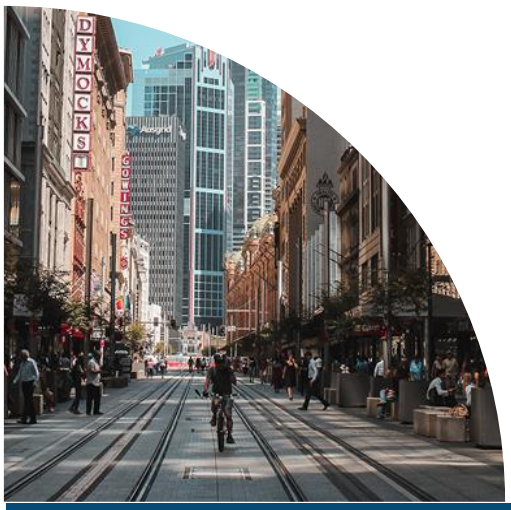

CROSSLEY

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School Road, Forbes Transport Impact Assessment

Rev B

Quality Assurance

Project Details

Project	School Road, Forbes – Transport Impact Assessment		
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Document Revision Register

Revision	Status	Prepared By	Checked By	Approved By
A	Final	Kevin Nathaniel	Kirk Martinez	Kirk Martinez
		25/09/2023	25/09/2023	25/09/2023
B	Final (update traffic impacts)	Kerry Tran	Kirk Martinez	Kirk Martinez
		27/09/2023	27/09/2023	27/09/2023

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Crossley have based this Report on information received or obtained on the basis that such information is accurate and complete. The information contained in this Report has not been subject to an audit.

Table of Contents

1 Introduction

1.1 Project background

Allera is proposing a rezoning of 92 hectares of land within the Forbes Shire Council to construct 742 residential dwellings and other mixed use developments to support the housing needs in Forbes.

1.2 Scope

Crossley Transport Planning (CTP) has been commissioned by Allera to carry out a Transport Impact Assessment (TIA) to determine the potential impacts of the proposed development on the operation and safety of the surrounding road network. The outcomes of the TIA will be used in support of a planning proposal for the site, which will be assessed by Forbes Shire Council (Council).

The study addresses the key topics related to traffic and transport impacts typically associated with the proposed development to include:

- Existing transport conditions surrounding the site
- Strategic planning context
- Traffic generating characteristics of the proposed development
- Transport impact of the planning proposal on the surrounding road network.

1.3 Study Area

The proposed development (subject site) has a total area of approximately 920,000 sqm and is located on Lots 375, 376, 386, 387, 388, 389, 830, 831, and 1273 in DP 750158. The subject site has been zoned as RU1 (Primary Production), R5 (Large Lot Residential), and RE1 (Public Recreation).

Figure 1-1 and **Figure 1-2** illustrates the location of the site in aerial view.

Figure 1-1: Aerial View of the Subject Site (Source: Nearmap, dated 19th March 2023)

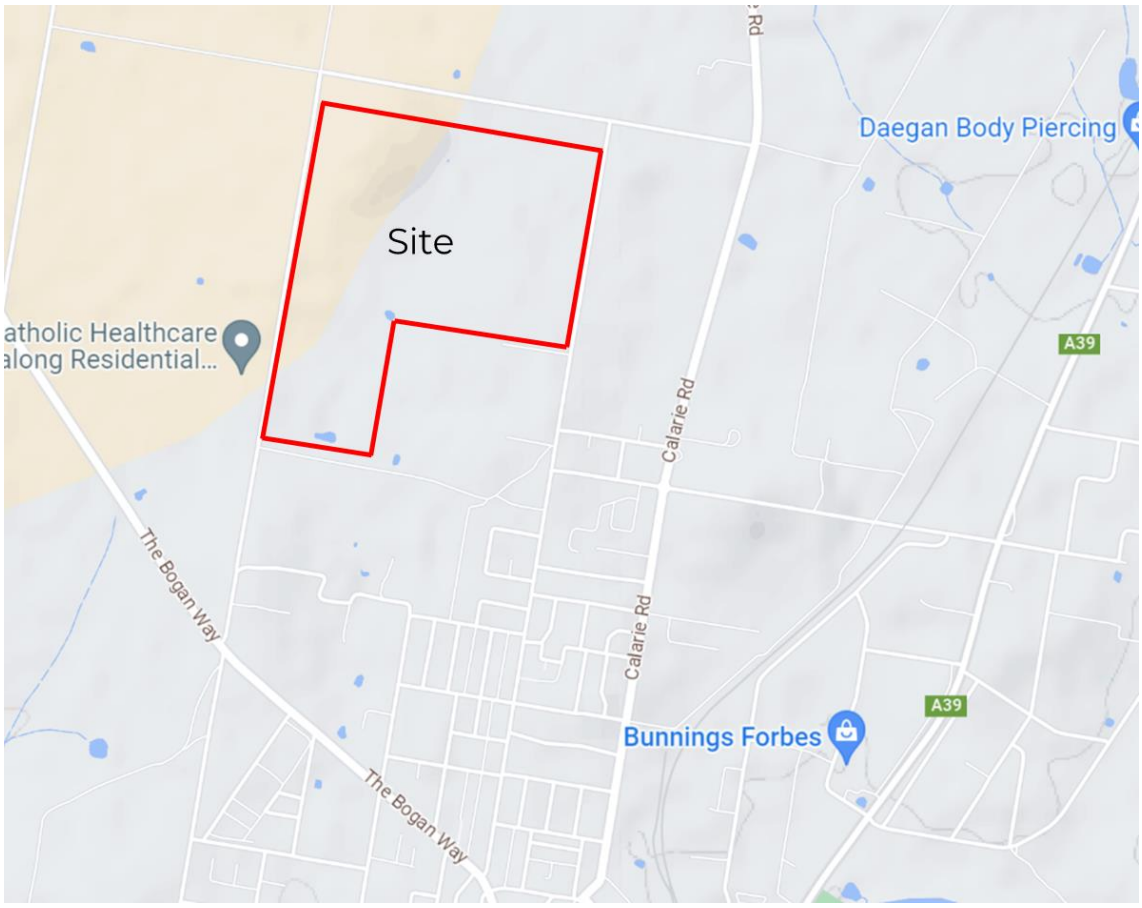


Figure 1-2 Road network surrounding the subject site (Source: Google Map)

1.4 Literature Review

Local policies, strategies and plans frame the planning intent and the aspired outcome for the region. A review of policies has been undertaken to help frame and align opportunity generation from this project with the vision for the region.

1.4.1 Forbes Housing Strategy 2021-2041

This strategy outlined the trend, opportunity, and issues of Forbes Shire to grow and provide the supply for the future housing demand in the existing residential area and the proposed urban expansion area.

Currently, there are 10,023 people living in Forbes Shire with 80% of the population residing in the city center. It is projected that the population will rise to 13,231 in 2041 with 1,819 new housing needs.

To address future housing supply, Council has outlined a priority for the development of serviced residential land estates. They have estimated that a reserve of serviced residential zoned land of approximately 238 hectares needs to be made available in response to any potential housing demands.

Furthermore, it is approximated that more than 75% of the residents travel by private motor vehicle. To accommodate the increase in traffic as a result of the increase In population, it is necessary to assess the capacity of the local road network such that adequate accessibility to the residents is maintained/provided.

Council have noted that an integrated planning approach should be adopted to assess the urban road network to properly manage urban growth and traffic-related

issues. This report will aim to assess the performance of the roads and intersections around the proposed residential development in response to the urban release program.

1.4.2 The Forbes Local Strategic Planning Statement (LSPS) 2040

This strategic planning provides the information of planning priorities of Forbes Shire area for the future. Based on the Department of Planning, Infrastructure and Environment, it is estimated that the area will experience a growth of 5% in 20 years.

The key objectives of The Forbes Local Strategic Planning Statement (LSPS) 2040 is as follows:

- Accommodating future growth and community needs of the area.
- Conservation of environment, heritage and local character of the area.
- Providing support to boost the diverse economy and industry of the area.
- Linking the local's strategic vision with the region and state vision to achieve the best outcomes for the area.
- Ensuring land zonings will accommodate the investment and growth in the Shire expected from infrastructure upgrades

This assessment will aim to assess the traffic impacts of the rezoning of 92 hectares of land within the Forbes Shire Council to construct 742 residential dwellings and other land use developments, as well as providing recommendations to support these key objectives for the desired growth of the northern Forbes township.

1.4.3 Forbes Community Strategic Plan (CSP) 2018-2028

The Forbes Community Strategic Plan is a document that outlines the collective vision, goals, and the community priorities for a ten-year period. This document is prepared in accordance with the principles of social justice and sustainability.

The Forbes Community Strategic Plan is built upon six key directions:

- Community and Culture
- Local Economy
- Natural Environment
- Rural and Urban Land use
- Infrastructure and Services
- Government and Representation

The findings of the document outlined that there is a need to identify new residential subdivisions and industrial precincts to accommodate future population growth while maintaining local agricultural land.

1.5 Purpose of the report

The purpose of this report is to present the likely traffic and transport impacts of the proposed development, and if any traffic mitigation strategies are required. The report has the following structure:

- Section 1: Introduction and a brief description of the proposal
- Section 2: Description of the existing conditions surrounding the site
- Section 3: Description of the proposed development
- Section 4: Determination of the traffic activity associated with the proposed development and assessment of the surrounding road network
- Section 5: Conclusion

2 Existing Site Condition

2.1 Road Network

The existing road network surrounding the subject site is comprised of the following roads (refer to **Figure 2-1**):

- **School Road** – serves as a local road which provides access to the surrounding residential areas. The road runs east-west along the northern boundary of the site and is governed by a speed limit of 50 km/hr.
- **Edward Street** – serves as the main road which connects the site and the surrounding area and offers a direct connection to the school's vicinity. The road runs north-south and is also governed by a speed limit of 50 km/hr.
- **The Bogan Way** - serves as a significant connector road, intersecting with other key roads in the area. It serves as a vital link to the local centre. The road runs northwest-southeast and is governed by a speed limit of 80 km/hr.
- **Farnell Street** – serves as a vital road that provides access to the surrounding residential areas. The road runs north-south and is governed by a speed limit of 50 km/hr.

Figure 2-1: Aerial View of the Surrounding Roads Subject to the Site (Source: Nearmap)

2.2 Public Transport

The nearest bus stop is located at the southern boundary of the subject site, along Farnell Street. **Table 2-1** summarises the bus routes and frequencies of each bus routes within the area. **Figure 2-2** shows the existing bus stop locations near the subject site.

Table 2-1 Bus Routes and Frequencies

Route	Type	Destinations	Frequency During Weekday (AM)	Frequency During Weekday (PM)
586	Public Bus	Forbes Town Centre to Forbes Dawson Street via Edward Street	Every 2 hours	Every 2 hours
587	Public Bus	Forbes Town Centre to Forbes Alder Street via Calarie Road	Every 1 hour	Every 1 hour

Figure 2-2 Existing Bus Stop Locations

2.3 Cycling and Walking

There are currently no pedestrian footpaths provided near the subject site. A bicycle lane is provided along Calarie Street, but no bicycle lane is provided to the site or along the boundary of the site. The walking and cycling infrastructure available around the site are shown in **Figure 2-3**.

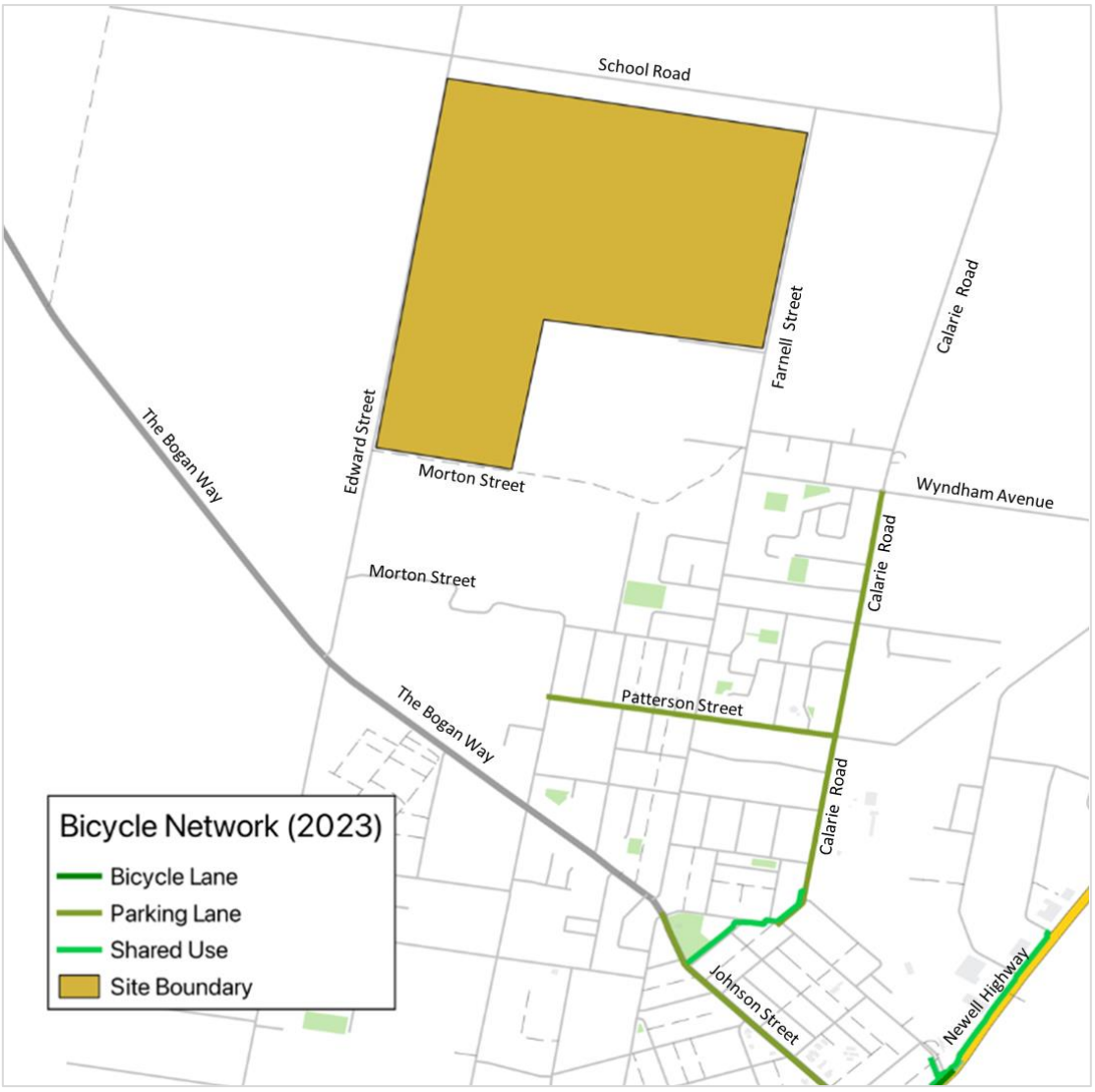


Figure 2-3 Bicycle network around the proposed residential development (TfNSW Open Data)

Following that, Forbes Shire Council is currently installing a wide shared footpath on Bogan Street and Edward Street, connecting the town centre and the residential area. The shared footpath design is shown in **Figure 2-4**

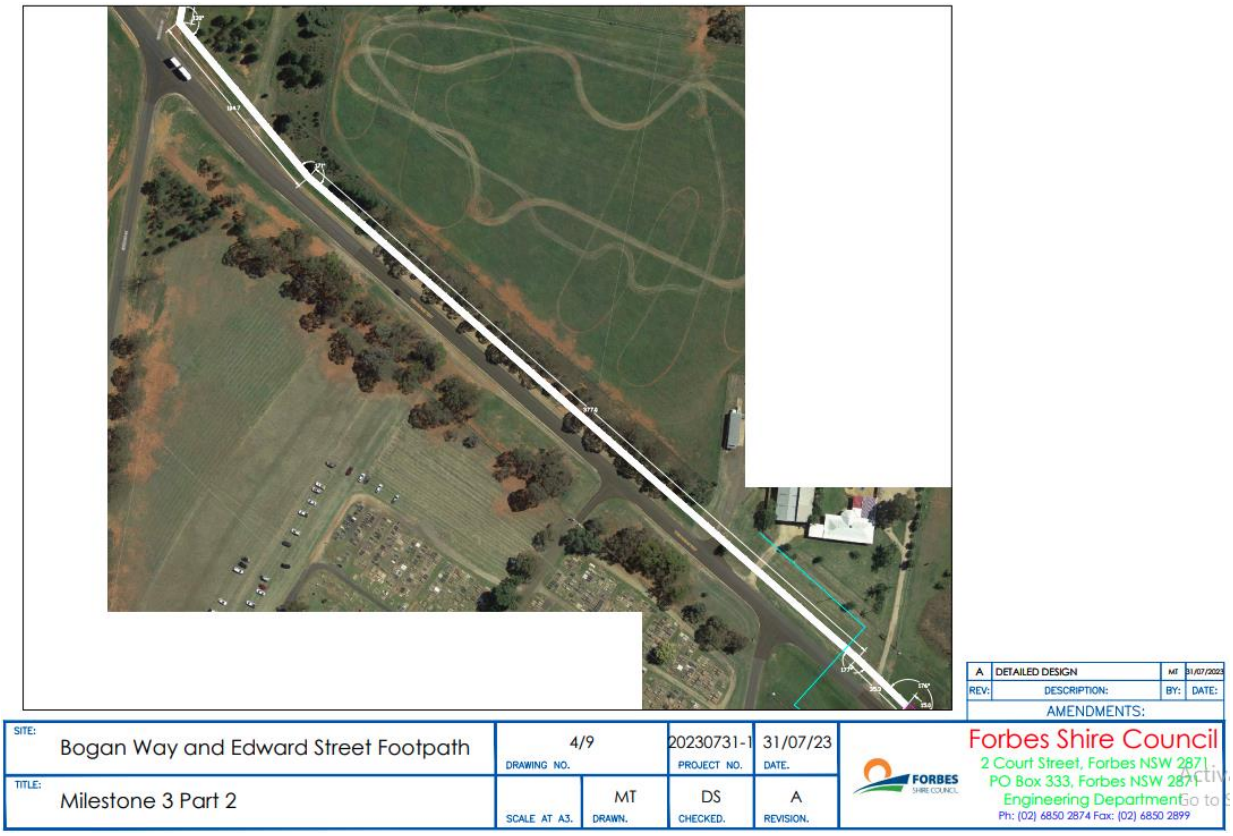


Figure 2-4 Shared Footpath Design at the Bogan Way and Edward Street (Source: Forbes Shire Council)

2.4 Crash Analysis

The crash history data within a 2 kilometres radius of the subject site was sourced from Transport for NSW (TfNSW) for the period 2017 to 2021. A total of 20 crashes were reported around the subject site during the 5-year period and are shown in **Figure 2-5**. Majority of the crashes involved are mainly moderate injury crashes which occurred at intersections located in the residential areas.

Two crashes occurred at the site boundary with no casualty. One of the crashes resulted in a moderate injury crash which occurred in 2019 along Edward Street within an 80km/hr speed limit. It was during daytime with dry conditions, and involved a light truck.
The other crash was a non-casualty crash that took place in 2020 along Farnell Street within an 50km/hr speed limit. It occurred at night with dry conditions involving a light truck going off the carriageway.

These crashes are not indicative of any inherent safety issue associated with the subject site.

Figure 2-5 Crash history around proposed residential development

2.5 Traffic Counts

Traffic counts of 3 intersections within proximity of the subject site (refer to Figure 2-6) were undertaken on Tuesday, 23 June 2023 to assess the traffic impacts and form inputs into the traffic modelling assessment.

These three survey intersections include:

- Johnson Street / Barton Street / Farnell Street
- The Bogan Way / Edward Street
- Farnell Street / Wyndham Avenue

The three intersection locations were consulted and confirmed with the Forbes Shire Council prior to conducting the traffic count.

Figure 2-6 Traffic survey locations

The morning and evening peak hours for each of the respective intersections are summarised in **Table 2-2.** The raw traffic survey data are provided in **Appendix B**.

Table 2-2 Traffic peak hour for AM and PM period

Intersection	AM Peak Hour	PM Peak Hour
Johnson Street / Barton Street	8:15 – 9:15	15:30 – 16:30
The Bogan Way / Edward Street	8:15 – 9:15	16:00 – 17:00
Farnell Street / Wyndham Avenue	8:15 – 9:15	15:00 – 16:00

Note: To conduct the traffic modeling assessment during the evening peak periods, we have designated the timeframe from 16:00 to 17:00 for analysis at the three intersections.

Figure 2-7, **Figure 2-8**, and **Figure 2-9** present the total vehicle movements at each of the surveyed intersections for the AM and PM peak hours respectively.

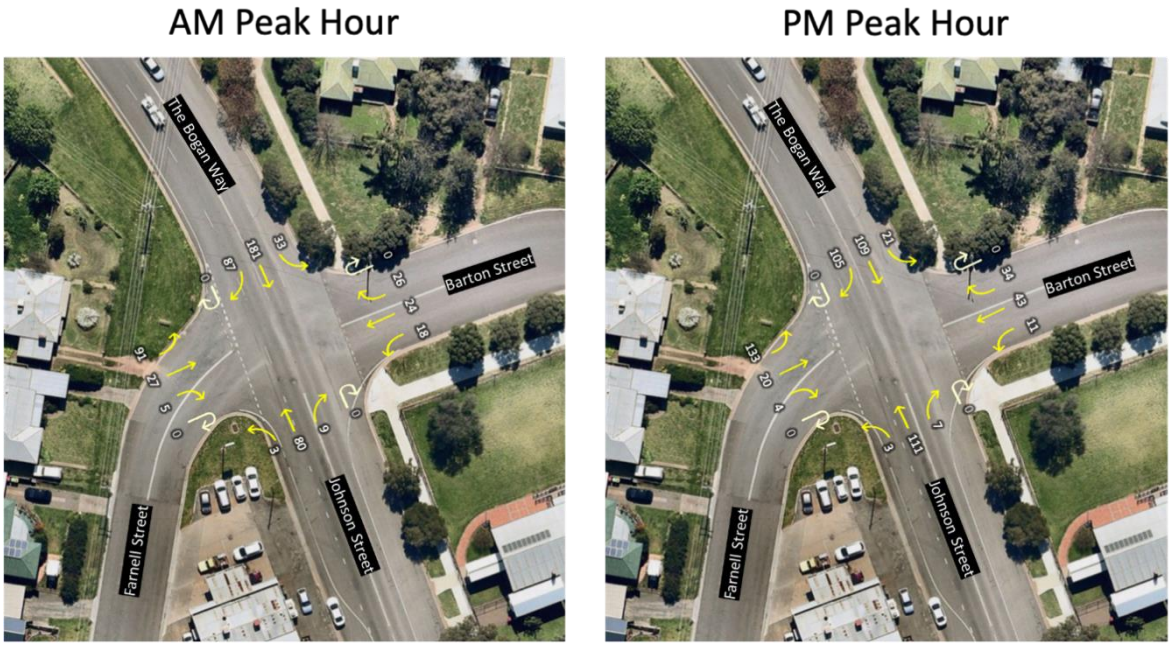


Figure 2-7 Intersection movement counts at Johnson Street and Barton Street

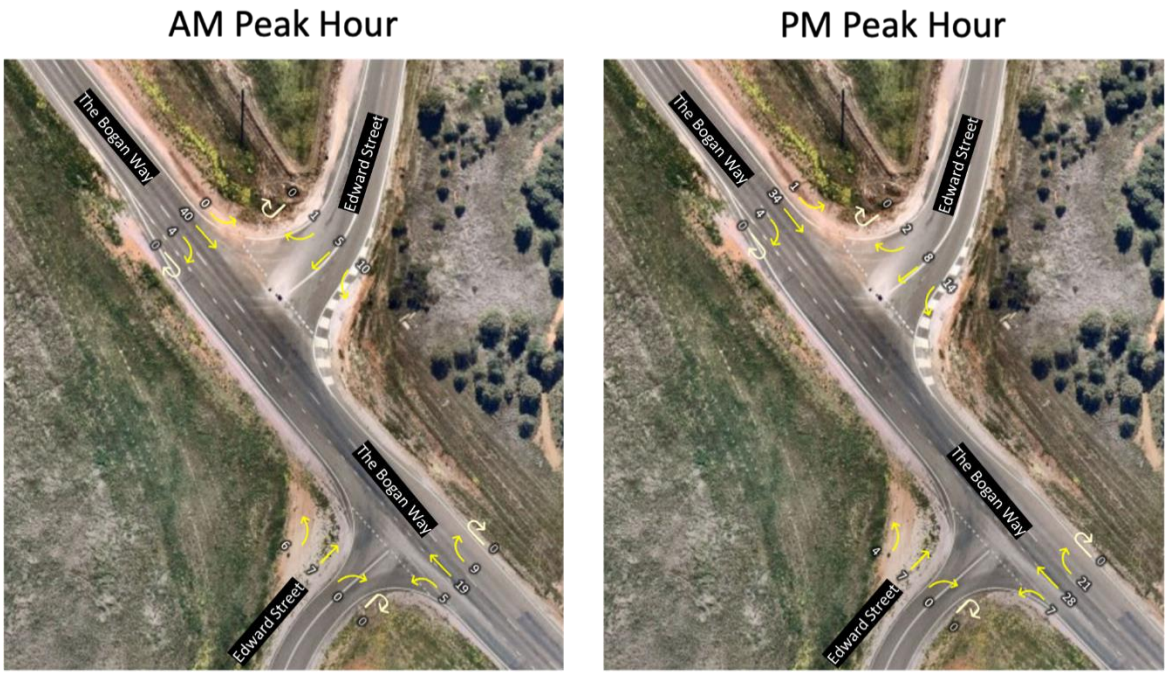
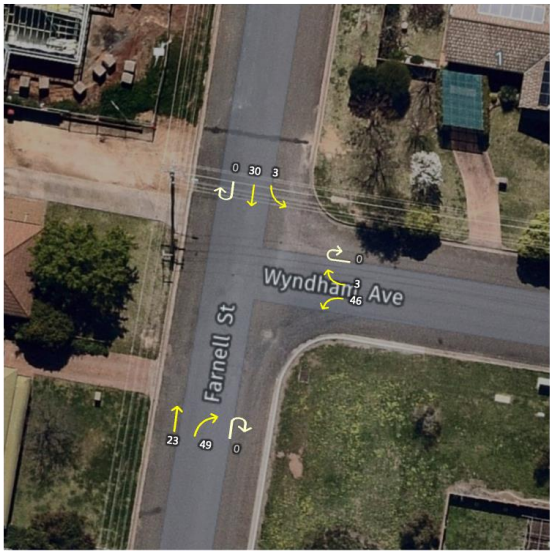


Figure 2-8 Intersection movement counts at The Bogan Way and Edward Street

AM Peak Hour



PM Peak Hour

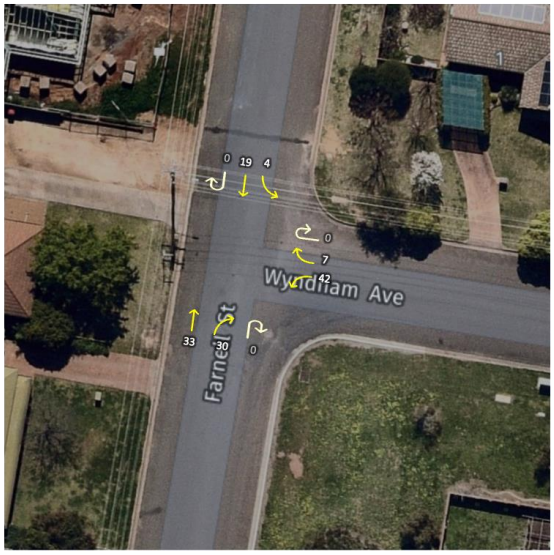


Figure 2-9 Intersection movement counts at Farnell Street and Wyndham Avenue

2.6 SIDRA Outputs Criteria

The assessment of the intersection was undertaken for the morning and afternoon peak periods using SIDRA INTERSECTION 9.1 (SIDRA), developed by SIDRA Solutions. SIDRA was the selected tool, as it is the most suitable software package for undertaking micro-analytical modelling. It provides information about the capacity of the intersection in terms of a range of parameters. A definition of these parameters are as follows:

- Level of Service (LOS): is the qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers. **Table 2-3** shows the level of service criteria for a various intersection treatments, extracted from the Guide to Traffic Generating Developments.
- Average Delay: is the average of all travel time delays for vehicles through the intersection.
- Degree of saturation: The ratio of arrival (demand) flow rate to capacity during a given flow period.

Table 2-3 Level of Service (LoS) for all types of intersections

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	< 15 seconds	Good operation	Good operation
B	15 to 28 seconds	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 43 seconds	Satisfactory	Satisfactory, but accident study required
D	43 to 56 seconds	Operating Near Capacity	Near capacity and accident study required
E	57 to 70 seconds	At capacity; at signals incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode
F	> 70 seconds	The amount of traffic approaching the point under consideration exceeds that which can pass it.	The amount of traffic approaching the point under consideration exceeds that which can pass it.

Source: Traffic Modelling Guidelines 2013 (RTA)

The following provides a description of each level of service category:

Level of Service A (LoS A):
LoS A represents the best operating conditions at an intersection. It indicates minimal delays, short queues, and efficient traffic flow. In terms of SIDRA modelling, intersections assigned to LoS A typically exhibit high capacities, low control delay, and short queue lengths. Vehicles can move through the intersection smoothly with minimal disruptions.

Level of Service B (LoS B):
LoS B indicates a high level of operational efficiency, but with slightly more congestion compared to LoS A. The delays and queues at the intersection are still relatively low, but there may be a slight decrease in traffic flow compared to LoS A. Intersections assigned to LoS B in SIDRA modelling generally maintain good capacities and reasonably low delays, ensuring acceptable levels of service for motorists.

Level of Service C (LoS C):
LoS C represents an intermediate level of service, where traffic congestion and delays begin to increase. Intersections assigned to LoS C may experience moderate queues and slightly longer delays compared to LoS A and B. Traffic flow is still relatively smooth, but there might be occasional interruptions and minor disruptions. The capacity of the intersection is typically lower than LoS A and B, indicating a moderately congested condition.

Level of Service D (LoS D):
LoS D indicates a moderate level of congestion and delays at an intersection. Intersections assigned to LoS D experience significant queues and delays during peak hours. Traffic flow is slower, and vehicles may have to wait for multiple signal cycles before being able to proceed through the intersection. Capacity is noticeably reduced, leading to longer delays and increased travel times.

Level of Service E (LoS E):
LoS E represents a high level of congestion and delays. Intersections assigned to LoS E face severe queues, lengthy delays, and significantly reduced traffic flow. Vehicles may experience multiple cycles of waiting before getting a chance to proceed, leading to frustration and longer travel times. The capacity of the intersection is considerably compromised, resulting in poor service quality.

Level of Service F (LoS F):
LoS F represents the worst operating conditions at an intersection. It indicates extreme congestion, long queues, and extensive delays. Intersections assigned to LoS F suffer from severe traffic congestion, where traffic may come to a standstill or move at an extremely slow pace. Vehicles experience extensive waiting times, resulting in significantly increased travel durations. The capacity of the intersection is overwhelmed, leading to extremely poor service quality.

2.7 Intersection Analysis and Results (Current Condition, 2023)

The key intersections has been assessed using SIDRA intersection modelling, focusing on the existing conditions. A summary of the intersections current operation is presented in **Table 2-4** and **Table 2-5**, while detailed results can be found in **Appendix C**.

Table 2-4 Existing Year 2023 AM Peak Results

Intersection	Average Delay (sec)	Level of Service (LoS)
The Bogan Way / Edward Street	7.1	A
Johnson Street / Barton Street / Farnell Street	11.9	A
Farnell Street / Wyndham Avenue	5.7	A

Table 2-5 Existing Year 2023 PM Peak Results

Intersection	Average Delay (sec)	Level of Service (LoS)
The Bogan Way / Edward Street	7.8	A
Johnson Street / Barton Street / Farnell Street	13.5	A
Farnell Street / Wyndham Avenue	5.7	A

Based on the SIDRA intersection results shown in **Table 2-4** and **Table 2-5**, the intersections surrounding the proposed subject site performs at a Level of Service A with ample capacity to accommodate for future traffic volumes.

3 Development Scheme

Allera is planning to rezone a 92-hectare land to facilitate the construction of 742 residential dwellings and other land use developments on the subject site. **Figure 3-1** presents the proposed masterplan for the subject site.

Figure 3-1 Proposed development of the subject site (Source: Hatch)

The proposed land use breakdown of the subject site is shown in **Table 3-1**. The land use details are intended for planning purposes only. It may subject to change.

Table 3-1 Proposed land use breakdown for the subject site

Land Use	Details
Residential	742 residential dwellings
Small Supermarket	850m^2
Specialty Shops	600m^2
Allied Health	850m^2
Childcare	100 place (700m^2)
Gym	950m^2

3.1 Vehicular Access

Proposed vehicular access to the subject site will be provided by key road Edwards Street and Farnell Street. At the early Phase, the main access will be via Morton Street.

3.2 Proposed Internal Road Network

The internal road network of the subject site will be provided via local and collector roads. The collector road will be serviced by a number of local roads which will distribute traffic to the local street network for residential access and other developments within the subject site.

The road network within the subject site would be developed as part of a site-specific Development Control Plan. This road network would be consistent with the relevant standards.

Table 3-2 Council road carriageway requirements

Traffic Volume (AADT)	Servicing No. of Lots	Hierarchy	Road Reserve Widths (min)	Vehicle Pavement Width (m)	Footpath Width (m)	Design Speed (Km/hr)
0-80	0 - 8	Minor Cul-de-sac	17	8	4.5	40
80-300	8 - 30	Cul-de-sac	18	9	4.5	60
300-800	30 - 80	Local Road	18	9	4.5	60
800-1500	80 - 150	Minor collector	20	1 1.0	4.5	60
1500-5000	> 150	Major Collector	22	13	4.5	70
5000+	>5,000	Distributor	22	13	4.5	70

3.3 Phasing of Development

Given the size of the proposed development, the construction of the subject site are likely to occur in the following three phases (subject to market demand):

- Phase 1 (2025): 30 residential dwellings.
- Phase 2, 50% complete (2030): 350 residential dwellings.
- Phase 3, 100% complete (2035): development of the full site to include 742 dwellings, small supermarket, specialty shops, allied health, childcare centre, and gym.

3.4 Servicing

Refuse collection will occur from the street by Council's collection service, which is typically a 9.9m rigid truck.

The design of the local roadways in this area will be suitable for on-street parking of service and delivery vehicles. The internal road system will be planned to accommodate the circulation of a 9.9m truck, and adhering to the Council's road width standards.

4 Traffic Impacts

The traffic impacts are assessed for four different scenarios:

- **Base case**: Assessment of the existing traffic volumes, based on the survey data (refer to **Section 2.7**).
- **Phase 1**: The future case scenario (2025) assesses the future traffic for the subject site with consideration of 30 residential dwellings. In addition, a background traffic growth rate is assumed to be 1.8 percent per annum.
- **Phase 2**: The future and development case scenario projects the overall traffic volumes in 2030, accounting for the additional traffic generated by the residential dwellings and other mixed use developments, which is expected to be approximately 50% completed.
- **Phase 3**: The future and development case scenario projects the total traffic for the year 2035, considering the additional traffic generated by the fully developed site.

4.1 Traffic Generation Rates

The 'Guide to Traffic Generating Development Version 2.2 (2002)' and 'Technical Direction Updated traffic surveys (TDT 2013/04a)' by RTA (RMS) outlines traffic generation rates for various development types.
In this assessment, CrossleyTP have applied the traffic generation rates as specified in these guidelines. The anticipated traffic generation for the development can be found in **Table 4-1**.

Table 4-1: Weekday peak (traffic generation rates)

Land use	Area / Dwellings / Place	Traffic generation rate Morning	Evening	Source
Residential	742 dwellings	0.85 trip per dwelling		TDT 2013/04a
Small Supermarket	850m²	12.3 trips per 100m² GLFA*		Guide to Traffic Generating Developments (2002)
Specialty Shops	600m²	This traffic generation will be included as part of the small supermarket rates. As noted in the 'Guide to Traffic Generating Developments 2022' these stores are grouped as they tend to not be primary attractors to the centre.		Guide to Traffic Generating Developments (2002)
Allied Health	850m²	10 trips per 100m² GFA	10 trips per 100m² GFA	Guide to Traffic Generating Developments (2002)

Land use	Area / Dwellings / Place	Traffic generation rate		Source
		Morning	Evening	
Childcare Centre	700m² / 100 place	0.8 trip per child	0.7 trip per child	Guide to Traffic Generating Developments (2002)
Gym	950m²	3 trips per 100m²	3 trips per 100m²	Guide to Traffic Generating Developments (2002)

Note: *Small supermarkets rates have not been identified in the Guide to Traffic Generating Developments (2002) or TDT 2013/04a. For this assessment the retail (shopping centres) traffic generation rate will be taken into consideration.

4.2 Traffic Distribution and Assumptions

Considering the characteristic trip types for the numerous land uses proposed for the subject site, the following assumptions have been considered for the trip distribution and assignment:

- Assumptions made for the residential dwellings:
  - 80/20 ratio for inbound and outbound morning trip distribution.
  - 20/80 ratio for inbound and outbound afternoon trip distribution.
  - 30 dwellings will be constructed at the starting year.
  - 60 new dwellings will be constructed annually until 2030 (50% completion).
  - 80 new dwellings will be constructed annually from 2030 to final completion.
- Retail uses (small supermarket and specialty shops) within the neighbourhood centre is assumed to generate 50/50 ratio of external and internal trips.
- Community and recreational uses (i.e. gym, childcare, and allied health) are assumed to generate 50/50 ratio of external and internal trips.
- Based on Journey to Work and Traffic Count data, the trip distribution are assumed as below:
  - AM Peak: 60% of the traffic will come from the north, 16% from the south, 22% from the east, and 2% from the west.
  - PM Peak: 58% of the traffic will head north, 17% to the south, 19% to the east, and 6% to the west.
- The projected annual background traffic growth rate of 1.8% is calculated using a pro rata method with data from the Travel Volume Viewer.

4.3 Phase 1 Intersection Analysis (year 2025)

Phase 1 is assessed based on the existing traffic, forecasting the background traffic up to the year 2025 and 30 residentials dwellings. It is assumed that the annual growth of traffic is 1.8 percent.

4.3.1 Traffic Generation (scenario 1)

Based on the assumptions specified, a summary of the traffic generated by the proposed development for Phase 1 is outlined in **Table 4-1**.

Table 4-2: Weekday peak (traffic generation)

Land use	Area / Dwellings / Place	Traffic generation	
		Morning	Evening
Residential	30 dwellings	25 vehicles	25 vehicles
Small Supermarket	Not applicable (developments has not entered the construction phase)		
Specialty Shops			
Allied Health			
Childcare Centre			
Gym			

Figure 4-1 and **Figure 4-2** provides the morning and evening peak hour total vehicle movements for Phase 1 (includes proposed development, forecast background growth etc).

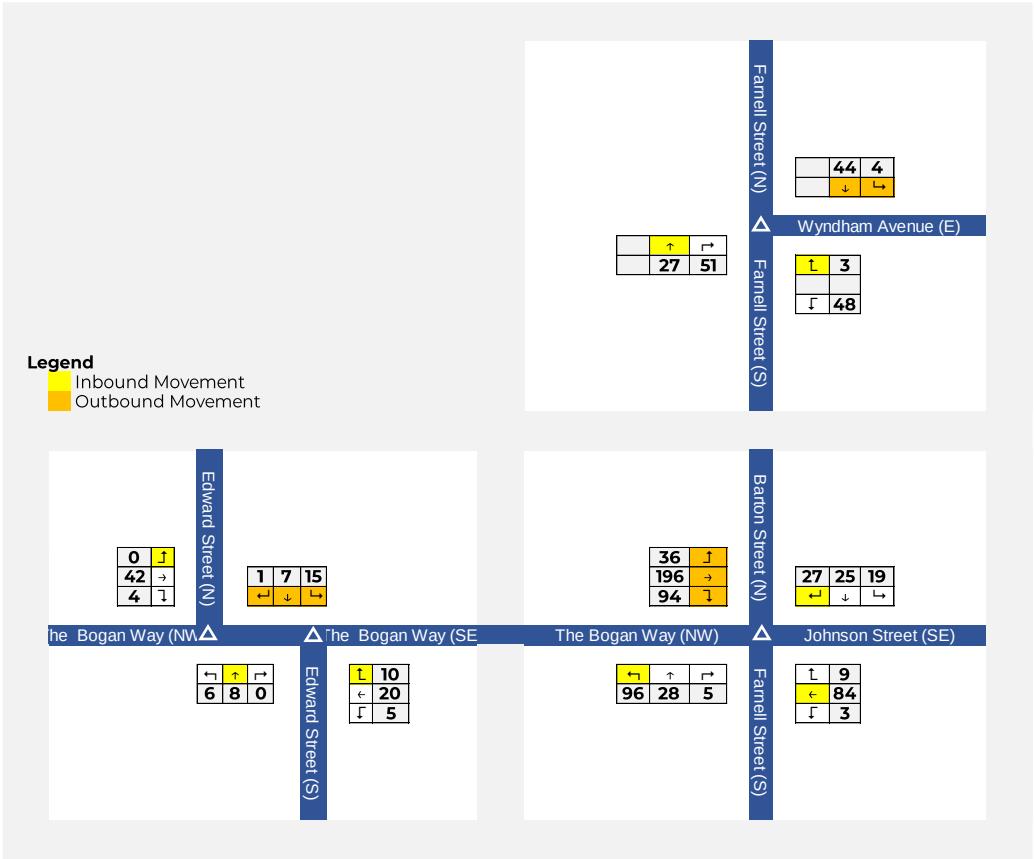


Figure 4-1 Phase 1 – Vehicle movements (morning peak) from the proposed development

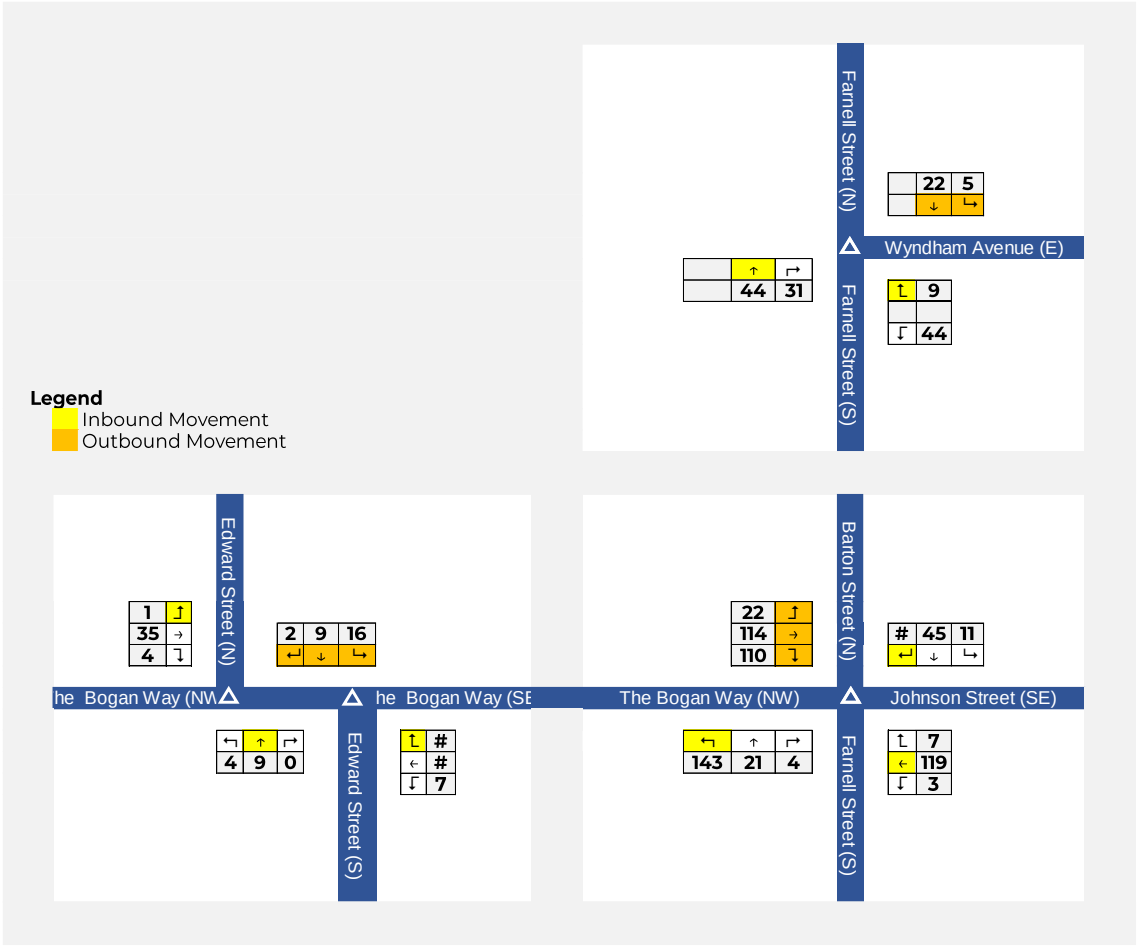


Figure 4-2 Phase 1 – Vehicle movements (evening) from the proposed development

4.3.2 Intersection analysis results (Phase 1)

Table 4-3 summarises the results of the Phase 1 scenario.

Table 4-3 SIDRA output results – Phase 1 (morning and evening peak periods)

Intersection	Morning		Evening	
	Average Delay (sec)	Level of Service (LoS)	Average Delay (sec)	Level of Service (LoS)
The Bogan Way / Edward Street	8.0	A	7.9	A
Johnson Street / Barton Street / Farnell Street	11.4	A	13.7	A
Farnell Street / Wyndham Avenue	5.7	A	5.7	A

Based on the SIDRA intersection modelling results (refer to **Table 4-3**), the intersections of The Bogan Way/Edward Street, Johnson Street/Barton Street/Farnell Street and Farnell Street/Wyndham Avenue performs at a Level of Service A with ample capacity to accommodate for future traffic volumes.

4.4 Phase 2 (50% complete) Intersection Analysis (year 2030)

Phase 2 is assessed based on the existing traffic, forecasting the background traffic up to the year 2030, 350 residentials dwellings and other developments. It is assumed that the annual growth of traffic is 1.8 percent.

4.4.1 Traffic Generation (scenario 2)

Based on the assumptions specified, a summary of the traffic generated by the proposed development for Phase 2 is outlined in **Table 4-4**.

Table 4-4 Weekday peak (traffic generation)

Land use	Area / Dwellings / Place	Vehicle traffic generation	
		Morning	Evening
Residential	350 dwellings	298 vehicles	298 vehicles
Small Supermarket	850 m²	Not applicable (development has not enter construction phase)	
Specialty Shops	600 m²		
Allied Health	850 m²		
Childcare Centre	700 m² / 100 children		
Gym	950 m²		

Figure 4-3 and **Figure 4-4** provides the morning and evening peak hour total vehicle movements for Phase 2 (includes proposed development, forecast background growth etc).

Figure 4-3 Phase 2 – Vehicle movements (morning peak) from the proposed development

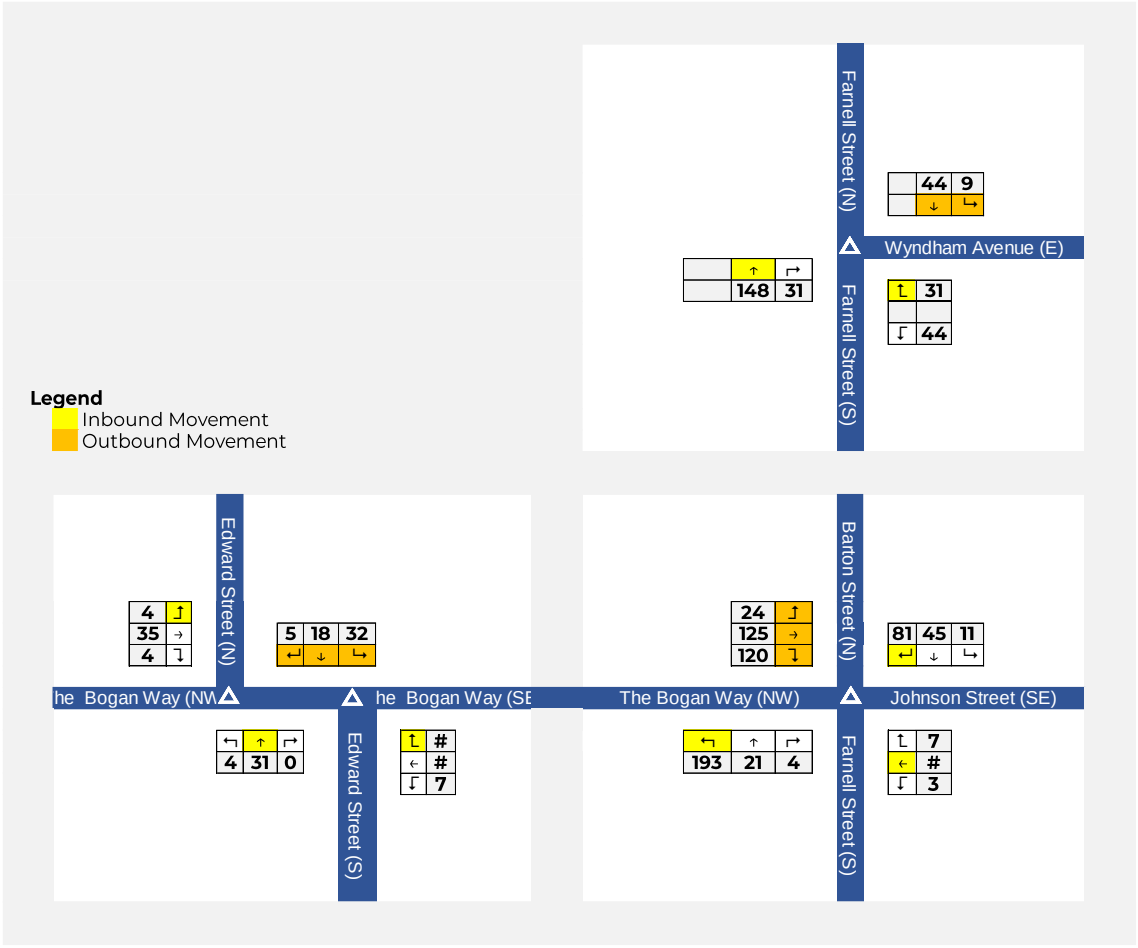


Figure 4-4 Phase 2 – Vehicle movements (evening) from the proposed development

4.4.2 Intersection analysis results (Phase 2)

Table 4-5 summarises the intersection performance results of Phase 2.

Table 4-5 SIDRA output results – Phase 2 (morning and evening peak periods)

Intersection	Morning		Evening	
	Average Delay (sec)	Level of Service (LoS)	Average Delay (sec)	Level of Service (LoS)
The Bogan Way / Edward Street	8.0	A	8.1	A
Johnson Street / Barton Street / Farnell Street	17.7	B	19.8	B
Farnell Street / Wyndham Avenue	6.4	A	5.9	A

The priority-controlled intersection (give-way sign control) of The Bogan Way and Edward Street has a maximum average delay of 8.0 seconds for the worst performing movement, and the intersection operating at a LoS A.
Johnson Street, Barton Street, and Farnell Street which is also a priority-controlled intersection (give-way sign control) which has increased to a LoS B for both morning and evening peak periods.

Farnell Street and Wyndham Avenue is also a priority-controlled intersection, which has a maximum average delay of 6.4 seconds and continues to perform at LoS A. Based on the SIDRA intersection modelling results (refer to Section **Table 4-5**), these intersections performs at a LoS A or B, with ample capacity to accommodate for future traffic volumes.

4.5 Phase 3 (100% completion) Intersection Analysis (year 2035)

Phase 3 is assessed based on the existing traffic, forecasting the background traffic up to the year 2035 with the site fully completed. It is assumed that the annual growth of traffic is 1.8 percent.

4.5.1 Traffic Generation (scenario 3)

Based on the assumptions specified in **Section 4.2**, a summary of the traffic generated by the proposed development for Phase 3 is outlined in **Table 4-6**.

Table 4-6 Weekday peak (traffic generation rates)

Land use	Area / Dwellings / Place	Traffic generation	
		Morning	Evening
Residential	742 dwellings	631	631
Small Supermarket	850m²	53	53
Specialty Shops	600m²		
Allied Health	850m²	43	43
Childcare Centre	700m² / 100 children	40	35
Gym	950m²	15	15
TOTAL		**782 vehicles**	**777 vehicles**

Figure 4-5 and **Figure 4-6** provides the morning and evening peak hour total vehicle movements for phase 3 (includes the proposed site being full developed, forecast background growth etc).

Figure 4-5 Phase 3 – Vehicle movements (morning peak) from the proposed development

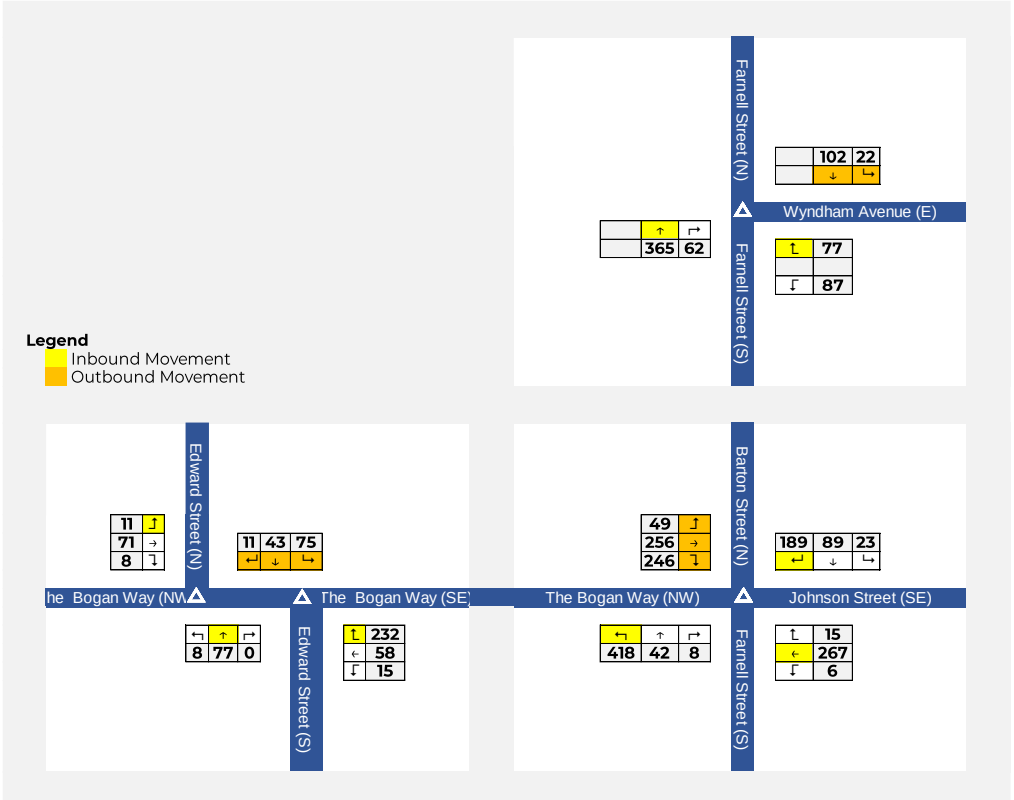


Figure 4-6 Phase 3 – Vehicle movements (evening) from the proposed development

4.5.2 Intersection analysis results (Phase 3)

Table 4-7 summarises the intersection performance results of Phase 3.

Table 4-7 SIDRA output results – Phase 3 (morning and evening peak periods)

Intersection	Morning		Evening	
	Average Delay (sec)	Level of Service (LoS)	Average Delay (sec)	Level of Service (LoS)
The Bogan Way / Edward Street	9.2	A	9.8	A
Johnson Street / Barton Street / Farnell Street	46.2	D	30.3	C
Farnell Street / Wyndham Avenue	8.5	A	6.3	A

Based on the SIDRA intersection modelling results (refer to **Table 4-7**), the intersection of The Bogan Way/Edward Street and Farnell Street/Wyndham Avenue performs at a LoS A during the morning and evening peak periods, with the site being fully developed.

The intersection of Johnson Street, Barton Street, and Farnell Street operates at a LoS D in the morning peak period and a LoS C during the evening peak period. These Levels of Service are deemed acceptable, indicating that ample capacity remains available for accommodating potential increases in traffic volume. It is worth noting that a Level of Service F signifies that the intersection is operating at maximum capacity.

5 Conclusion

Crossley Transport Planning has reviewed the traffic and transport matters for the proposed development at subject site located at School Road Forbes.
Based on the findings of this assessment the following can be concluded:

- The proposal would seek to provide approximately 742 new residential dwellings and other land use developments within Forbes.
- The proposed road network would be subject to further design work. A site-specific Development Control Plan will be developed in consultation with Council prior to any future Development Application and will accord with all relevant standards.
- The provisions for vehicle access and servicing will be satisfactory.
- There will be no adverse traffic implications.
- Based on the SIDRA traffic modelling assessment the key intersections within vicinity of the subject site indicate that the additional traffic generated for the proposed development would have a negligible impact on the road network and intersections.

Taking into account the information presented in this report and the conclusions outlined above, we believe that the planning proposal for the site is justifiable from a traffic and transport planning perspective.

Appendix A
Concept Plans

School Road

Water Tower Location

Habitat Reservation

Detention Basin

Green connection

Kick around park

Young play and water play

Neighbourhood Centre

Edward Street

Cypress Lane

Shared Pathway

Ornamental Lake

Farnell Street

Jemalong Residential Village

Future Residential Area

Green spine and riparian corridor

Stage 1 Visitor Centre and Cafe

Morton Street

New housing subdivision

N

CADASTRAL INFORMATION
SOURCE: Client Survey
PROJECTION: GDA2020

AERIAL PHOTOGRAPHY
SOURCE: NearMap

0 metres 2 4 6 8

HATCH

FOR DISCUSSION

Forbes View Concept Master Plan
Forbes Shire Council

SIZE A0 1:2000

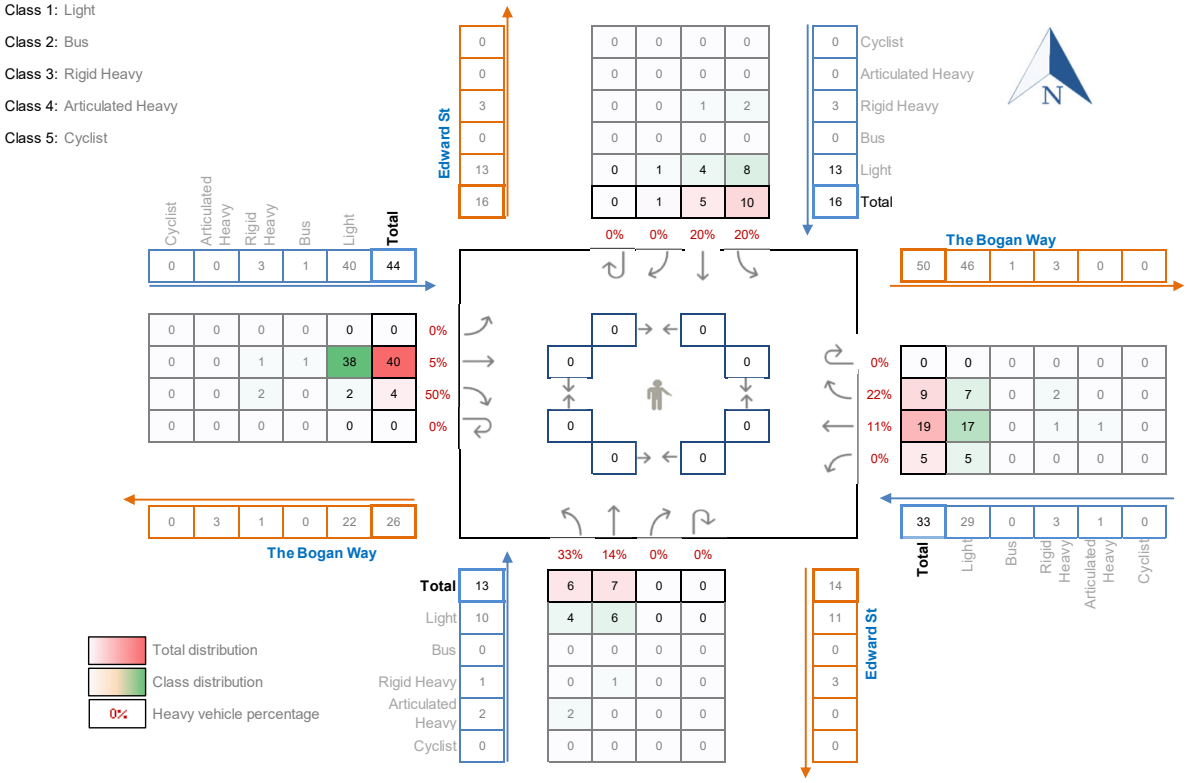
DATE - YYMMDD	DRAWN	APPRD	JOBE CODE	SERVICE	DOC.TYPE	DRAW NO.	REV.
230922	MD	MD	H-377649	Concept Design	DWG	001	A

Appendix B
Traffic Surveys

Location: The Bogan Way & Edward St
Date: Tuesday, 27 June 2023
Survey Duration: 0700-1000 & 1500-1800
Survey Period: AM Peak to 17:00
Notes: 0

AM Peak: 08:15-09:15
PM Peak: 15:30-16:30

Class 1: Light
Class 2: Bus
Class 3: Rigid Heavy
Class 4: Articulated Heavy
Class 5: Cyclist

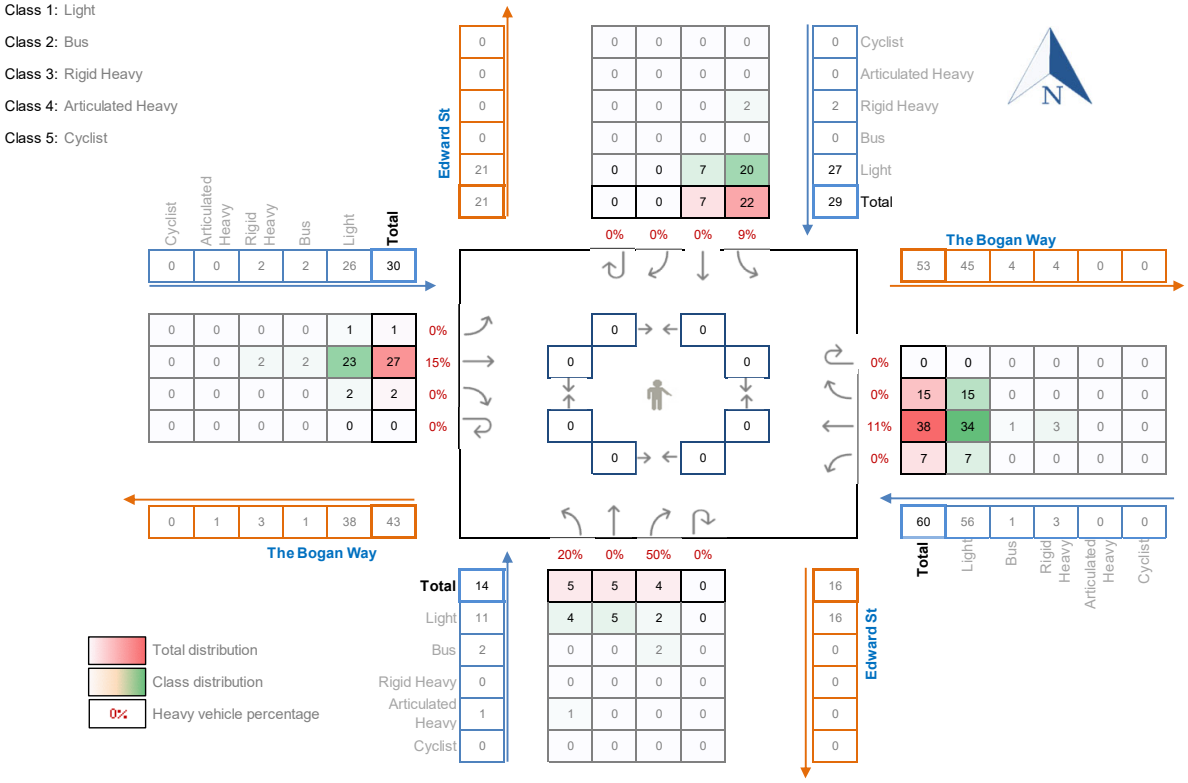


Total distribution
Class distribution
0% Heavy vehicle percentage

Location: The Bogan Way & Edward St
Date: Tuesday, 27 June 2023
Survey Duration: 0700-1000 & 1500-1800
Survey Period: PM Peak to 17:00
Notes: 0

AM Peak: 08:15-09:15
PM Peak: 15:30-16:30

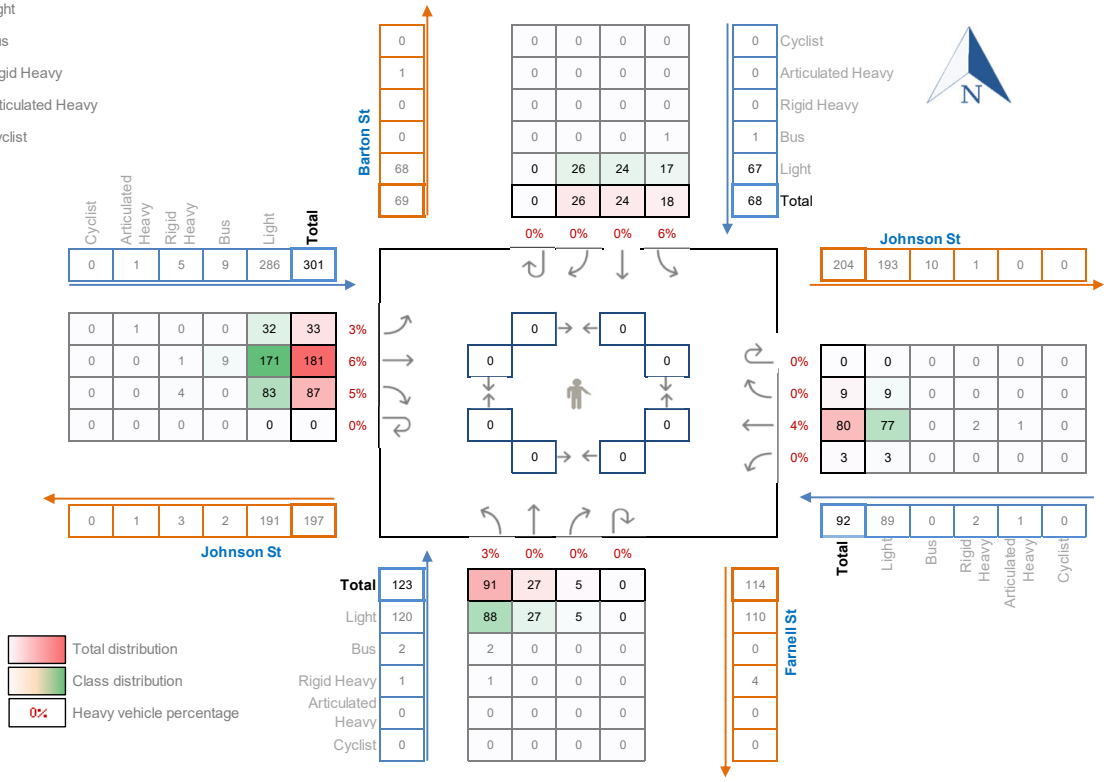
Class 1: Light
Class 2: Bus
Class 3: Rigid Heavy
Class 4: Articulated Heavy
Class 5: Cyclist



Location: Johnson St & Barton St
Date: Tuesday, 27 June 2023
Survey Duration: 0700-1000 & 1500-1800
Survey Period: AM Peak to 17:00
Notes: 0

AM Peak: 08:15-09:15
PM Peak: 16:00-17:00

Class 1: Light
Class 2: Bus
Class 3: Rigid Heavy
Class 4: Articulated Heavy
Class 5: Cyclist

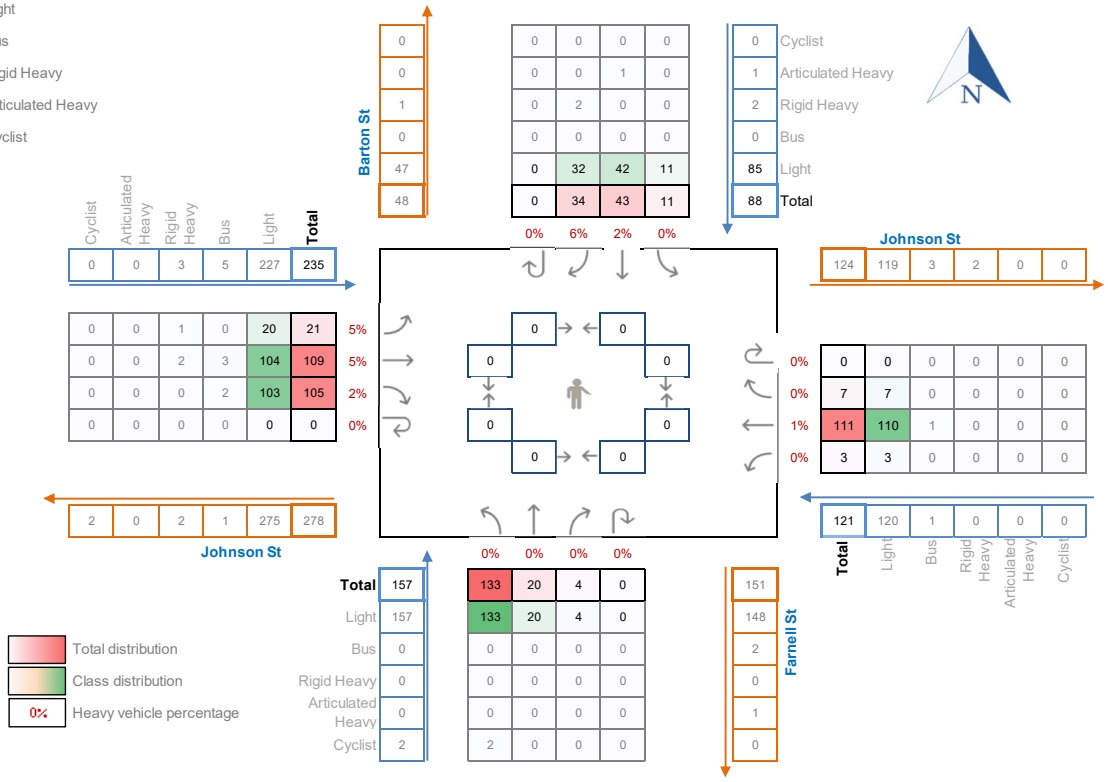


Total distribution
Class distribution
0% Heavy vehicle percentage

Location: Johnson St & Barton St
Date: Tuesday, 27 June 2023
Survey Duration: 0700-1000 & 1500-1800
Survey Period: PM Peak to 17:00
Notes: 0

AM Peak: 08:15-09:15
PM Peak: 16:00-17:00

Class 1: Light
Class 2: Bus
Class 3: Rigid Heavy
Class 4: Articulated Heavy
Class 5: Cyclist



Total	Light	Bus	Rigid Heavy	Articulated Heavy	Cyclist
157	157	0	0	0	2

133	20	4	0	
133	20	4	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
2	0	0	0	

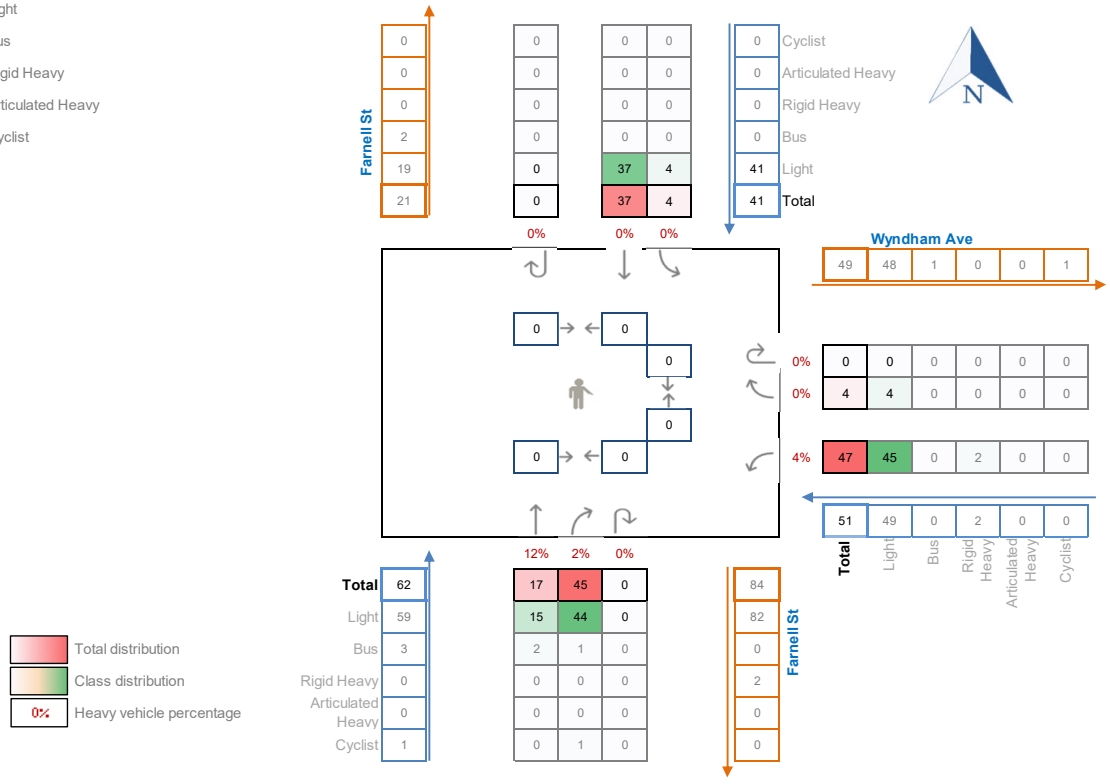
Total	Light	Bus	Rigid Heavy	Articulated Heavy	Cyclist
151	148	2	0	1	0

Total distribution
Class distribution
0% Heavy vehicle percentage

Location: Farnell St & Wyndham Ave
Date: Tuesday, 27 June 2023
Survey Duration: 0700-1000 & 1500-1800
Survey Period: AM Peak to 17:00
Notes: 0

AM Peak: 08:00-09:00
PM Peak: 15:00-16:00

Class 1: Light
Class 2: Bus
Class 3: Rigid Heavy
Class 4: Articulated Heavy
Class 5: Cyclist

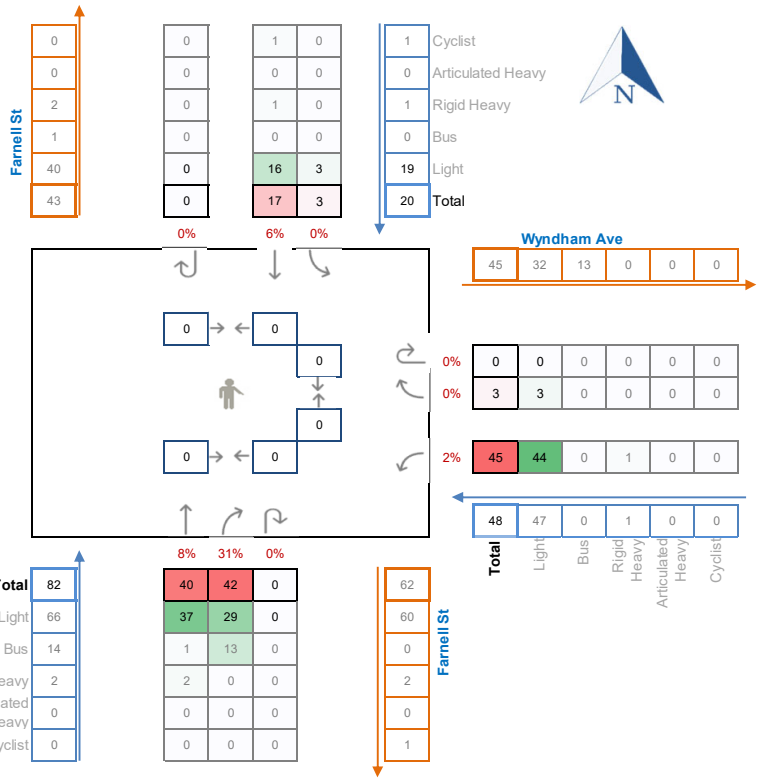


Total distribution
Class distribution
0% Heavy vehicle percentage

Location: Farnell St & Wyndham Ave
Date: Tuesday, 27 June 2023
Survey Duration: 0700-1000 & 1500-1800
Survey Period: PM Peak to 17:00
Notes: 0

AM Peak: 08:00-09:00
PM Peak: 15:00-16:00

Class 1: Light
Class 2: Bus
Class 3: Rigid Heavy
Class 4: Articulated Heavy
Class 5: Cyclist



Total distribution
Class distribution
0% Heavy vehicle percentage

Appendix C
SIDRA Outputs

MOVEMENT SUMMARY

Site: 01 [01 (AM BASE) 8:15-9:15AM - BOG_EDW (Site Folder: AM Peak - (Base case))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

01 (AM BASE) 8:15-9:15AM - The Bogan Way, Edward Street Intersection
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: The Bogan Way_SE															
22	T1	All MCs	40	16.0	40	16.0	0.037	0.2	LOS A	0.1	1.1	0.12	0.21	0.12	59.4
23a	R1	All MCs	28	18.8	28	18.8	0.037	2.4	LOS A	0.1	1.1	0.14	0.25	0.14	42.0
Approach			68	17.1	68	17.1	0.037	1.1	NA	0.1	1.1	0.13	0.23	0.13	57.3
North: Edward St_NE															
7a	L1	All MCs	28	20.0	28	20.0	0.025	5.4	LOS A	0.1	0.8	0.16	0.55	0.16	35.2
9b	R3	All MCs	4	0.0	4	0.0	0.025	7.1	LOS A	0.1	0.8	0.16	0.55	0.16	54.4
Approach			32	17.5	32	17.5	0.025	5.6	LOS A	0.1	0.8	0.16	0.55	0.16	43.2
NorthWest: The Bogan Way_NW															
27b	L3	All MCs	4	0.0	4	0.0	0.036	8.0	LOS A	0.0	0.0	0.00	0.33	0.00	72.7
28	T1	All MCs	60	9.1	60	9.1	0.036	2.1	LOS A	0.0	0.0	0.00	0.33	0.00	76.4
Approach			64	8.5	64	8.5	0.036	2.4	NA	0.0	0.0	0.00	0.33	0.00	76.2
All Vehicles			164	13.8	164	13.8	0.037	2.5	NA	0.1	1.1	0.08	0.33	0.08	64.7

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 02 [02 (AM BASE) 8:15-9:15AM - JOH_BAR (Site Folder: AM Peak - (Base case))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

02 (AM BASE) 8:15-9:15AM - The Bogan Way, Johnson Street, Farnell Street, Barton Street Intersection
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Farnell Street_S															
1a	L1	All MCs	140	3.3	140	3.3	0.194	5.7	LOS A	0.8	5.5	0.29	0.56	0.29	30.2
3a	R1	All MCs	36	0.0	36	0.0	0.194	10.9	LOS A	0.8	5.5	0.29	0.56	0.29	36.3
3b	R3	All MCs	6	0.0	6	0.0	0.194	11.9	LOS A	0.8	5.5	0.29	0.56	0.29	38.1
Approach			182	2.5	182	2.5	0.194	6.9	LOS A	0.8	5.5	0.29	0.56	0.29	31.9
SouthEast: Johnson Street_SE															
21b	L3	All MCs	4	0.0	4	0.0	0.071	9.8	LOS A	0.3	1.9	0.21	0.19	0.21	46.6
22	T1	All MCs	92	3.8	92	3.8	0.071	0.9	LOS A	0.3	1.9	0.21	0.19	0.21	50.9
23	R2	All MCs	10	0.0	10	0.0	0.071	9.2	LOS A	0.3	1.9	0.21	0.19	0.21	41.6
Approach			106	3.3	106	3.3	0.071	2.1	NA	0.3	1.9	0.21	0.19	0.21	49.4
NorthEast: Barton Street_NE															
24	L2	All MCs	28	5.6	28	5.6	0.091	6.3	LOS A	0.3	2.3	0.39	0.63	0.39	34.9
24a	L1	All MCs	32	0.0	32	0.0	0.091	6.3	LOS A	0.3	2.3	0.39	0.63	0.39	36.7
26	R2	All MCs	44	0.0	44	0.0	0.091	6.8	LOS A	0.3	2.3	0.39	0.63	0.39	27.5
Approach			104	1.5	104	1.5	0.091	6.5	LOS A	0.3	2.3	0.39	0.63	0.39	32.6
NorthWest: The Bogan Way_NW															
27	L2	All MCs	52	3.0	52	3.0	0.216	3.8	LOS A	0.8	6.2	0.16	0.27	0.16	26.8
28	T1	All MCs	220	5.5	220	5.5	0.216	0.2	LOS A	0.8	6.2	0.16	0.27	0.16	67.1
29a	R1	All MCs	112	4.6	112	4.6	0.216	3.0	LOS A	0.8	6.2	0.16	0.27	0.16	46.2
Approach			384	4.9	384	4.9	0.216	1.5	NA	0.8	6.2	0.16	0.27	0.16	51.7
All Vehicles			776	3.7	776	3.7	0.216	3.5	NA	0.8	6.2	0.23	0.38	0.23	41.9

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 03 [03 (AM BASE) 8:15-9:15AM - FAR_WYN (Site Folder: AM Peak - (Base case))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

03 (AM BASE) 8:15-9:15AM - Farnell Street, Wyndham Street
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Farnell Street															
2	T1	All MCs	44	8.7	44	8.7	0.061	0.1	LOS A	0.2	1.7	0.11	0.35	0.11	49.1
3	R2	All MCs	68	2.0	68	2.0	0.061	5.7	LOS A	0.2	1.7	0.11	0.35	0.11	48.1
Approach			112	4.7	112	4.7	0.061	3.5	NA	0.2	1.7	0.11	0.35	0.11	48.4
East: Wyndham Avenue															
4	L2	All MCs	72	0.0	72	0.0	0.050	5.7	LOS A	0.2	1.4	0.12	0.54	0.12	45.6
6	R2	All MCs	8	0.0	8	0.0	0.050	5.6	LOS A	0.2	1.4	0.12	0.54	0.12	30.9
Approach			80	0.0	80	0.0	0.050	5.7	LOS A	0.2	1.4	0.12	0.54	0.12	44.2
North: Farnell Street															
7	L2	All MCs	8	0.0	8	0.0	0.026	4.7	LOS A	0.0	0.0	0.00	0.09	0.00	50.4
8	T1	All MCs	44	6.7	44	6.7	0.026	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	57.6
Approach			52	5.6	52	5.6	0.026	0.7	NA	0.0	0.0	0.00	0.09	0.00	56.4
All Vehicles			244	3.3	244	3.3	0.061	3.6	NA	0.2	1.7	0.09	0.36	0.09	47.8

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 01 [01 (PM BASE) 4:00-5:00PM - BOG_EDW (Site Folder: PM Peak - Scenario (Base case))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

01 (PM BASE) 8:15-9:15AM - The Bogan Way, Edward Street Intersection
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: The Bogan Way_SE															
22	T1	All MCs	34	6.3	34	6.3	0.026	0.1	LOS A	0.1	0.7	0.08	0.18	0.08	78.8
23a	R1	All MCs	22	0.0	22	0.0	0.026	2.3	LOS A	0.1	0.7	0.11	0.25	0.11	47.2
Approach			56	3.8	56	3.8	0.026	1.0	NA	0.1	0.7	0.09	0.21	0.09	74.6
North: Edward St_NE															
7a	L1	All MCs	23	4.5	23	4.5	0.018	5.1	LOS A	0.1	0.5	0.12	0.54	0.12	35.9
9b	R3	All MCs	2	0.0	2	0.0	0.018	6.7	LOS A	0.1	0.5	0.12	0.54	0.12	54.5
Approach			25	4.2	25	4.2	0.018	5.3	LOS A	0.1	0.5	0.12	0.54	0.12	41.8
NorthWest: The Bogan Way_NW															
27b	L3	All MCs	1	0.0	1	0.0	0.024	7.8	LOS A	0.0	0.0	0.00	0.06	0.00	71.3
28	T1	All MCs	40	13.2	40	13.2	0.024	0.2	LOS A	0.0	0.0	0.00	0.06	0.00	76.8
Approach			41	12.8	41	12.8	0.024	0.4	NA	0.0	0.0	0.00	0.06	0.00	76.6
All Vehicles			122	6.9	122	6.9	0.026	1.7	NA	0.1	0.7	0.06	0.23	0.06	71.8

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 02 [02 (PM BASE) 4:00-5:00PM - JOH_BAR (Site Folder: PM Peak - Scenario (Base case))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

02 (PM BASE) 8:15-9:15AM - The Bogan Way, Johnson Street, Farnell Street, Barton Street Intersection
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Farnell Street_S															
1a	L1	All MCs	177	0.0	177	0.0	0.210	6.1	LOS A	0.9	6.0	0.39	0.61	0.39	30.0
3a	R1	All MCs	24	0.0	24	0.0	0.210	12.8	LOS A	0.9	6.0	0.39	0.61	0.39	36.0
3b	R3	All MCs	6	0.0	6	0.0	0.210	13.5	LOS A	0.9	6.0	0.39	0.61	0.39	37.8
Approach			207	0.0	207	0.0	0.210	7.0	LOS A	0.9	6.0	0.39	0.61	0.39	31.1
SouthEast: Johnson Street_SE															
21b	L3	All MCs	3	0.0	3	0.0	0.141	8.9	LOS A	0.4	3.1	0.16	0.15	0.16	48.1
22	T1	All MCs	200	0.9	200	0.9	0.141	0.6	LOS A	0.4	3.1	0.16	0.15	0.16	53.6
23	R2	All MCs	21	0.0	21	0.0	0.141	8.1	LOS A	0.4	3.1	0.16	0.15	0.16	42.9
Approach			224	0.8	224	0.8	0.141	1.4	NA	0.4	3.1	0.16	0.15	0.16	51.9
NorthEast: Barton Street_NE															
24	L2	All MCs	15	0.0	15	0.0	0.138	6.0	LOS A	0.5	3.5	0.45	0.67	0.45	34.4
24a	L1	All MCs	59	2.3	59	2.3	0.138	7.3	LOS A	0.5	3.5	0.45	0.67	0.45	35.7
26	R2	All MCs	58	5.9	58	5.9	0.138	7.4	LOS A	0.5	3.5	0.45	0.67	0.45	26.7
Approach			132	3.6	132	3.6	0.138	7.2	LOS A	0.5	3.5	0.45	0.67	0.45	31.9
NorthWest: The Bogan Way_NW															
27	L2	All MCs	61	4.8	61	4.8	0.220	4.2	LOS A	1.1	8.2	0.32	0.42	0.32	26.3
28	T1	All MCs	132	4.6	132	4.6	0.220	0.6	LOS A	1.1	8.2	0.32	0.42	0.32	61.5
29a	R1	All MCs	173	1.9	173	1.9	0.220	3.4	LOS A	1.1	8.2	0.32	0.42	0.32	43.3
Approach			366	3.3	366	3.3	0.220	2.6	NA	1.1	8.2	0.32	0.42	0.32	44.3
All Vehicles			928	2.0	928	2.0	0.220	3.9	NA	1.1	8.2	0.32	0.43	0.32	39.8

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 03 [03 (PM BASE) 4:00-5:00PM - FAR_WYN (Site Folder: PM Peak - Scenario (Base case))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

03 (PM BASE) 8:15-9:15AM - Farnell Street, Wyndham Street
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Farnell Street															
2	T1	All MCs	48	6.1	48	6.1	0.048	0.1	LOS A	0.2	1.2	0.10	0.27	0.10	51.8
3	R2	All MCs	40	3.3	40	3.3	0.048	5.7	LOS A	0.2	1.2	0.10	0.27	0.10	49.0
Approach			88	4.8	88	4.8	0.048	2.6	NA	0.2	1.2	0.10	0.27	0.10	50.2
East: Wyndham Avenue															
4	L2	All MCs	52	4.8	52	4.8	0.042	5.7	LOS A	0.2	1.1	0.11	0.55	0.11	45.5
6	R2	All MCs	16	0.0	16	0.0	0.042	5.6	LOS A	0.2	1.1	0.11	0.55	0.11	37.3
Approach			68	3.6	68	3.6	0.042	5.7	LOS A	0.2	1.1	0.11	0.55	0.11	43.9
North: Farnell Street															
7	L2	All MCs	12	0.0	12	0.0	0.025	4.7	LOS A	0.0	0.0	0.00	0.14	0.00	49.6
8	T1	All MCs	40	0.0	40	0.0	0.025	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	56.7
Approach			52	0.0	52	0.0	0.025	1.1	NA	0.0	0.0	0.00	0.14	0.00	54.9
All Vehicles			208	3.2	208	3.2	0.048	3.2	NA	0.2	1.2	0.08	0.33	0.08	48.5

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 01 [01 (AM Scenario 1) 8:15-9:15AM - BOG_EDW 1 (Site Folder: AM Peak - Scenario 1 (Opening Year 2025))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

01 (AM Scenario 1) 8:15-9:15AM - The Bogan Way, Edward Street Intersection
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: The Bogan Way_SE															
22	T1	All MCs	42	15.4	42	15.4	0.039	0.2	LOS A	0.2	1.2	0.12	0.22	0.12	59.4
23a	R1	All MCs	32	16.7	32	16.7	0.039	2.4	LOS A	0.2	1.2	0.15	0.26	0.15	42.3
Approach			73	15.9	73	15.9	0.039	1.2	NA	0.2	1.2	0.13	0.24	0.13	57.2
North: Edward St_NE															
7a	L1	All MCs	41	18.2	41	18.2	0.034	5.4	LOS A	0.1	1.1	0.16	0.54	0.16	35.3
9b	R3	All MCs	4	0.0	4	0.0	0.034	7.1	LOS A	0.1	1.1	0.16	0.54	0.16	54.4
Approach			45	16.6	45	16.6	0.034	5.6	LOS A	0.1	1.1	0.16	0.54	0.16	41.6
NorthWest: The Bogan Way_NW															
27b	L3	All MCs	4	0.0	4	0.0	0.037	8.0	LOS A	0.0	0.0	0.00	0.33	0.00	72.7
28	T1	All MCs	63	8.7	63	8.7	0.037	2.1	LOS A	0.0	0.0	0.00	0.33	0.00	76.5
Approach			67	8.2	67	8.2	0.037	2.4	NA	0.0	0.0	0.00	0.33	0.00	76.2
All Vehicles			185	13.3	185	13.3	0.039	2.7	NA	0.2	1.2	0.09	0.35	0.09	63.9

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 02 [02 (AM Scenario 1) 8:15-9:15AM - JOH_BAR (Site Folder: AM Peak - Scenario 1 (Opening Year 2025))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

02 (AM Scenario 1) 8:15-9:15AM - The Bogan Way, Johnson Street, Farnell Street, Barton Street Intersection
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Farnell Street_S															
1a	L1	All MCs	148	3.1	148	3.1	0.198	5.7	LOS A	0.8	5.7	0.29	0.56	0.29	30.4
3a	R1	All MCs	37	0.0	37	0.0	0.198	10.4	LOS A	0.8	5.7	0.29	0.56	0.29	36.5
3b	R3	All MCs	6	0.0	6	0.0	0.198	11.4	LOS A	0.8	5.7	0.29	0.56	0.29	38.3
Approach			191	2.4	191	2.4	0.198	6.8	LOS A	0.8	5.7	0.29	0.56	0.29	32.0
SouthEast: Johnson Street_SE															
21b	L3	All MCs	4	0.0	4	0.0	0.074	10.3	LOS A	0.3	2.0	0.22	0.20	0.22	46.4
22	T1	All MCs	97	3.6	97	3.6	0.074	1.0	LOS A	0.3	2.0	0.22	0.20	0.22	50.6
23	R2	All MCs	10	0.0	10	0.0	0.074	9.7	LOS A	0.3	2.0	0.22	0.20	0.22	41.4
Approach			111	3.1	111	3.1	0.074	2.2	NA	0.3	2.0	0.22	0.20	0.22	49.1
NorthEast: Barton Street_NE															
24	L2	All MCs	30	5.3	30	5.3	0.094	6.4	LOS A	0.3	2.3	0.38	0.63	0.38	34.9
24a	L1	All MCs	33	0.0	33	0.0	0.094	6.2	LOS A	0.3	2.3	0.38	0.63	0.38	36.7
26	R2	All MCs	46	0.0	46	0.0	0.094	6.7	LOS A	0.3	2.3	0.38	0.63	0.38	27.5
Approach			109	1.4	109	1.4	0.094	6.5	LOS A	0.3	2.3	0.38	0.63	0.38	32.7
NorthWest: The Bogan Way_NW															
27	L2	All MCs	57	2.8	57	2.8	0.199	3.8	LOS A	0.5	4.1	0.11	0.22	0.11	27.2
28	T1	All MCs	238	5.6	238	5.6	0.199	0.2	LOS A	0.5	4.1	0.11	0.22	0.11	69.4
29a	R1	All MCs	51	10.0	51	10.0	0.199	3.2	LOS A	0.5	4.1	0.11	0.22	0.11	46.4
Approach			346	5.8	346	5.8	0.199	1.2	NA	0.5	4.1	0.11	0.22	0.11	54.1
All Vehicles			757	3.9	757	3.9	0.199	3.5	NA	0.8	5.7	0.21	0.36	0.21	42.0

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 03 [03 (AM Scenario 1) 8:15-9:15AM - FAR_WYN (Site Folder: AM Peak - Scenario 1 (Opening Year 2025))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

03 (AM Scenario 1) 8:15-9:15AM - Farnell Street, Wyndham Street
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Farnell Street															
2	T1	All MCs	52	7.4	52	7.4	0.068	0.1	LOS A	0.3	1.9	0.13	0.34	0.13	49.8
3	R2	All MCs	71	2.0	71	2.0	0.068	5.7	LOS A	0.3	1.9	0.13	0.34	0.13	48.4
Approach			122	4.3	122	4.3	0.068	3.4	NA	0.3	1.9	0.13	0.34	0.13	48.8
East: Wyndham Avenue															
4	L2	All MCs	75	0.0	75	0.0	0.053	5.7	LOS A	0.2	1.4	0.14	0.54	0.14	45.5
6	R2	All MCs	8	0.0	8	0.0	0.053	5.7	LOS A	0.2	1.4	0.14	0.54	0.14	30.8
Approach			83	0.0	83	0.0	0.053	5.7	LOS A	0.2	1.4	0.14	0.54	0.14	44.1
North: Farnell Street															
7	L2	All MCs	11	0.0	11	0.0	0.035	4.7	LOS A	0.0	0.0	0.00	0.09	0.00	50.4
8	T1	All MCs	60	4.9	60	4.9	0.035	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	57.7
Approach			71	4.1	71	4.1	0.035	0.7	NA	0.0	0.0	0.00	0.09	0.00	56.5
All Vehicles			277	2.9	277	2.9	0.068	3.4	NA	0.3	1.9	0.10	0.34	0.10	48.4

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 01 [01 (PM Scenario 1) 4:00-5:00PM - BOG_EDW 1 (Site Folder: PM Peak - Scenario 1 (Opening Year 2025))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

01 (PM Scenario 1) 4:00-5:00PM - The Bogan Way, Edward Street Intersection
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: The Bogan Way_SE															
22	T1	All MCs	35	6.1	35	6.1	0.035	0.1	LOS A	0.2	1.1	0.08	0.22	0.08	77.0
23a	R1	All MCs	39	0.0	39	0.0	0.035	2.3	LOS A	0.2	1.1	0.12	0.33	0.12	45.9
Approach			74	2.9	74	2.9	0.035	1.3	NA	0.2	1.1	0.10	0.28	0.10	70.6
North: Edward St_NE															
7a	L1	All MCs	26	4.0	26	4.0	0.020	5.1	LOS A	0.1	0.6	0.12	0.54	0.12	35.9
9b	R3	All MCs	2	0.0	2	0.0	0.020	6.9	LOS A	0.1	0.6	0.12	0.54	0.12	54.5
Approach			28	3.7	28	3.7	0.020	5.3	LOS A	0.1	0.6	0.12	0.54	0.12	41.3
NorthWest: The Bogan Way_NW															
27b	L3	All MCs	1	0.0	1	0.0	0.024	7.9	LOS A	0.0	0.0	0.00	0.06	0.00	71.4
28	T1	All MCs	41	12.8	41	12.8	0.024	0.2	LOS A	0.0	0.0	0.00	0.06	0.00	76.9
Approach			42	12.5	42	12.5	0.024	0.4	NA	0.0	0.0	0.00	0.06	0.00	76.7
All Vehicles			144	5.8	144	5.8	0.035	1.8	NA	0.2	1.1	0.08	0.27	0.08	69.9

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 02 [02 (PM Scenario 1) 4:00-5:00PM - JOH_BAR (Site Folder: PM Peak - Scenario 1 (Opening Year 2025))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

02 (PM Scenario 1) 4:00-5:00PM - The Bogan Way, Johnson Street, Farnell Street, Barton Street Intersection
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Farnell Street_S															
1a	L1	All MCs	191	0.0	191	0.0	0.230	6.1	LOS A	0.9	6.6	0.41	0.62	0.41	29.8
3a	R1	All MCs	25	0.0	25	0.0	0.230	13.7	LOS A	0.9	6.6	0.41	0.62	0.41	35.8
3b	R3	All MCs	6	0.0	6	0.0	0.230	14.2	LOS A	0.9	6.6	0.41	0.62	0.41	37.6
Approach			221	0.0	221	0.0	0.230	7.2	LOS A	0.9	6.6	0.41	0.62	0.41	30.8
SouthEast: Johnson Street_SE															
21b	L3	All MCs	3	0.0	3	0.0	0.149	9.1	LOS A	0.5	3.2	0.16	0.14	0.16	48.2
22	T1	All MCs	214	0.8	214	0.8	0.149	0.6	LOS A	0.5	3.2	0.16	0.14	0.16	53.7
23	R2	All MCs	21	0.0	21	0.0	0.149	8.2	LOS A	0.5	3.2	0.16	0.14	0.16	43.0
Approach			238	0.8	238	0.8	0.149	1.4	NA	0.5	3.2	0.16	0.14	0.16	52.1
NorthEast: Barton Street_NE															
24	L2	All MCs	15	0.0	15	0.0	0.144	6.0	LOS A	0.5	3.7	0.46	0.68	0.46	34.1
24a	L1	All MCs	60	2.3	60	2.3	0.144	7.6	LOS A	0.5	3.7	0.46	0.68	0.46	35.4
26	R2	All MCs	58	5.9	58	5.9	0.144	7.5	LOS A	0.5	3.7	0.46	0.68	0.46	26.5
Approach			133	3.6	133	3.6	0.144	7.4	LOS A	0.5	3.7	0.46	0.68	0.46	31.7
NorthWest: The Bogan Way_NW															
27	L2	All MCs	64	4.5	64	4.5	0.232	4.2	LOS A	1.2	8.7	0.34	0.43	0.34	26.3
28	T1	All MCs	138	4.4	138	4.4	0.232	0.7	LOS A	1.2	8.7	0.34	0.43	0.34	61.2
29a	R1	All MCs	181	1.8	181	1.8	0.232	3.5	LOS A	1.2	8.7	0.34	0.43	0.34	43.2
Approach			383	3.2	383	3.2	0.232	2.6	NA	1.2	8.7	0.34	0.43	0.34	44.2
All Vehicles			976	1.9	976	1.9	0.232	4.0	NA	1.2	8.7	0.33	0.44	0.33	39.7

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 03 [03 (PM Scenario 1) 4:00-5:00PM - FAR_WYN (Site Folder: PM Peak - Scenario 1 (Opening Year 2025))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

03 (PM Scenario 1) 4:00-5:00PM - Farnell Street, Wyndham Street
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Farnell Street															
2	T1	All MCs	64	2.3	64	2.3	0.056	0.1	LOS A	0.2	1.3	0.10	0.24	0.10	52.7
3	R2	All MCs	41	3.2	41	3.2	0.056	5.7	LOS A	0.2	1.3	0.10	0.24	0.10	50.1
Approach			105	2.6	105	2.6	0.056	2.3	NA	0.2	1.3	0.10	0.24	0.10	51.4
East: Wyndham Avenue															
4	L2	All MCs	55	4.5	55	4.5	0.050	5.7	LOS A	0.2	1.2	0.12	0.55	0.12	45.5
6	R2	All MCs	27	0.0	27	0.0	0.050	5.6	LOS A	0.2	1.2	0.12	0.55	0.12	37.2
Approach			82	3.0	82	3.0	0.050	5.7	LOS A	0.2	1.2	0.12	0.55	0.12	43.1
North: Farnell Street															
7	L2	All MCs	15	0.0	15	0.0	0.029	4.7	LOS A	0.0	0.0	0.00	0.14	0.00	49.5
8	T1	All MCs	46	0.0	46	0.0	0.029	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	56.5
Approach			61	0.0	61	0.0	0.029	1.2	NA	0.0	0.0	0.00	0.14	0.00	54.6
All Vehicles			249	2.1	249	2.1	0.056	3.1	NA	0.2	1.3	0.08	0.32	0.08	48.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 01 [01 (AM Scenario 2) 8:15-9:15AM - BOG_EDW 1 (Site Folder: AM Peak - Scenario 2 (50% completion))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

01 (AM Scenario 2) 8:15-9:15AM - The Bogan Way, Edward Street Intersection
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: The Bogan Way_SE															
22	T1	All MCs	42	15.4	42	15.4	0.059	0.2	LOS A	0.3	2.1	0.11	0.24	0.11	59.3
23a	R1	All MCs	68	12.8	68	12.8	0.059	2.5	LOS A	0.3	2.1	0.18	0.37	0.18	41.9
Approach			110	13.8	110	13.8	0.059	1.6	NA	0.3	2.1	0.15	0.32	0.15	55.0
North: Edward St_NE															
7a	L1	All MCs	164	20.5	164	20.5	0.152	5.5	LOS A	0.6	5.2	0.19	0.55	0.19	35.0
9b	R3	All MCs	24	0.0	24	0.0	0.152	7.7	LOS A	0.6	5.2	0.19	0.55	0.19	54.4
Approach			188	17.8	188	17.8	0.152	5.8	LOS A	0.6	5.2	0.19	0.55	0.19	43.2
NorthWest: The Bogan Way_NW															
27b	L3	All MCs	8	0.0	8	0.0	0.040	8.0	LOS A	0.0	0.0	0.00	0.35	0.00	72.3
28	T1	All MCs	63	8.7	63	8.7	0.040	2.1	LOS A	0.0	0.0	0.00	0.35	0.00	76.1
Approach			71	7.7	71	7.7	0.040	2.7	NA	0.0	0.0	0.00	0.35	0.00	75.6
All Vehicles			369	14.7	369	14.7	0.152	3.9	NA	0.6	5.2	0.14	0.45	0.14	57.0

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 02 [02 (AM Scenario 2) 8:15-9:15AM - JOH_BAR (Site Folder: AM Peak - Scenario 2 (50% completion))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

02 (AM Scenario 2) 8:15-9:15AM - The Bogan Way, Johnson Street, Farnell Street, Barton Street Intersection
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Farnell Street_S															
1a	L1	All MCs	168	2.8	168	2.8	0.268	5.8	LOS A	1.1	7.9	0.38	0.57	0.38	28.5
3a	R1	All MCs	37	0.0	37	0.0	0.268	17.7	LOS B	1.1	7.9	0.38	0.57	0.38	34.4
3b	R3	All MCs	6	0.0	6	0.0	0.268	17.0	LOS B	1.1	7.9	0.38	0.57	0.38	36.2
Approach			211	2.2	211	2.2	0.268	8.2	LOS A	1.1	7.9	0.38	0.57	0.38	29.8
SouthEast: Johnson Street_SE															
21b	L3	All MCs	4	0.0	4	0.0	0.088	13.0	LOS A	0.4	2.9	0.26	0.24	0.26	44.5
22	T1	All MCs	110	3.1	110	3.1	0.088	1.9	LOS A	0.4	2.9	0.26	0.24	0.26	47.5
23	R2	All MCs	10	0.0	10	0.0	0.088	12.6	LOS A	0.4	2.9	0.26	0.24	0.26	39.7
Approach			125	2.8	125	2.8	0.088	3.1	NA	0.4	2.9	0.26	0.24	0.26	46.4
NorthEast: Barton Street_NE															
24	L2	All MCs	30	5.3	30	5.3	0.124	6.9	LOS A	0.4	3.0	0.48	0.72	0.48	33.9
24a	L1	All MCs	33	0.0	33	0.0	0.124	7.7	LOS A	0.4	3.0	0.48	0.72	0.48	35.5
26	R2	All MCs	53	0.0	53	0.0	0.124	7.6	LOS A	0.4	3.0	0.48	0.72	0.48	26.5
Approach			115	1.3	115	1.3	0.124	7.5	LOS A	0.4	3.0	0.48	0.72	0.48	31.4
NorthWest: The Bogan Way_NW															
27	L2	All MCs	79	4.0	79	4.0	0.332	3.9	LOS A	1.5	10.8	0.20	0.29	0.20	26.7
28	T1	All MCs	335	5.8	335	5.8	0.332	0.3	LOS A	1.5	10.8	0.20	0.29	0.20	66.6
29a	R1	All MCs	171	4.5	171	4.5	0.332	3.2	LOS A	1.5	10.8	0.20	0.29	0.20	45.9
Approach			585	5.2	585	5.2	0.332	1.6	NA	1.5	10.8	0.20	0.29	0.20	51.4
All Vehicles			1036	3.9	1036	3.9	0.332	3.8	NA	1.5	10.8	0.27	0.39	0.27	41.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 03 [03 (AM Scenario 2) 8:15-9:15AM - FAR_WYN (Site Folder: AM Peak - Scenario 2 (50% completion))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

03 (AM Scenario 2) 8:15-9:15AM - Farnell Street, Wyndham Street
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Farnell Street															
2	T1	All MCs	107	8.9	107	8.9	0.105	0.5	LOS A	0.4	2.7	0.27	0.33	0.27	50.6
3	R2	All MCs	71	2.0	71	2.0	0.105	6.4	LOS A	0.4	2.7	0.27	0.33	0.27	48.9
Approach			178	6.2	178	6.2	0.105	2.9	NA	0.4	2.7	0.27	0.33	0.27	49.8
East: Wyndham Avenue															
4	L2	All MCs	75	0.0	75	0.0	0.070	6.4	LOS A	0.3	1.8	0.33	0.60	0.33	44.6
6	R2	All MCs	19	0.0	19	0.0	0.070	5.9	LOS A	0.3	1.8	0.33	0.60	0.33	30.2
Approach			94	0.0	94	0.0	0.070	6.3	LOS A	0.3	1.8	0.33	0.60	0.33	41.8
North: Farnell Street															
7	L2	All MCs	48	0.0	48	0.0	0.153	4.7	LOS A	0.0	0.0	0.00	0.09	0.00	50.3
8	T1	All MCs	260	7.9	260	7.9	0.153	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	57.5
Approach			308	6.7	308	6.7	0.153	0.7	NA	0.0	0.0	0.00	0.09	0.00	56.3
All Vehicles			580	5.4	580	5.4	0.153	2.3	NA	0.4	2.7	0.14	0.25	0.14	50.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 01 [01 (PM Scenario 2) 4:00-5:00PM - BOG_EDW 1 (Site Folder: PM Peak - Scenario 2 (50% completion))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

01 (PM Scenario 2) 4:00-5:00PM - The Bogan Way, Edward Street Intersection
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: The Bogan Way_SE															
22	T1	All MCs	35	6.1	35	6.1	0.019	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	80.0
23a	R1	All MCs	164	0.0	164	0.0	0.095	2.4	LOS A	0.5	3.2	0.14	0.49	0.14	43.4
Approach			199	1.1	199	1.1	0.095	2.0	NA	0.5	3.2	0.12	0.41	0.12	59.9
North: Edward St_NE															
7a	L1	All MCs	63	5.0	63	5.0	0.049	5.2	LOS A	0.2	1.4	0.13	0.54	0.13	35.8
9b	R3	All MCs	5	0.0	5	0.0	0.049	8.1	LOS A	0.2	1.4	0.13	0.54	0.13	54.5
Approach			68	4.6	68	4.6	0.049	5.4	LOS A	0.2	1.4	0.13	0.54	0.13	41.4
NorthWest: The Bogan Way_NW															
27b	L3	All MCs	6	0.0	6	0.0	0.028	7.9	LOS A	0.0	0.0	0.00	0.13	0.00	70.7
28	T1	All MCs	41	12.8	41	12.8	0.028	0.2	LOS A	0.0	0.0	0.00	0.13	0.00	76.0
Approach			47	11.1	47	11.1	0.028	1.3	NA	0.0	0.0	0.00	0.13	0.00	75.2
All Vehicles			315	3.3	315	3.3	0.095	2.6	NA	0.5	3.2	0.10	0.40	0.10	61.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 02 [02 (PM Scenario 2) 4:00-5:00PM - JOH_BAR (Site Folder: PM Peak - Scenario 2 (50% completion))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

02 (PM Scenario 2) 4:00-5:00PM - The Bogan Way, Johnson Street, Farnell Street, Barton Street Intersection
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Farnell Street_S															
1a	L1	All MCs	280	0.0	280	0.0	0.327	6.3	LOS A	1.5	10.2	0.47	0.64	0.47	29.2
3a	R1	All MCs	25	0.0	25	0.0	0.327	19.8	LOS B	1.5	10.2	0.47	0.64	0.47	35.2
3b	R3	All MCs	6	0.0	6	0.0	0.327	16.7	LOS B	1.5	10.2	0.47	0.64	0.47	37.0
Approach			311	0.0	311	0.0	0.327	7.6	LOS A	1.5	10.2	0.47	0.64	0.47	29.9
SouthEast: Johnson Street_SE															
21b	L3	All MCs	3	0.0	3	0.0	0.165	9.6	LOS A	0.5	3.5	0.16	0.14	0.16	48.2
22	T1	All MCs	241	0.7	241	0.7	0.165	0.6	LOS A	0.5	3.5	0.16	0.14	0.16	53.6
23	R2	All MCs	21	0.0	21	0.0	0.165	8.7	LOS A	0.5	3.5	0.16	0.14	0.16	42.9
Approach			265	0.7	265	0.7	0.165	1.4	NA	0.5	3.5	0.16	0.14	0.16	52.2
NorthEast: Barton Street_NE															
24	L2	All MCs	15	0.0	15	0.0	0.288	6.3	LOS A	1.1	8.0	0.54	0.79	0.61	32.7
24a	L1	All MCs	62	2.2	62	2.2	0.288	8.8	LOS A	1.1	8.0	0.54	0.79	0.61	33.8
26	R2	All MCs	163	6.3	163	6.3	0.288	8.7	LOS A	1.1	8.0	0.54	0.79	0.61	25.1
Approach			239	4.9	239	4.9	0.288	8.6	LOS A	1.1	8.0	0.54	0.79	0.61	28.0
NorthWest: The Bogan Way_NW															
27	L2	All MCs	73	4.0	73	4.0	0.264	4.4	LOS A	1.4	10.2	0.37	0.45	0.37	26.0
28	T1	All MCs	155	4.7	155	4.7	0.264	0.8	LOS A	1.4	10.2	0.37	0.45	0.37	60.5
29a	R1	All MCs	203	1.6	203	1.6	0.264	3.7	LOS A	1.4	10.2	0.37	0.45	0.37	42.8
Approach			430	3.1	430	3.1	0.264	2.8	NA	1.4	10.2	0.37	0.45	0.37	43.7
All Vehicles			1245	2.2	1245	2.2	0.327	4.8	NA	1.5	10.2	0.38	0.50	0.39	37.0

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 03 [03 (PM Scenario 2) 4:00-5:00PM - FAR_WYN (Site Folder: PM Peak - Scenario 2 (50% completion))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

03 (PM Scenario 2) 4:00-5:00PM - Farnell Street, Wyndham Street
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Farnell Street															
2	T1	All MCs	266	3.3	266	3.3	0.155	0.1	LOS A	0.2	1.7	0.07	0.10	0.07	56.8
3	R2	All MCs	41	3.2	41	3.2	0.155	5.9	LOS A	0.2	1.7	0.07	0.10	0.07	52.6
Approach			308	3.3	308	3.3	0.155	0.9	NA	0.2	1.7	0.07	0.10	0.07	55.9
East: Wyndham Avenue															
4	L2	All MCs	55	4.5	55	4.5	0.089	5.9	LOS A	0.3	1.9	0.20	0.57	0.20	45.0
6	R2	All MCs	89	0.0	89	0.0	0.089	5.9	LOS A	0.3	1.9	0.20	0.57	0.20	36.8
Approach			144	1.7	144	1.7	0.089	5.9	LOS A	0.3	1.9	0.20	0.57	0.20	40.4
North: Farnell Street															
7	L2	All MCs	33	0.0	33	0.0	0.067	4.7	LOS A	0.0	0.0	0.00	0.14	0.00	49.6
8	T1	All MCs	107	0.0	107	0.0	0.067	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	56.6
Approach			140	0.0	140	0.0	0.067	1.1	NA	0.0	0.0	0.00	0.14	0.00	54.8
All Vehicles			592	2.1	592	2.1	0.155	2.1	NA	0.3	1.9	0.09	0.22	0.09	50.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 01 [01 (AM Scenario 3) 8:15-9:15AM - BOG_EDW 1 (Site Folder: AM Peak - Scenario 3 (100% completion))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

01 (AM Scenario 3) 8:15-9:15AM - The Bogan Way, Edward Street Intersection
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: The Bogan Way_SE															
22	T1	All MCs	42	15.4	42	15.4	0.094	0.2	LOS A	0.4	3.6	0.06	0.15	0.06	59.6
23a	R1	All MCs	132	17.3	132	17.3	0.094	2.5	LOS A	0.4	3.6	0.19	0.46	0.19	40.2
Approach			173	16.9	173	16.9	0.094	1.9	NA	0.4	3.6	0.16	0.38	0.16	51.9
North: Edward St_NE															
7a	L1	All MCs	362	6.7	362	6.7	0.329	5.3	LOS A	1.7	12.5	0.23	0.55	0.23	35.0
9b	R3	All MCs	56	0.0	56	0.0	0.329	9.2	LOS A	1.7	12.5	0.23	0.55	0.23	54.3
Approach			418	5.8	418	5.8	0.329	5.9	LOS A	1.7	12.5	0.23	0.55	0.23	43.4
NorthWest: The Bogan Way_NW															
27b	L3	All MCs	12	0.0	12	0.0	0.042	8.0	LOS A	0.0	0.0	0.00	0.37	0.00	72.0
28	T1	All MCs	63	8.7	63	8.7	0.042	2.1	LOS A	0.0	0.0	0.00	0.37	0.00	75.7
Approach			75	7.3	75	7.3	0.042	3.0	NA	0.0	0.0	0.00	0.37	0.00	75.0
All Vehicles			666	8.8	666	8.8	0.329	4.5	NA	1.7	12.5	0.18	0.49	0.18	52.3

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 02 [02 (AM Scenario 3) 8:15-9:15AM - JOH_BAR (Site Folder: AM Peak - Scenario 3 (100% completion))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

02 (AM Scenario 3) 8:15-9:15AM - The Bogan Way, Johnson Street, Farnell Street, Barton Street Intersection
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Farnell Street_S															
1a	L1	All MCs	205	3.8	205	3.8	0.466	8.1	LOS A	3.5	25.2	0.63	0.67	0.88	22.1
3a	R1	All MCs	37	0.0	37	0.0	0.466	46.2	LOS D	3.5	25.2	0.63	0.67	0.88	27.2
3b	R3	All MCs	6	0.0	6	0.0	0.466	36.4	LOS C	3.5	25.2	0.63	0.67	0.88	29.4
Approach			248	3.1	248	3.1	0.466	14.5	LOS B	3.5	25.2	0.63	0.67	0.88	23.1
SouthEast: Johnson Street_SE															
21b	L3	All MCs	4	0.0	4	0.0	0.121	21.4	LOS B	0.9	6.2	0.34	0.33	0.34	38.5
22	T1	All MCs	135	3.4	135	3.4	0.121	5.0	LOS A	0.9	6.2	0.34	0.33	0.34	38.5
23	R2	All MCs	10	0.0	10	0.0	0.121	21.2	LOS B	0.9	6.2	0.34	0.33	0.34	34.6
Approach			149	3.1	149	3.1	0.121	6.5	NA	0.9	6.2	0.34	0.33	0.34	38.2
NorthEast: Barton Street_NE															
24	L2	All MCs	30	5.3	30	5.3	0.195	8.0	LOS A	0.6	4.6	0.63	0.84	0.63	31.5
24a	L1	All MCs	33	0.0	33	0.0	0.195	11.1	LOS A	0.6	4.6	0.63	0.84	0.63	32.6
26	R2	All MCs	64	0.0	64	0.0	0.195	9.5	LOS A	0.6	4.6	0.63	0.84	0.63	24.1
Approach			127	1.2	127	1.2	0.195	9.6	LOS A	0.6	4.6	0.63	0.84	0.63	28.4
NorthWest: The Bogan Way_NW															
27	L2	All MCs	120	2.6	120	2.6	0.504	4.1	LOS A	2.7	19.8	0.26	0.32	0.26	26.4
28	T1	All MCs	508	5.5	508	5.5	0.504	0.4	LOS A	2.7	19.8	0.26	0.32	0.26	65.4
29a	R1	All MCs	259	4.5	259	4.5	0.504	3.5	LOS A	2.7	19.8	0.26	0.32	0.26	45.3
Approach			886	4.8	886	4.8	0.504	1.8	NA	2.7	19.8	0.26	0.32	0.26	50.6
All Vehicles			1411	4.0	1411	4.0	0.504	5.2	NA	3.5	25.2	0.37	0.43	0.41	38.4

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 03 [03 (PM Scenario 3) 4:00-5:00PM - FAR_WYN (Site Folder: PM Peak - Scenario 3 (100% completion))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

03 (PM Scenario 3) 4:00-5:00PM - Farnell Street, Wyndham Street
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Farnell Street															
2	T1	All MCs	481	3.0	481	3.0	0.260	0.1	LOS A	0.3	2.0	0.06	0.07	0.06	57.8
3	R2	All MCs	41	3.2	41	3.2	0.260	6.3	LOS A	0.3	2.0	0.06	0.07	0.06	53.2
Approach			523	3.0	523	3.0	0.260	0.6	NA	0.3	2.0	0.06	0.07	0.06	57.2
East: Wyndham Avenue															
4	L2	All MCs	55	4.5	55	4.5	0.145	6.2	LOS A	0.4	2.8	0.28	0.62	0.28	44.6
6	R2	All MCs	160	0.0	160	0.0	0.145	6.2	LOS A	0.4	2.8	0.28	0.62	0.28	36.4
Approach			215	1.2	215	1.2	0.145	6.2	LOS A	0.4	2.8	0.28	0.62	0.28	38.8
North: Farnell Street															
7	L2	All MCs	51	0.0	51	0.0	0.107	4.7	LOS A	0.0	0.0	0.00	0.13	0.00	49.6
8	T1	All MCs	173	0.0	173	0.0	0.107	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	56.7
Approach			224	0.0	224	0.0	0.107	1.1	NA	0.0	0.0	0.00	0.13	0.00	54.9
All Vehicles			961	1.9	961	1.9	0.260	2.0	NA	0.4	2.8	0.10	0.21	0.10	51.1

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 01 [01 (PM Scenario 3) 4:00-5:00PM - BOG_EDW 1 (Site Folder: PM Peak - Scenario 3 (100% completion))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

01 (PM Scenario 3) 4:00-5:00PM - The Bogan Way, Edward Street Intersection
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: The Bogan Way_SE															
22	T1	All MCs	35	6.1	35	6.1	0.019	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	80.0
23a	R1	All MCs	295	0.0	295	0.0	0.172	2.4	LOS A	0.9	6.2	0.16	0.49	0.16	43.3
Approach			329	0.6	329	0.6	0.172	2.1	NA	0.9	6.2	0.14	0.44	0.14	54.8
North: Edward St_NE															
7a	L1	All MCs	100	4.2	100	4.2	0.082	5.2	LOS A	0.3	2.4	0.14	0.54	0.14	35.7
9b	R3	All MCs	9	0.0	9	0.0	0.082	9.8	LOS A	0.3	2.4	0.14	0.54	0.14	54.5
Approach			109	3.8	109	3.8	0.082	5.6	LOS A	0.3	2.4	0.14	0.54	0.14	41.8
NorthWest: The Bogan Way_NW															
27b	L3	All MCs	11	0.0	11	0.0	0.030	7.9	LOS A	0.0	0.0	0.00	0.18	0.00	70.3
28	T1	All MCs	41	12.8	41	12.8	0.030	0.2	LOS A	0.0	0.0	0.00	0.18	0.00	75.4
Approach			52	10.2	52	10.2	0.030	1.8	NA	0.0	0.0	0.00	0.18	0.00	74.2
All Vehicles			491	2.4	491	2.4	0.172	2.9	NA	0.9	6.2	0.13	0.44	0.13	57.2

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 02 [02 (PM Scenario 3) 4:00-5:00PM - JOH_BAR (Site Folder: PM Peak - Scenario 3 (100% completion))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

02 (PM Scenario 3) 4:00-5:00PM - The Bogan Way, Johnson Street, Farnell Street, Barton Street Intersection
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Farnell Street_S															
1a	L1	All MCs	373	0.0	373	0.0	0.443	7.4	LOS A	2.9	20.6	0.55	0.72	0.70	27.4
3a	R1	All MCs	25	0.0	25	0.0	0.443	30.3	LOS C	2.9	20.6	0.55	0.72	0.70	33.2
3b	R3	All MCs	6	0.0	6	0.0	0.443	21.1	LOS B	2.9	20.6	0.55	0.72	0.70	35.1
Approach			404	0.0	404	0.0	0.443	9.0	LOS A	2.9	20.6	0.55	0.72	0.70	27.9
SouthEast: Johnson Street_SE															
21b	L3	All MCs	3	0.0	3	0.0	0.183	10.0	LOS A	0.5	3.7	0.15	0.14	0.15	48.2
22	T1	All MCs	273	0.7	273	0.7	0.183	0.7	LOS A	0.5	3.7	0.15	0.14	0.15	53.8
23	R2	All MCs	21	0.0	21	0.0	0.183	9.1	LOS A	0.5	3.7	0.15	0.14	0.15	43.0
Approach			298	0.6	298	0.6	0.183	1.4	NA	0.5	3.7	0.15	0.14	0.15	52.5
NorthEast: Barton Street_NE															
24	L2	All MCs	15	0.0	15	0.0	0.466	7.2	LOS A	2.2	15.9	0.64	0.95	0.96	30.5
24a	L1	All MCs	62	2.2	62	2.2	0.466	10.9	LOS A	2.2	15.9	0.64	0.95	0.96	31.3
26	R2	All MCs	264	5.8	264	5.8	0.466	10.7	LOS A	2.2	15.9	0.64	0.95	0.96	23.0
Approach			340	4.9	340	4.9	0.466	10.6	LOS A	2.2	15.9	0.64	0.95	0.96	25.0
NorthWest: The Bogan Way_NW															
27	L2	All MCs	76	3.8	76	3.8	0.297	4.6	LOS A	1.6	11.9	0.40	0.48	0.40	26.0
28	T1	All MCs	172	4.9	172	4.9	0.297	1.0	LOS A	1.6	11.9	0.40	0.48	0.40	59.6
29a	R1	All MCs	226	2.2	226	2.2	0.297	3.9	LOS A	1.6	11.9	0.40	0.48	0.40	42.2
Approach			473	3.4	473	3.4	0.297	2.9	NA	1.6	11.9	0.40	0.48	0.40	43.5
All Vehicles			1515	2.3	1515	2.3	0.466	6.0	NA	2.9	20.6	0.45	0.58	0.56	34.3

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 03 [03 (AM Scenario 3) 8:15-9:15AM - FAR_WYN (Site Folder: AM Peak - Scenario 3 (100% completion))]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

03 (AM Scenario 3) 8:15-9:15AM - Farnell Street, Wyndham Street
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Farnell Street															
2	T1	All MCs	205	8.4	205	8.4	0.183	1.4	LOS A	0.7	5.0	0.34	0.43	0.34	51.0
3	R2	All MCs	71	2.0	71	2.0	0.183	8.5	LOS A	0.7	5.0	0.34	0.43	0.34	49.1
Approach			275	6.8	275	6.8	0.183	3.2	NA	0.7	5.0	0.34	0.43	0.34	50.3
East: Wyndham Avenue															
4	L2	All MCs	75	0.0	75	0.0	0.117	8.4	LOS A	0.4	2.7	0.50	0.76	0.50	43.5
6	R2	All MCs	37	0.0	37	0.0	0.117	6.5	LOS A	0.4	2.7	0.50	0.76	0.50	29.4
Approach			113	0.0	113	0.0	0.117	7.8	LOS A	0.4	2.7	0.50	0.76	0.50	38.9
North: Farnell Street															
7	L2	All MCs	109	0.0	109	0.0	0.352	4.8	LOS A	0.0	0.0	0.00	0.09	0.00	50.3
8	T1	All MCs	607	6.3	607	6.3	0.352	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	57.4
Approach			717	5.3	717	5.3	0.352	0.7	NA	0.0	0.0	0.00	0.09	0.00	56.2
All Vehicles			1105	5.1	1105	5.1	0.352	2.1	NA	0.7	5.0	0.14	0.24	0.14	51.7

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.