	0.50	0.00	53.6
All Vehicles			211	5.0	211	5.0	0.089	5.1	NA	0.3	2.2	0.07	0.52	0.07	53.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: [EX1] BG2028 PM (BG2028)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Alice Street / Jannila Avenue
 Year 2028 Background
 AM Peak: 7:45AM - 8:45AM
 Site Category: Existing Conditions
 Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]	v/c	sec		[Veh.]	[Dist]				km/h
			veh/h	%	veh/h	%				veh	m				
SouthEast: Alice Street (SE)															
7	L2	All MCs	6	5.0	6	5.0	0.116	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	57.1
8	T1	All MCs	213	5.0	213	5.0	0.116	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach			219	5.0	219	5.0	0.116	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.7
NorthWest: Alice Street (NW)															
2	T1	All MCs	88	5.0	88	5.0	0.060	0.2	LOS A	0.1	0.9	0.13	0.16	0.13	58.6
3	R2	All MCs	18	5.0	18	5.0	0.060	6.3	LOS A	0.1	0.9	0.13	0.16	0.13	55.6
Approach			106	5.0	106	5.0	0.060	1.2	NA	0.1	0.9	0.13	0.16	0.13	58.1
SouthWest: Jannila Avenue (SW)															
4	L2	All MCs	18	5.0	18	5.0	0.018	6.3	LOS A	0.1	0.5	0.31	0.56	0.31	51.8
6	R2	All MCs	4	5.0	4	5.0	0.018	6.8	LOS A	0.1	0.5	0.31	0.56	0.31	51.5
Approach			22	5.0	22	5.0	0.018	6.4	LOS A	0.1	0.5	0.31	0.56	0.31	51.7
All Vehicles			347	5.0	347	5.0	0.116	0.9	NA	0.1	0.9	0.06	0.09	0.06	58.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 Site: [EX9] BG2028 PM (BG2028)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Ross River Road / Alice Street

Year 2028 Background

AM Peak: 7:45AM - 8:45AM

Site Category: Existing Conditions

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120.0 seconds (Site Optimum Cycle Time - Minimum Degree of Saturation)

Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]			v/c	sec							km/h
			veh/h	%	veh/h	%			[Veh. Dist]						
			veh	m											
SouthEast: Alice Street (SE)															
4	L2	All MCs	103	5.0	103	5.0	0.478	60.4	LOS E	5.8	42.5	0.98	0.78	0.98	29.4
6	R2	All MCs	132	5.0	132	5.0	* 0.504	57.8	LOS E	7.3	53.2	0.97	0.80	0.97	30.1
Approach			235	5.0	235	5.0	0.504	59.0	LOS E	7.3	53.2	0.97	0.79	0.97	29.8
NorthEast: Ross River Road (NE)															
7	L2	All MCs	94	5.0	94	5.0	* 0.512	20.9	LOS C	19.1	139.4	0.61	0.59	0.61	46.6
8	T1	All MCs	1094	5.0	1094	5.0	0.512	15.2	LOS B	19.1	139.4	0.60	0.56	0.60	48.8
9u	U	All MCs	12	5.0	12	5.0	0.102	67.5	LOS E	0.7	4.8	0.95	0.69	0.95	28.5
Approach			1199	5.0	1199	5.0	0.512	16.1	LOS B	19.1	139.4	0.61	0.57	0.61	47.3
SouthWest: Ross River Road (SW)															
2	T1	All MCs	733	5.0	733	5.0	0.313	11.3	LOS B	9.9	72.2	0.51	0.44	0.51	50.6
3	R2	All MCs	59	5.0	59	5.0	* 0.512	65.3	LOS E	4.3	31.3	1.00	0.77	1.00	28.3
3u	U	All MCs	14	5.0	14	5.0	0.512	66.6	LOS E	4.3	31.3	1.00	0.77	1.00	28.2
Approach			805	5.0	805	5.0	0.512	16.2	LOS B	9.9	72.2	0.55	0.47	0.55	47.2
All Vehicles			2239	5.0	2239	5.0	0.512	20.6	LOS C	19.1	139.4	0.62	0.56	0.62	44.5

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

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

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

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec	[Ped Dist]					sec	m	m/sec
					ped	m						
SouthEast: Alice Street (SE)												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
SouthWest: Ross River Road (SW)												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All		100	105	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96

Pedestrians

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: [PR2] BG2028 + DEV AM (BG2028 + DEV)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Louise Street / Victor Street
 Year 2028 Background + Dev
 AM Peak: 7:45AM - 8:45AM
 Site Category: Proposed Conditions
 Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]	v/c	sec		[Veh.]	[Dist]				km/h
			veh/h	%	veh/h	%				veh	m				
South: Louise Street (S)															
2	T1	All MCs	18	5.0	18	5.0	0.018	0.2	LOS A	0.1	0.5	0.18	0.28	0.18	57.1
3	R2	All MCs	14	5.0	14	5.0	0.018	5.9	LOS A	0.1	0.5	0.18	0.28	0.18	54.3
Approach			32	5.0	32	5.0	0.018	2.7	NA	0.1	0.5	0.18	0.28	0.18	55.8
East: Victor Street (E)															
4	L2	All MCs	1	5.0	1	5.0	0.077	5.6	LOS A	0.3	1.9	0.17	0.57	0.17	52.3
6	R2	All MCs	88	5.0	88	5.0	0.077	5.9	LOS A	0.3	1.9	0.17	0.57	0.17	52.0
Approach			89	5.0	89	5.0	0.077	5.9	LOS A	0.3	1.9	0.17	0.57	0.17	52.0
North: Louise Street (N)															
7	L2	All MCs	105	5.0	105	5.0	0.064	5.6	LOS A	0.0	0.0	0.00	0.53	0.00	53.0
8	T1	All MCs	9	5.0	9	5.0	0.064	0.0	LOS A	0.0	0.0	0.00	0.53	0.00	55.4
Approach			115	5.0	115	5.0	0.064	5.2	NA	0.0	0.0	0.00	0.53	0.00	53.2
All Vehicles			236	5.0	236	5.0	0.077	5.1	NA	0.3	1.9	0.09	0.51	0.09	53.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: [PR3] BG2028 + DEV AM (BG2028 + DEV)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Jannila Avenue / Site Access
 Year 2028 Background + Dev
 AM Peak: 7:45AM - 8:45AM
 Site Category: Proposed Conditions
 Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]	v/c	sec		[Veh.]	[Dist]				km/h
			veh/h	%	veh/h	%				veh	m				
NorthEast: Jannila Avenue (NE)															
5	T1	All MCs	18	5.0	18	5.0	0.011	0.0	LOS A	0.0	0.1	0.03	0.09	0.03	59.1
6	R2	All MCs	3	5.0	3	5.0	0.011	5.5	LOS A	0.0	0.1	0.03	0.09	0.03	56.1
Approach			21	5.0	21	5.0	0.011	0.8	NA	0.0	0.1	0.03	0.09	0.03	58.6
NorthWest: Site Access (N)															
7	L2	All MCs	11	5.0	11	5.0	0.008	5.7	LOS A	0.0	0.2	0.10	0.54	0.10	52.4
9	R2	All MCs	1	5.0	1	5.0	0.008	5.7	LOS A	0.0	0.2	0.10	0.54	0.10	52.1
Approach			12	5.0	12	5.0	0.008	5.7	LOS A	0.0	0.2	0.10	0.54	0.10	52.4
SouthWest: Jannila Avenue (SW)															
10	L2	All MCs	1	5.0	1	5.0	0.017	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	57.1
11	T1	All MCs	31	5.0	31	5.0	0.017	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach			32	5.0	32	5.0	0.017	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.7
All Vehicles			64	5.0	64	5.0	0.017	1.4	NA	0.0	0.2	0.03	0.14	0.03	57.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [PR4] BG2028 + DEV AM (BG2028 + DEV)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Alice Street / Jannila Avenue
 Year 2028 Background + Dev
 AM Peak: 7:45AM - 8:45AM
 Site Category: Proposed Conditions
 Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]	v/c	sec		[Veh.]	[Dist]				km/h
			veh/h	%	veh/h	%				veh	m				
SouthEast: Alice Street (SE)															
7	L2	All MCs	3	5.0	3	5.0	0.107	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	57.1
8	T1	All MCs	198	5.0	198	5.0	0.107	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach			201	5.0	201	5.0	0.107	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
NorthWest: Alice Street (NW)															
2	T1	All MCs	163	5.0	163	5.0	0.098	0.1	LOS A	0.1	0.9	0.07	0.09	0.07	59.2
3	R2	All MCs	17	5.0	17	5.0	0.098	6.2	LOS A	0.1	0.9	0.07	0.09	0.07	56.2
Approach			180	5.0	180	5.0	0.098	0.7	NA	0.1	0.9	0.07	0.09	0.07	58.9
SouthWest: Jannila Avenue (SW)															
4	L2	All MCs	40	5.0	40	5.0	0.031	6.2	LOS A	0.1	0.9	0.29	0.56	0.29	51.8
6	R2	All MCs	1	5.0	1	5.0	0.031	7.1	LOS A	0.1	0.9	0.29	0.56	0.29	51.5
Approach			41	5.0	41	5.0	0.031	6.3	LOS A	0.1	0.9	0.29	0.56	0.29	51.8
All Vehicles			422	5.0	422	5.0	0.107	1.0	NA	0.1	0.9	0.06	0.10	0.06	58.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

 **Site: [PR5] BG2028 + DEV AM (BG2028 + DEV)**
 Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Ross River Road / Alice Street
 Year 2028 Background + Dev
 AM Peak: 7:45AM - 8:45AM
 Site Category: Proposed Conditions
 Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120.0 seconds (Site Optimum Cycle Time - Minimum Degree of Saturation)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]			v/c	sec	[Veh. Dist]						km/h
			veh/h	%	veh/h	%									
SouthEast: Alice Street (SE)															
4	L2	All MCs	92	5.0	92	5.0	0.400	58.9	LOS E	5.1	37.0	0.96	0.78	0.96	29.8
6	R2	All MCs	165	5.0	165	5.0	* 0.602	58.0	LOS E	9.3	67.6	0.98	0.81	0.98	30.1
Approach			257	5.0	257	5.0	0.602	58.3	LOS E	9.3	67.6	0.98	0.80	0.98	30.0
NorthEast: Ross River Road (NE)															
7	L2	All MCs	75	5.0	75	5.0	0.346	22.0	LOS C	11.4	83.0	0.58	0.56	0.58	45.7
8	T1	All MCs	662	5.0	662	5.0	0.346	14.7	LOS B	11.5	83.8	0.58	0.53	0.58	47.9
9u	U	All MCs	18	5.0	18	5.0	0.104	58.3	LOS E	1.0	7.0	0.92	0.71	0.92	29.9
Approach			755	5.0	755	5.0	0.346	16.4	LOS B	11.5	83.8	0.59	0.54	0.59	47.0
SouthWest: Ross River Road (SW)															
2	T1	All MCs	1272	5.0	1272	5.0	* 0.602	19.4	LOS B	24.5	178.6	0.71	0.64	0.71	46.3
3	R2	All MCs	118	5.0	118	5.0	* 0.602	63.8	LOS E	7.6	55.5	0.99	0.80	1.00	29.4
3u	U	All MCs	15	5.0	15	5.0	0.602	65.2	LOS E	7.6	55.5	0.99	0.80	1.00	29.2
Approach			1404	5.0	1404	5.0	0.602	23.6	LOS C	24.5	178.6	0.73	0.66	0.74	43.1
All Vehicles			2416	5.0	2416	5.0	0.602	25.1	LOS C	24.5	178.6	0.71	0.63	0.71	42.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Intersection and Approach LOS values are based on average delay for all vehicle movements.
 Delay Model: SIDRA Standard (Control Delay; Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec	[Ped Dist]							
					ped	m						
SouthEast: Alice Street (SE)												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
SouthWest: Ross River Road (SW)												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All		100	105	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96

Pedestrians

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: [PR6] BG2028 + DEV PM (BG2028 + DEV)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Louise Street / Victor Street
 Year 2028 Background + Dev
 AM Peak: 7:45AM - 8:45AM
 Site Category: Proposed Conditions
 Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycles	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]	v/c	sec		[Veh.]	[Dist]		Rate	to Depart	km/h
			veh/h	%	veh/h	%				veh	m				
South: Louise Street (S)															
2	T1	All MCs	8	5.0	8	5.0	0.007	0.1	LOS A	0.0	0.2	0.13	0.22	0.13	57.8
3	R2	All MCs	4	5.0	4	5.0	0.007	5.8	LOS A	0.0	0.2	0.13	0.22	0.13	54.9
Approach			13	5.0	13	5.0	0.007	2.0	NA	0.0	0.2	0.13	0.22	0.13	56.8
East: Victor Street (E)															
4	L2	All MCs	11	5.0	11	5.0	0.089	5.6	LOS A	0.3	2.2	0.12	0.57	0.12	52.4
6	R2	All MCs	98	5.0	98	5.0	0.089	5.7	LOS A	0.3	2.2	0.12	0.57	0.12	52.1
Approach			108	5.0	108	5.0	0.089	5.7	LOS A	0.3	2.2	0.12	0.57	0.12	52.1
North: Louise Street (N)															
7	L2	All MCs	77	5.0	77	5.0	0.050	5.6	LOS A	0.0	0.0	0.00	0.50	0.00	53.3
8	T1	All MCs	13	5.0	13	5.0	0.050	0.0	LOS A	0.0	0.0	0.00	0.50	0.00	55.6
Approach			89	5.0	89	5.0	0.050	4.8	NA	0.0	0.0	0.00	0.50	0.00	53.6
All Vehicles			211	5.0	211	5.0	0.089	5.1	NA	0.3	2.2	0.07	0.52	0.07	53.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: [PR8] BG2028 + DEV PM (BG2028 + DEV)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Jannila Avenue / Site Access
 Year 2028 Background + Dev
 AM Peak: 7:45AM - 8:45AM
 Site Category: Proposed Conditions
 Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycles	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]	v/c	sec		[Veh.]	[Dist]		Rate		km/h
			veh/h	%	veh/h	%				veh	m				
NorthEast: Jannila Avenue (NE)															
5	T1	All MCs	24	5.0	24	5.0	0.022	0.0	LOS A	0.1	0.6	0.07	0.24	0.07	57.7
6	R2	All MCs	16	5.0	16	5.0	0.022	5.6	LOS A	0.1	0.6	0.07	0.24	0.07	54.8
Approach			40	5.0	40	5.0	0.022	2.2	NA	0.1	0.6	0.07	0.24	0.07	56.5
NorthWest: Site Access (N)															
7	L2	All MCs	4	5.0	4	5.0	0.004	5.7	LOS A	0.0	0.1	0.08	0.55	0.08	52.4
9	R2	All MCs	1	5.0	1	5.0	0.004	5.7	LOS A	0.0	0.1	0.08	0.55	0.08	52.2
Approach			5	5.0	5	5.0	0.004	5.7	LOS A	0.0	0.1	0.08	0.55	0.08	52.4
SouthWest: Jannila Avenue (SW)															
10	L2	All MCs	1	5.0	1	5.0	0.012	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	57.0
11	T1	All MCs	22	5.0	22	5.0	0.012	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.7
Approach			23	5.0	23	5.0	0.012	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.6
All Vehicles			68	5.0	68	5.0	0.022	1.8	NA	0.1	0.6	0.04	0.19	0.04	57.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: [PR9] BG2028 + DEV PM (BG2028 + DEV)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Alice Street / Jannila Avenue
 Year 2028 Background + Dev
 AM Peak: 7:45AM - 8:45AM
 Site Category: Proposed Conditions
 Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]	v/c	sec		[Veh.]	[Dist]				km/h
			veh/h	%	veh/h	%				veh	m				
SouthEast: Alice Street (SE)															
7	L2	All MCs	8	5.0	8	5.0	0.117	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	57.0
8	T1	All MCs	213	5.0	213	5.0	0.117	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.7
Approach			221	5.0	221	5.0	0.117	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.6
NorthWest: Alice Street (NW)															
2	T1	All MCs	88	5.0	88	5.0	0.070	0.3	LOS A	0.2	1.6	0.20	0.24	0.20	57.8
3	R2	All MCs	33	5.0	33	5.0	0.070	6.3	LOS A	0.2	1.6	0.20	0.24	0.20	54.9
Approach			121	5.0	121	5.0	0.070	1.9	NA	0.2	1.6	0.20	0.24	0.20	57.0
SouthWest: Jannila Avenue (SW)															
4	L2	All MCs	22	5.0	22	5.0	0.022	6.3	LOS A	0.1	0.6	0.31	0.56	0.31	51.8
6	R2	All MCs	4	5.0	4	5.0	0.022	6.9	LOS A	0.1	0.6	0.31	0.56	0.31	51.5
Approach			26	5.0	26	5.0	0.022	6.4	LOS A	0.1	0.6	0.31	0.56	0.31	51.7
All Vehicles			368	5.0	368	5.0	0.117	1.2	NA	0.2	1.6	0.09	0.13	0.09	58.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 Site: [PR10] BG2028 + DEV PM (BG2028 + DEV)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Ross River Road / Alice Street

Year 2028 Background + Dev

AM Peak: 7:45AM - 8:45AM

Site Category: Proposed Conditions

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120.0 seconds (Site Optimum Cycle Time - Minimum Degree of Saturation)

Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]	v/c	sec		[Veh.]	[Dist]				km/h
			veh/h	%	veh/h	%				veh	m				
SouthEast: Alice Street (SE)															
4	L2	All MCs	105	5.0	105	5.0	0.488	60.5	LOS E	6.0	43.5	0.98	0.79	0.98	29.4
6	R2	All MCs	134	5.0	134	5.0	* 0.512	57.9	LOS E	7.4	54.1	0.97	0.80	0.97	30.1
Approach			239	5.0	239	5.0	0.512	59.0	LOS E	7.4	54.1	0.97	0.79	0.97	29.8
NorthEast: Ross River Road (NE)															
7	L2	All MCs	102	5.0	102	5.0	* 0.521	21.3	LOS C	19.6	142.9	0.62	0.60	0.62	46.3
8	T1	All MCs	1094	5.0	1094	5.0	0.521	15.8	LOS B	19.6	143.0	0.61	0.57	0.61	48.5
9u	U	All MCs	12	5.0	12	5.0	0.096	66.9	LOS E	0.7	4.7	0.95	0.69	0.95	28.7
Approach			1207	5.0	1207	5.0	0.521	16.8	LOS B	19.6	143.0	0.62	0.58	0.62	46.9
SouthWest: Ross River Road (SW)															
2	T1	All MCs	733	5.0	733	5.0	0.315	11.6	LOS B	10.0	73.2	0.51	0.45	0.51	50.4
3	R2	All MCs	65	5.0	65	5.0	* 0.521	64.6	LOS E	4.6	33.9	1.00	0.77	1.00	28.5
3u	U	All MCs	14	5.0	14	5.0	0.521	66.0	LOS E	4.6	33.9	1.00	0.77	1.00	28.3
Approach			812	5.0	812	5.0	0.521	16.8	LOS B	10.0	73.2	0.56	0.48	0.56	46.8
All Vehicles			2258	5.0	2258	5.0	0.521	21.2	LOS C	19.6	143.0	0.63	0.56	0.63	44.2

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

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

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

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped]	[Dist]			sec	m	m/sec
						ped	m					
SouthEast: Alice Street (SE)												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
SouthWest: Ross River Road (SW)												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All		100	105	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96

Pedestrians

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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