PROPOSED RESIDENTIAL DEVELOPMENT

50 BUSBY STREET, SOUTH BATHURST

TRANSPORT IMPACT ASSESSMENT

SALT³

PROPOSED RESIDENTIAL DEVELOPMENT 50 BUSBY STREET, SOUTH BATHURST
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1 INTRODUCTION

Allera has engaged SALT to undertake a transport impact assessment to support the planning proposal for the proposed residential precinct development at 50 Busby Street, South Bathurst. The proposal seeks to rezone the land to enable the development of a medium density residential precinct, including a four storey apartment building with a total of 63 units, 34 townhouses, small care retail/ commercial uses and community spaces including a village green.

In the course of preparing this report, the following has been undertaken:

- Development plans and relevant background information have been reviewed;
- The subject site and its environs have been inspected;
- Intersection turning movement count and car parking utilisation surveys have been commissioned;
- The adjacent intersections have been analysed using SIDRA Intersection;
- The parking and traffic implications of the proposal have been assessed; and
- The cumulative traffic impact of development on the adjacent site at 34 Busby Street has been considered.

The following sets out SALT's finding with respect to the traffic engineering matters of the proposal.

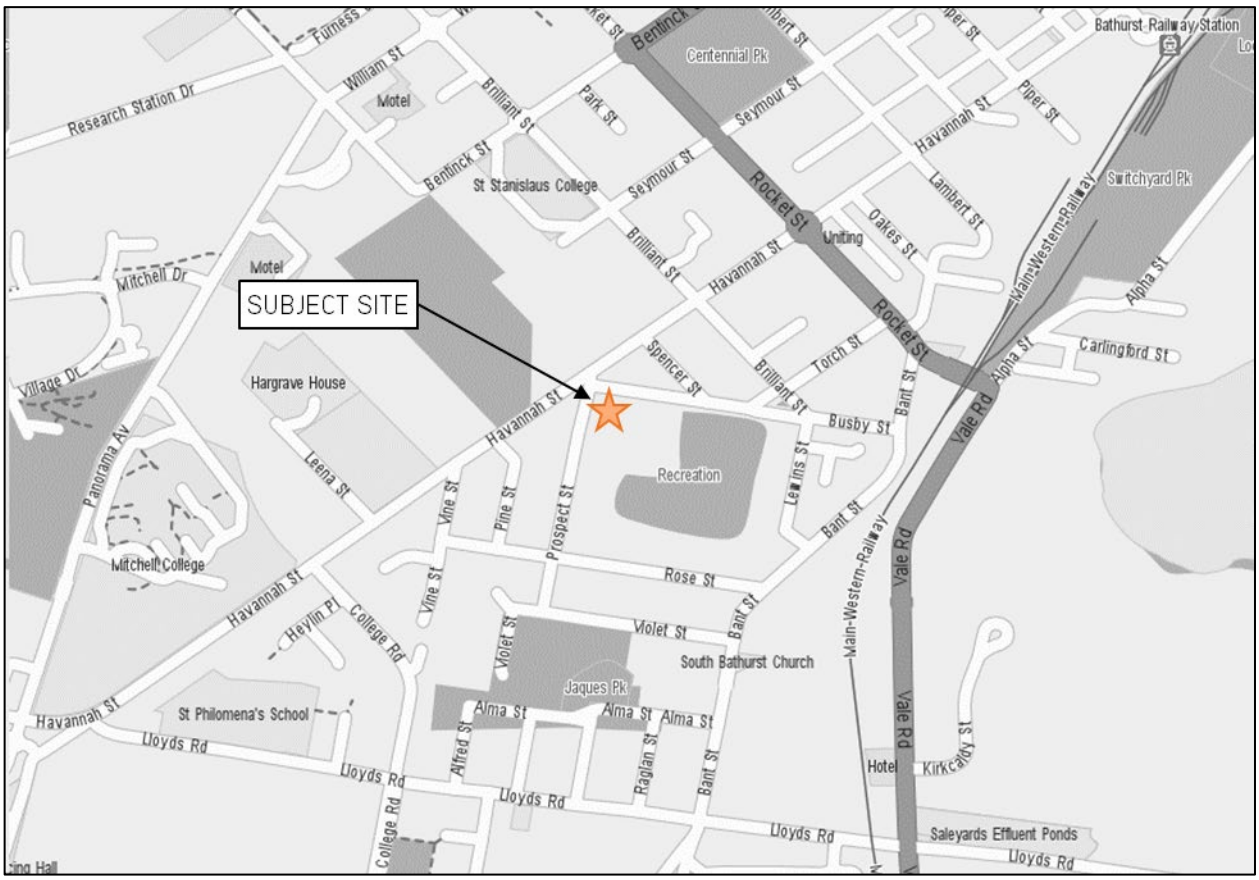
2 EXISTING CONDITIONS

2.1 LOCATION AND SITE DESCRIPTION

The subject site is located at 50 Busby Street, South Bathurst within the Bathurst Regional Council LGA. The site has a frontage of approximately 110 metres to Busby Street and a frontage of approximately 100 metres to Prospect Street, it has a total area of 11,726 m^2 and is currently occupied by a vacant and redundant 62 bed aged care facility.

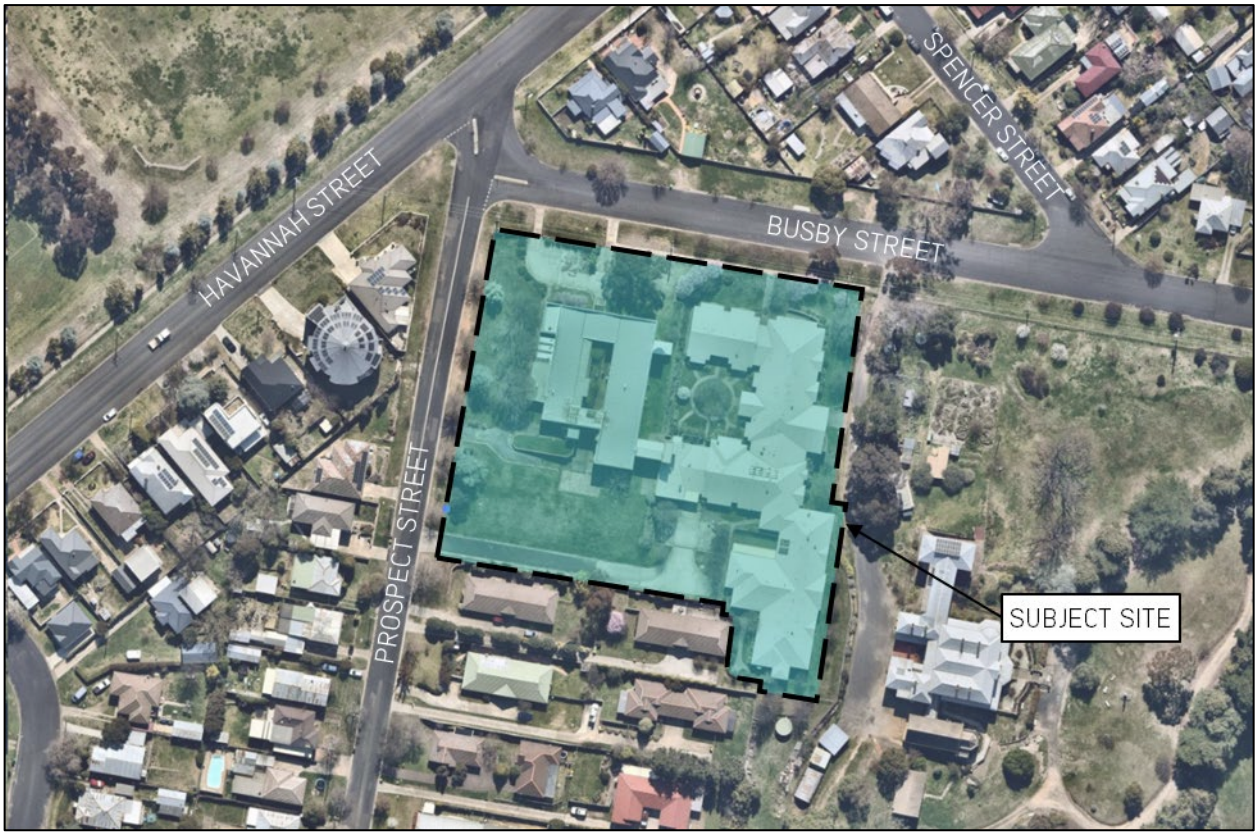
The location of the subject site with respect to the surrounding road network is depicted in Figure 1. An aerial view of the subject site is provided in Figure 2.

Figure 1 Subject site locality



Source: https://www.street-directory.com.au (accessed October 2023)

Figure 2 Aerial View of subject site



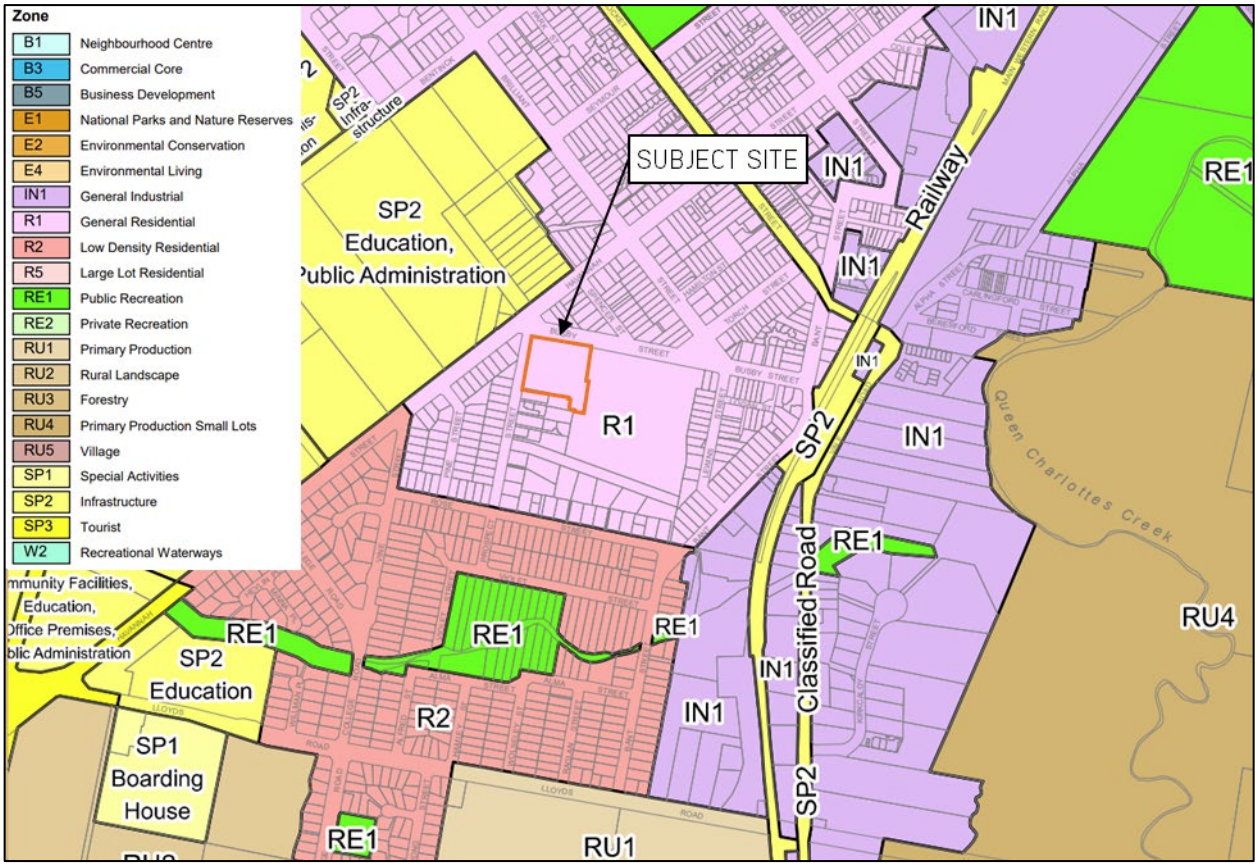
Base Source: Nearmap August 2023

2.2 ZONING AND POLICY

The subject site currently has a land use classification of R1 General Residential. The surrounding land is largely residential in nature, with education areas to the north-west and industrial areas towards the east of the subject site,

Figure 3 shows the Local Environmental Plan (LEP) land use map for the site and its surrounds,

Figure 3 Subject site zoning



Source: Bathurst Regional LEP 2014

2.3 TRANSPORT NETWORK

2.3.1 SURROUNDING ROAD NETWORK

Havannah Street

Havannah Street is generally aligned in a north-east to south-west direction and connects to the Great Western Highway in the north. Havannah Street is under the control and maintenance of Council. In the vicinity of the site, it is a two-way road and provides one traffic lane in each direction, set within an approximate 14-metre-wide carriageway. A posted speed limit of 60km/h applies to Havannah Street, and unrestricted parking is provided on both sides.

Havannah Street is shown in Figure 4 and Figure 5.

Figure 4 Havannah Street (looking south-west)

Figure 5 Havannah Street (looking north-east)

Prospect Street

Prospect Street runs in a north-south alignment along the subject site's western frontage. It is a two-way road with one traffic lane in each direction, with a total carriageway width of approximately 9 metres. The urban default speed limit of 50km/h applies.

South of the site, on street parking is generally permitted on both sides of the street, with a double barrier centreline limiting parking opportunities along the site frontage (parked vehicles are required to leave a minimum of 3m of clear roadway to double barrier centre lines).

Figure 6 and Figure 7 show Prospect Street looking north and south adjacent to the subject site.

Figure 6 Prospect Street (looking north)

Figure 7 Prospect Street (looking south)

Busby Street

Busby Street runs in an east-west alignment, along the subject site's northern boundary. It is a two-way road with one-traffic lane and parking provided for both directions of travel. Busby Street has an approximate carriageway width of 12 metres. The urban default speed limit of 50km/h applies.

Busby Street is shown in Figure 8 and Figure 9,

Figure 8 Busby Street (looking west)

Figure 9 Busby Street (looking east)

2.3.2 SURROUNDING INTERSECTIONS

The following key intersections currently exist near the site:

- Havannah Street / Prospect Street (priority controlled)
- Prospect Street / Busby Street (priority controlled).

2.4 PARKING

2.4.1 PARKING SUPPLY

Parking demand surveys were commissioned by SALT on the publicly available parking within approximately 200 metres of the subject site. Figure 10 shows the extents of the car parking surveys, with the car parking supply and corresponding restrictions summarized in Table 1.

Figure 10 Car Parking Survey Extents

Table 1 Car Parking Supply

ID	Location	Restriction	Supply
A1	Havannah St – Pine St to Spencer St – North	Unrestricted	23
A2		Taxi Zone	2
A3		Unrestricted	29
A4	Havannah St – Spencer St to Prospect St – South	Unrestricted	11
A5	Havannah St – Prospect St to Pine St – South	Unrestricted	19
		HAVANNAH ST SUB-TOTAL	82*
B1	Prospect St – Busby St to 26 Prospect St – East	Unrestricted	20
B2	Prospect St – 19 Prospect St to Busby St – West	Unrestricted	19
		PROSPECT ST SUB-TOTAL	39
C1	Busby St – Prospect St to Spencer St – North	Unrestricted	15
C2	Busby St – Spencer St to Torch St – North	Unrestricted	6
C3	Busby St – Torch St to Prospect St – South	Unrestricted	29
		BUSBY ST SUB-TOTAL	50
D1	Spencer St – Havannah St to Busby St – East	Unrestricted	19
D2	Spencer St – Busby St to Havannah St – West	Unrestricted	18
		SPENCER ST SUB-TOTAL	37
		TOTAL	208*

** The 2 taxi zone spaces on Havannah Street have been excluded from the supply as these are not available for general parking.*

As shown in Table 1 a total of 208 unrestricted on-street parking spaces are available within the vicinity of the subject site. A taxi zone for two vehicles is located on Havannah Street within the survey area.

2.4.2 PARKING DEMAND

Car parking demand surveys were undertaken on Thursday 12 October 2023 between 8:00am and 6:00pm. The demands are shown in Table 2, with full results presented in Appendix 1.

Table 2 Car Parking Demand

Location	Supply	Demand										
		8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm	6pm
Havannah St	82	1	1	2	1	4	5	5	3	2	2	3
Prospect St	39	0	0	0	0	0	0	1	1	1	1	0
Busby St	50	0	3	6	5	4	3	3	3	1	2	2
Spencer St	37	6	8	10	8	10	8	8	8	9	13	15
	TOTAL	**7**	**12**	**18**	**14**	**18**	**16**	**17**	**15**	**13**	**18**	**20**

Table 2 indicates the parking demand surrounding the subject site is low, with peak demand of 20 vehicles parking occurring between 6:00pm-7:00pm, representing an occupancy of only 9.6%. Most of the parking demand occurred in Spencer Street, with significant capacity for parking in Busby Street and Prospect Street.

2.4.3 HISTORIC SITE PARKING DEMAND

Historically the site has operated as St Catherine's Aged Care providing a total of 62 beds, with limited on site parking. Observation of historical Nearmap aerial imagery indicates the use of on-street parking along Busby Street and Prospect Street to accommodate site parking.

The following on-street parking utilisation associated with the historic site use can be observed:

- Monday 6 February 2017 (midday): 20 vehicles on Busby Street and 5 vehicles on Prospect Street
- Tuesday 2 February 2016 (9:42am): 21 vehicles on Busby Street and 1 vehicle on Prospect Street
- Friday 27 March 2015 (11:29am): 20 vehicles on Busby Street and 1 vehicle on Prospect Street

Figure 11 and Figure 12 show the use of on-street parking along Busby Street and Prospect Street during the historic use of the site by St Catherine's.

Figure 11 On-Street Parking 6 February 2017

Figure 12 On-Street Parking 2 February 2016

As such, the use of the surrounding on-street available parking has been accepted historically.

2.5 SUSTAINABLE TRANSPORT

2.5.1 WALKING & CYCLING

The site has limited formal pedestrian footpaths in place, with footpaths provided along a portion of the northern site frontage of Busby Road. Properties in the area are generally set back from the roadway, allowing informal pedestrian access along the grassed verge and connecting to the surrounding footpath.

The bicycle network servicing the site is limited with no dedicated bicycle facilities within vicinity of the site. Notwithstanding, the relatively low volumes and carriageway widths on Havannah Road, Prospect Street and Busby Street provide an environment that is suitable for sharing with cyclists.

2.5.2 PUBLIC TRANSPORT

The site is accessible by public transport with bus routes 526 and 528 servicing the area. The nearby public transport opportunities are summarised in Table 3 and shown in Figure 13.

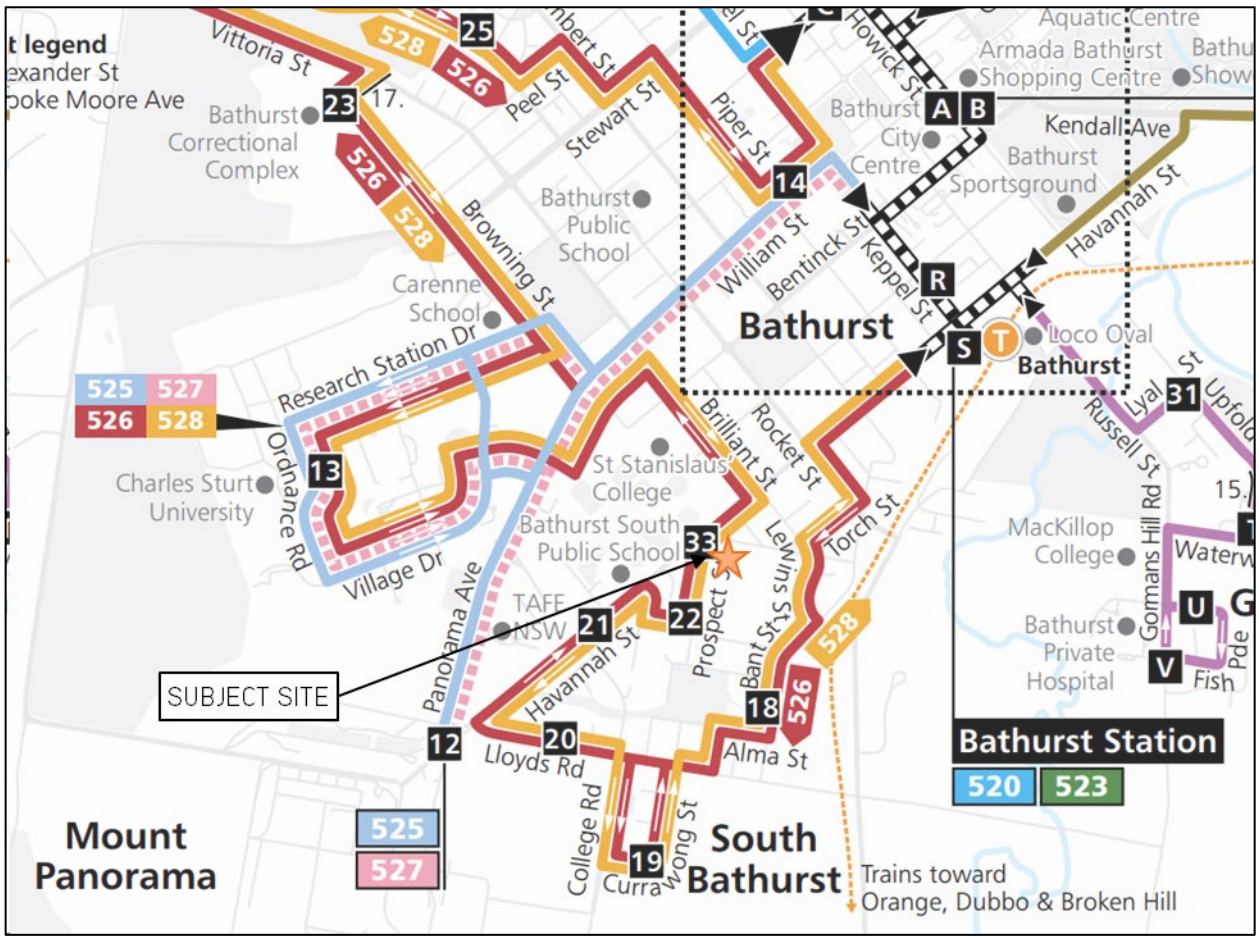
Table 3 Bus Services

Bus Route	Route Description	Nearest Bus Stop	Distance to Bus Stop
526	South Bathurst – West Bathurst Town Loop – Clockwise	Rose St before Prospect St	350 (5-minute walk)
528	West Bathurst – South Bathurst Town Loop – Anticlockwise	Prospect St after Busby St	0m (at site frontage)

The 526 runs four morning services and four afternoon / evening services on weekdays and five services on Saturdays. The 528 operates four morning services and three afternoon / evening services on weekdays with five services on Saturdays.

Bathurst Train station is located approximately 1km north-east of the site and can be accessed by bus or a 17-minute walk along Havannah Street. The station is serviced by the Blue Mountains Line which provides connections to Lithgow and into Sydney. The Western NSW Regional trains also service Bathurst providing connections to Dubbo, Parkes, Broken Hill, etc.

Figure 13 Surrounding Public Transport Network



Base Source: Bathurst Buslines Bus Guide (accessed October 2023)

2.6 TRAFFIC VOLUMES

Traffic movement counts were commissioned by SALT for the below intersections to gain an understanding of the existing traffic conditions proximate to the site:

- Havannah Street / Prospect Street
- Prospect Street / Busby Street

The movements counts were undertaken on Thursday 12 October 2023 during the following peak periods:

- 7:00am and 10:00am
- 3:00pm and 6:30pm

Analysis of the survey data indicates the average AM and PM peak hours across the surveyed sites occurred from 8:15am to 9:15am and 3:00pm to 4:00pm respectively. The average weekday peak hour traffic volumes of the surveyed intersections are summarised in Figure 14 and Figure 15.

Figure 14 Existing AM Peak Hour Traffic Volumes

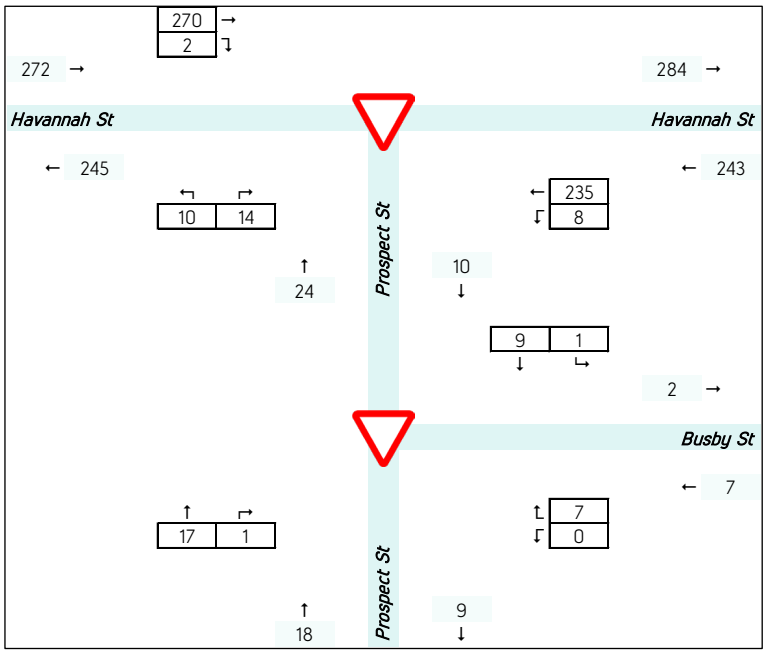
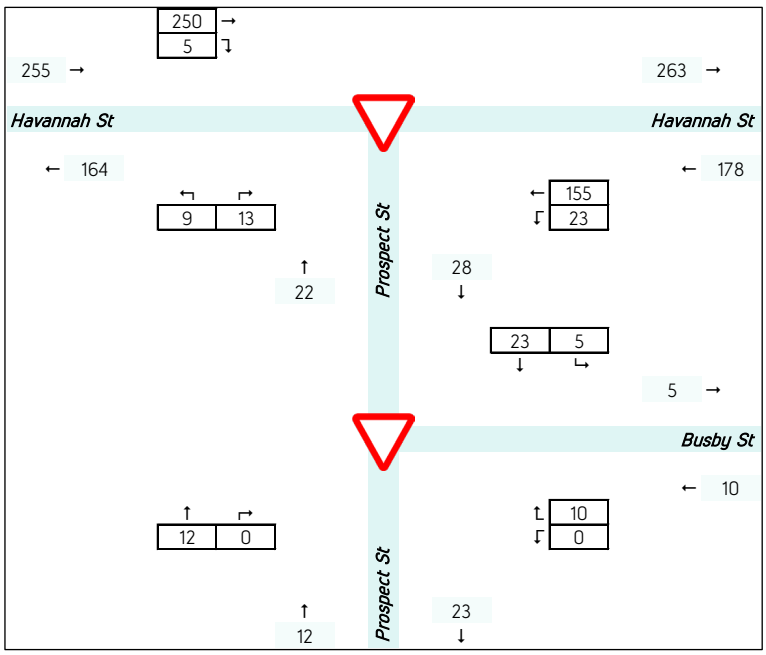


Figure 15 Existing PM Peak Hour Traffic Volumes



From the above figures, it is observed that traffic volumes entering and exiting Prospect Street and Busby Street are relatively low, which is typical of local roads servicing residential areas.

2.7 INTERSECTION OPERATION

SALT has reviewed the operation of the key intersections under 'base case' conditions using SIDRA9.1 Intersection software. This computer package measures the performance of an intersection using a range of parameters, as described below:

Degree of Saturation (DOS) is the ratio of the volume of traffic observed making a particular movement compared to the maximum capacity for that movement. Where an intersection is oversaturated, the degree of saturation would be greater than 1.0 (100%). This indicates that not all traffic can pass through the intersection control mechanism.

TfNSW *Traffic Modelling Guidelines* provide the practical degree of saturation for different intersection types. Where the intersection DOS exceeds the values indicated below, the intersection requires appropriate treatment to maintain an acceptable level of DOS. The maximum practical degree of saturation for intersection types are:

- Signals 0.90
- Roundabouts 0.85
- Sign-Controlled 0.80
- Continuous Lanes 0.98

The 95th Percentile (95%ile) Queue represents the maximum queue length, in metres, that could be expected to be observed on 95% of occasions during the analysis period. (i.e. it is the queue length that only has a 5% chance of being exceeded during the analysis time period).

Level of Service (LOS) is a qualitative performance measure which can be based on various traffic factors such as speed, volume of traffic, degree of saturation, delays and freedom to manoeuvre during a given flow period. A guide to LOS ratings is provided in Table 4.

SIDRA does note however that Intersection LOS and Major Road Approach LOS values are not applicable for two-way sign control since the average delay is not a good LOS measure. This is due to zero delays associated with major road movements.

Table 4 Level of Service Ratings

Level of Service	Control delay per vehicle in seconds (d) (including geometric delay)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	d < 14	Good operation	Good operation
B	d < 15 to 28	Good with acceptable delays & spare capacity	Acceptable delays and spare capacity
C	d < 29 to 42	Satisfactory	Satisfactory, but accident study required
D	d < 43 to 56	Operating near capacity	Near capacity & accident study required
E	d < 57 to 70	At capacity,, at signals incidents will cause excessive delays. Roundabouts require other control mode.	At capacity, requires other control mode
F	d > 70	Unsatisfactory and requires additional capacity	Unsatisfactory and requires other control mode or major treatment.

Based on the above, the key outputs from the SIDRA analysis for the existing operation of the study intersections are summarised in Table 5, with full SIDRA results included in Appendix 2.

Table 5 SIDRA Summary – Existing Intersection Operation

Intersection	Peak Period	Approach	Critical Movement	DOS	95% queue length (m)	Average Delay (s)	LOS
Havannah Street / Prospect Street	AM Peak	South	R	0.029	0.7	4.1	A
		North East	L	0.126	0.0	5.1	A
		South West	R	0.145	0.1	6.9	A
		Intersection	**-**	**0.145**	**0.7**	**0.3**	**-**
	PM Peak	South	L	0.023	0.2	3.8	A
		North East	L	0.092	0.0	4.8	A
		South West	R	0.135	0.1	7.0	A
		Intersection	**-**	**0.135**	**0.2**	**0.5**	**-**
Prospect Street / Busby Street	AM Peak	South	R	0.010	0.0	5.6	A
		East	R	0.007	0.1	5.7	A
		North	L	0.006	0.0	2.3	A
		Intersection	**-**	**0.010**	**0.1**	**1.5**	**-**
	PM Peak	South	R	0.007	0.0	5.6	A
		East	R	0.010	0.1	5.8	A
		North	L	0.014	0.0	2.3	A
		Intersection	**-**	**0.014**	**0.1**	**1.6**	**-**

As shown in Table 5, both intersections are currently operating well, with minimal delays or queuing on all approaches.

3 PROPOSAL

3.1 LAND USES

The proposal involves the development of medium density residential apartments and townhouses, a village green and community space, and small-scale retail spaces to service the local community.

The community space is provided for resident use and is anticipated to be ancillary to the site and will not generate any additional visitors to the site.

A schedule of the proposed areas is provided in Table 6. The proposed yield and apartment mix shown is indicative only. This yield and apartment mix is considered to be the maximum potential residential yield on the site.

Table 6 Development Schedule

Use	Description	Size
Residential – Townhouse	3+ bedroom	34 dwellings
Residential – Apartment	Soho-Style Apartments	4 units
	1-bedroom	12 units
	2-bedroom	39 units
	3-bedroom	8 units
	TOTAL	**63 units**
Retail	Soho Style Shops	225m^2
Food and Beverage	Café / Deli	212m^2
Community Space	Community Space	60m^2

3.2 SITE ACCESS

A through site link is provided connecting Prospect Street and Busby Street, providing vehicle access to the apartment basement carpark and townhouses. The laneway includes crossovers to both streets. The existing shared access driveway in the north-east corner of the site will provide vehicle access, to six townhouses fronting this road, via an existing 6m crossover to Busby Street. Townhouses fronting Busby Street and Prospect Street will be provided via direct vehicle crossovers.

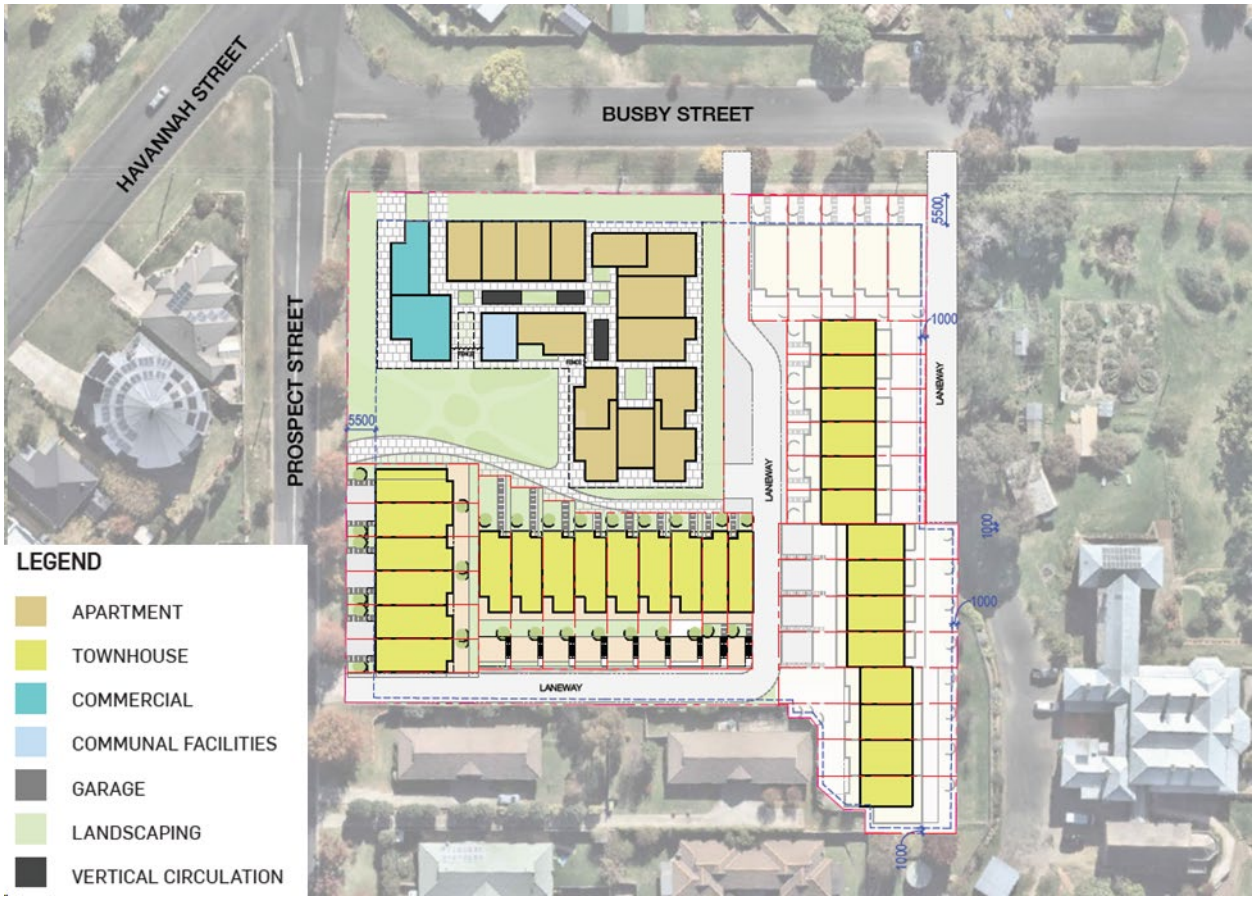
The intended function of the access points is to provide entry only via Prospect Street, with two-way movements to be permitted at Busby Street. The internal laneway between Busby Street and the apartment basement accesses are intended to permit two-way traffic, with the remainder of the laneway one-way with travel permitted in an eastbound direction. The current 5.0m width Busby Street crossover would need to be widened to enable two-way movements, this is to be detailed at the Development Application stage.

The proposed access locations have been reviewed against the requirements of AS2890 with respect to sight distance. Based on the 50km/h speed limits along the site frontages a minimum stopping sight distance (SSD) of 45 metres is required to be provided, with a desirable distance of 69 metres to enable a five second gap.

The access on Busby Street provides sufficient sight distance to meet the requirements of AS2890 subject to tree removal. The location of the access on Prospect Street maintains the existing site access location and provides sufficient site distance, The current proposal converts this two-way access to an entry only, notwithstanding should this access be proposed as two-way its is considered an appropriate location. At the Development Application stage SSD is to be further considered to meet the requirements of AS2890 with tree removal required to ensure minimum SSD is provided.

A diagram of the site layout is provided in Figure 16.

Figure 16 Proposed Ground Floor Layout



Base Source: Site Plan prepared by Clarke Hopkins Clarke

3.3 CAR PARKING

Car parking is proposed to be provided on site, with parking distributed around the site to service the proposed uses. Townhouse parking is to be provided within individual lots, accessed either directly from Prospect Street and Busby Street or off the internal site laneway. Apartment parking is provided over two levels of basement parking. A total of 65 car parking spaces are proposed to be provided across the basement car parks and within the site boundaries (excludes individual parking providing on townhouse lots).

The on-site car parking provision is intended to meet the needs of residents, with visitor parking to be accommodated via a mixture of on-site and on-street parking, this is as per the historic site use.

3.4 OTHER CONSIDERATIONS

3.4.1 PEDESTRIAN AND BICYCLE FACILITIES

Pedestrian access to the site is provided from both site frontages, with internal pedestrian facilities connecting to the village green, community space and residential dwellings. The internal site laneway is anticipated to be designated as a 10km/h shared zone permitting pedestrian activity and access.

The current development plans do not yet detail any bicycle parking for visitors to the site. Notwithstanding, it is intended that appropriate at-grade bicycle parking will be provided throughout the site for visitors, with ample space available for these to be incorporated.

3.4.2 LOADING AND SERVICING

Loading and servicing access to the site is via the proposed site link. Further details of on-site loading and servicing facilities will be considered as part of any future Development Application. It is anticipated that the food and beverage tenancies would utilise a mixture of on-site and on-street parking for deliveries.

4 CAR PARKING

4.1 STATUTORY REQUIREMENTS

Bathurst Council's Development Control Plan (DCP) 2014 provides the statutory requirement for the number of car parking spaces required for various land uses. The car parking requirements for the proposed development are summarised in Table 7 based on the relevant DCP 2014 rates.

The proposed yield and apartment mix shown is indicative only and is considered to be the maximum potential residential yield on the site. As such the assessment represents a maximum parking requirement. Any future development application will be reviewed in light of the revised yield and apartment mix.

As noted above the community space is available for resident use only and is not anticipated to generate any additional parking demand for the site, therefore has been excluded from the parking demand calculations.

Table 7 Bathurst Council DCP 2014 Parking Requirements

Use	Description	Size	DCP Parking Rate	DCP Parking Requirement
Residential Townhouse	3+ bedroom	34 dwellings	1 space per dwelling and 1 visitor space per dwelling	34 (+34 visitor)
Residential Apartment	Soho-Style Apartments	4 units	1 space per dwelling and 1 visitor space per 4 dwellings	4 (+1 visitor)
	1-bedroom	12 units		12 (+3 visitor)
	2-bedroom	39 units		39 (+10 visitor)
	3-bedroom	8 units	1 space per dwelling and 1 visitor space per dwelling	8 (+8 visitor)
	TOTAL	**63 units**	**-**	**63 (+22 visitor)**
Retail	Soho Style Shops	225m^2	1 space per 35m^2	7
Food and Beverage	Café / Deli	212m^2	1 space per 10m^2 or 1 space per 3 seats	22
			TOTAL	**182**

As shown in Table 7 the proposed development has a statutory parking requirement of 182 spaces, which includes 55 visitor spaces for the townhouses and apartments.

4.2 ADEQUACY OF CAR PARKING PROVISION

Each townhouse is proposed to have a one or two car garage, with ample space generally provided on site to accommodate one visitor parking space. Therefore, the statutory parking requirement for the proposed townhouses meets the DCP parking requirement.

A total of 65 parking spaces are provided on site for the apartments, with 59 of these included in the basement car parks and a further six provided along the internal site link. Therefore, the requirement for resident parking of 63 spaces is met. Residential visitor parking can be accommodated in a combination of on site and on-street parking.

Similarly, visitors to the retail and food and beverage spaces are accommodated via a combination of on site and on-street parking.

Therefore, up to 49 parking spaces (20 apartment visitor and 29 retail/ café) for the proposed development are required to be accommodated off site.

As discussed above, within approximately 200m of the site there are 208 on-street parking spaces available. Parking surveys of a typical weekday show the peak parking demand is less than 10 percent, indicating there are at least 185 parking spaces available in close vicinity of the site.

Busby Street has a current capacity of 50 parking spaces, with a relatively low usage due to the limited number of properties directly fronting Busby Street. It is anticipated that the development parking would naturally use Busby Street before spreading further into the surrounding streets minimising the impact on nearby residents. As demonstrated above, historically St Catherine's has relied on the on-street parking along Busby Street and Prospect Street.

It should be noted the café/ deli parking demands are likely to be significantly lower, as it is anticipated much of the trade will come from people living at the site or walk-up demand from nearby residents. Therefore, the off-site parking requirement of 50 will generally be lower.

Furthermore, the peak times of the café and retail space visitors will be different to those of residential visitors. The café and retail demands will typically peak around lunchtimes, while the visitor demands will peak in the evenings and on weekends.

As such, the use of the surrounding on-street parking to accommodate the apartment visitor parking, retail, and food and beverage visitor parking is not expected to materially impact surrounding properties. The future Development Application for the site will justify any proposed on-site parking reduction.

Notwithstanding the above assessment, consideration should be given to reduced residential visitor parking requirements, particularly for the apartments. The current DCP requirement are not necessarily suitable for higher density residential apartment buildings. Furthermore, the location of visitor parking within close proximity to the site is in line with other jurisdictions where public parking is available. These should be further considered as part of the future site-specific DCP following this Planning Proposal stage.

4.3 BICYCLE PARKING

Bicycle parking requirements are set out within Bathurst Council's DCP. Bicycle parking is not required for the residential land uses of the site. Furthermore, the size of the retail and community facility spaces are less than 1,000m^2 and therefore DCP 2014 does not require any bicycle parking.

As such, bicycle parking is only required for the café. DCP 2014 indicates the following bicycle parking requirements:

- 1 space per 100m^2 for employees
- 2 plus 1 space per 200m^2 of area available to the public for customers.

Based on a total 212m^2 for the café/ deli spaces three employee bicycle parking spaces are required and up to four customer bicycle parking spaces are required.

Therefore, based on DCP 2014 a total of seven bicycle parking spaces are required.

Current plans for the site do not indicate the bicycle parking provision, with location of bicycle parking and amount to be determined as the design develops. There is ample space on site to meet the requirement of seven bicycle parking spaces.

4.4 SITE LAYOUT

The current site plans are satisfactory for Planning Proposal submission, with the following items to be furthered detailed and resolved at the Development Application stage:

- Laneway and vehicle cross over widths
- Site grades for all users
- Visitor bicycle parking provision
- On-site parking provision to reflect any adjustments to development yield
- Swept path assessment for key vehicles
- Loading and servicing arrangements
- Basement car park adjustments to meet AS2890 requirements.

5 TRAFFIC CONSIDERATIONS

5.1 TRAFFIC GENERATION

TfNSW's Guide to Traffic Generating Development 2002 and Technical Direction: Updated Traffic Surveys (TDT 2013/04a) provide traffic generation rates for various land uses. The rates from the guide have been adopted to estimate the traffic generated by the proposed development.

Table 8 summarises the anticipated peak hour traffic generation for the proposed development in the AM and PM peak periods.

The proposed yield and apartment mix shown is indicative only and is considered to be the maximum potential residential yield on the site. As such the assessment represents a maximum traffic generation for the site. Any future development application will be reviewed in light of the revised yield and apartment mix.

Table 8 Traffic Generation Estimates

Use	Description	Size	Traffic Generation Rate (veh/h)		Traffic Generation Estimate (veh/h)	
			AM	PM	AM	PM
Residential Townhouse[1]	3+ bedroom	34 dwellings	0.575	0.575	20	20
Residential Apartment[1]	Soho-Style Apartments	4 units	0.45	0.45	2	2
	1-bedroom	12 units	0.45	0.45	6	6
	2-bedroom	39 units	0.45	0.45	18	18
	3-bedroom	8 units	0.575	0.575	5	5
Retail[2]	Soho Style Shops	225m^2	2.8 / 100m^2 GFA	5.6 / 100m^2 GFA	7	13
Food and Beverage[3]	Café / Deli	212m^2	5 / 100m^2 GFA	5 / 100m^2 GFA	11	11
				TOTAL	69	75

1. The medium density residential rates have been adopted, with an average of the indicated range applied.
2 The proposed retail spaces are anticipated to be specialty retail stores, the Friday evening rate for specialty stores has been adopted. It has been assumed that the AM peak traffic generation is half of the PM peak traffic generation.
3 Restaurant rate have been adopted for the proposed café use.

As shown in Table 8 the proposed development is estimated to generate 69 and 75 vehicle trips in the AM and PM peak hours respectively.

5.2 TRAFFIC DISTRIBUTION

A number of factors influence how traffic generated by the site will be distributed through the surrounding road network, including

- Site access location points and configuration
- Configuration of the surrounding road network in vicinity of the site
- Operation of intersections connecting the site to the arterial road network
- Location of surrounding employment areas, retail centres and school in relation to the site.

Havannah Street is a key road providing both local connectivity and connectivity into the wider road network, with majority of traffic anticipated to use Havannah Street for a portion of their journey. Given the site access locations and their proximity to the Busby Street/ Prospect Street intersection, majority of traffic generated by the proposed development is expected to travel along Busby Street and Prospect Street to access Havannah Street. Development traffic is unlikely to travel extra distances along Torch Street, Brilliant Street, Rocket Street or Spencer Street to access Havannah Street and the wider surrounding road network.

Further to the above, the directional split of traffic (i.e. the proportion of inbound and outbound trips for proposed land uses) needs to be considered. For the residential components of the proposed development it is assumed that during the AM peak traffic will be 80% outbound and 20% inbound, with the converse adopted in the PM peak

period. For the non-residential uses a 50% outbound and 50% inbound split has been adopted for both peak periods.

Based on the above, Figure 17 and Figure 18 show how the estimated traffic volumes generated by the site are anticipated to be distributed through the surrounding road network.

Figure 17 AM Peak Hour Development Traffic Volumes

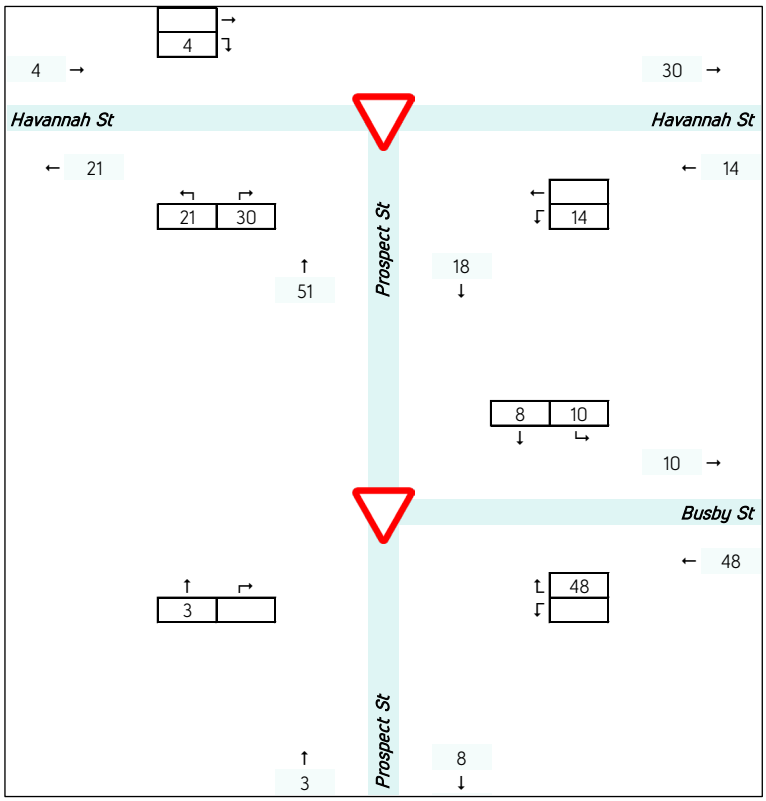
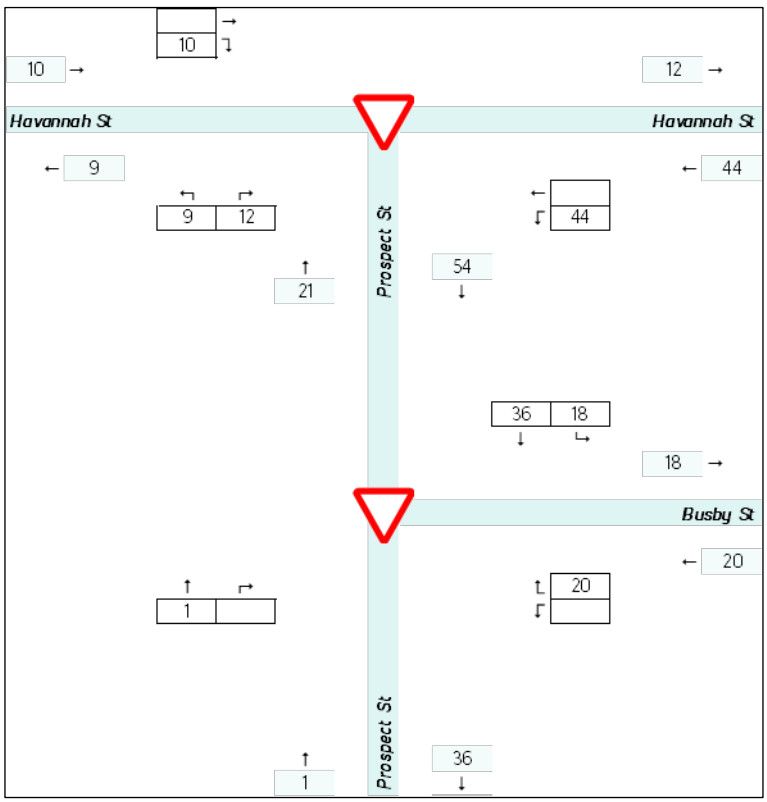


Figure 18 PM Peak Hour Development Traffic Volumes



5.3 TRAFFIC IMPACT

SALT has reviewed the operation of the study intersections previously assessed in Section 2.7 under post-development conditions using SIDRA Intersection software. The 10-year design horizon was considered, with a 2% per annum background growth applied to the existing through movements along Havannah Street.

The 10-year post development intersection operation is summarized in Table 9, with full results presented in Appendix 2.

Table 9 SIDRA Summary – Post Development Intersection Operation

Intersection	Peak Period	Approach	Movement	DOS	95% queue length (m)	Average Delay (s)	LOS
Havannah Street / Prospect Street	AM Peak	South	R	0.099	1.0	5.1	A
		North East	L	0.158	0.0	4.9	A
		South West	R	0.177	0.2	8.5	A
		Intersection	-	**0.177**	**1.0**	**0.7**	-
	PM Peak	South	R	0.050	0.5	4.1	A
		North East	L	0.131	0.0	4.8	A
		South West	R	0.171	0.4	9.0	A
		Intersection	-	**0.171**	**0.5**	**1.0**	-
Prospect Street / Busby Street	AM Peak	South	R	0.011	0.0	5.6	A
		East	R	0.047	0.4	5.7	A
		North	L	0.015	0.0	2.3	A
		Intersection	-	**0.047**	**0.4**	**3.3**	-
	PM Peak	South	R	0.007	0.0	5.9	A
		East	R	0.028	0.3	5.9	A
		North	L	0.041	0.0	2.3	A
		Intersection	-	**0.041**	**0.3**	**1.9**	-

Table 9 shows that the study intersections continue to operate at LOS A, with minimal delays and queuing on all approaches. The traffic generated by the proposed development has a negligible impact on the surrounding road network and is anticipated to be able to be accommodated.

It is anticipated that limited, if any, development traffic will use alternative intersections to access Havannah Street and the wider surrounding road network. Notwithstanding this, Havannah Street/ Prospect Street anticipated to be one of the busier intersections in the vicinity of the site. With the analysis showing the intersection operates at LOS A with a low degree of saturation post-development, this indicates there is significant capacity in the network to accommodate additional traffic. Similarly, it is expected that nearby intersections including Havannah Street/ Brilliant Street would also currently be operating with a good level of service and additional capacity.

Furthermore, the additional development traffic that is anticipated to be travelling along Havannah Street at nearby intersections is less than 60 vehicles in either peak period. This reflects approximately 10% of the existing traffic volumes on Havannah Street and is not expected to have a significant impact on traffic operation.

5.4 CUMULATIVE ASSESSMENT

The adjacent site at 34 Busby Street is currently the subject of a concept masterplan. The concept masterplan proposes to retain the historic homestead and develop the open space within the site to provide approximately 150 dwellings. The following sub-section considers the cumulative traffic impact of the proposed development of 50 Busby Street in conjunction with the concept masterplan at 34 Busby Street.

The proposed yield is indicative and is to be confirmed by the landowner of the adjacent site. The anticipated breakdown is as follows:

- 1 bedroom 30 apartments
- 2 bedroom 45 apartments
- 3+ bedroom 75 apartments.

Figure 19 shows the location of 34 Busby Street and proximity to the proposed development site.

Figure 19 Subject Site and Adjacent Development at 34 Busby Street

5.4.1 TRAFFIC GENERATION

Table 10 summarises the anticipated peak hour traffic generation for the 34 Busby Street concept masterplan in the AM and PM peak periods.

Table 10 Traffic Generation Estimates – 34 Busby Street

Use	Description	Size	Traffic Generation Rate (veh/h)		Traffic Generation Estimate (veh/h)	
			AM	PM	AM	PM
Residential Apartments	1-bedroom	30 units	0.45	0.45	14	14
	2-bedroom	45 units	0.45	0.45	21	21
	3+ bedroom	75 units	0.575	0.575	44	44
				TOTAL	79	79

1. The medium density residential rates have been adopted, with an average of the indicated range applied.

As shown in Table 10 the adjacent development is estimated to generate 79 vehicle trips in both the AM and PM peak hours. Therefore, the cumulative traffic generated by both proposals is estimated to be 148 and 154 vehicle trips in the AM and PM peak hours respectively.

The proposed yield breakdown is indicative only at this stage, as such for the purpose of this assessment it is assumed that all 150 dwellings are 3+ bedroom apartments. This is considered a conservative approach, given they

have a higher traffic generation rate compared to smaller units. Where the dwelling mix includes a higher proportion of smaller units the traffic generation estimate is anticipated to be lower.

Table 11 summarises the anticipated peak hour traffic generation in the AM and PM peak periods for the adjacent site should all 150 dwellings be 3+ bedroom units.

It is understood that works are proposed for the existing function/ wedding venue at 34 Busby Street, however details on the works were not made available to the time of completing this report. Given the transient nature of guests attending this venue and likely timing of events to occur outside of the weekday AM and PM peak periods, it is not expected to have any significant impact on the local road network.

Table 11 Traffic Generation Estimates

Use	Description	Size	Traffic Generation Rate (veh/h)		Traffic Generation Estimate (veh/h)	
			AM	PM	AM	PM
Medium Density Residential	3+ bedroom	150 dwellings	0.575	0.575	87	87
				TOTAL	87	87

1. The medium density residential rates have been adopted, with an average of the indicated range applied.

As shown in Table 11, conservatively the adjacent development could be expected to generate up to 87 vehicle trips in both the AM and PM peak hours. This is an increase of 8 vehicle trips compared to the indicative yield for 34 Busby Street concept masterplan.

For the purpose of this cumulative assessment, this conservative traffic generation estimate of 87 vehicle trips in the AM and PM peak hours has been adopted. It is anticipated the adjacent site will include a proportion of 1- and 2-bedroom units and as such the traffic impact presented below is considered a worst-case assessment based on a total of 150 dwellings.

5.4.2 TRAFFIC DISTRIBUTION

As noted above, it is assumed that the directional split of traffic for the adjacent site is similar to the proposed site, with 80% outbound and 20% inbound traffic during the AM peak period, and the converse is adopted in the PM peak period. 34 Busby Street has frontage to Busby Street only, therefore all traffic is to access and egress the site via Busby Street. The proposed dwellings at 34 Busby Street are to be located on the eastern portion of 34 Busby Street. It is acknowledged that this would likely result in some traffic travelling along Torch Street and Brilliant Street to access Havannah Street. However, it has been assumed that all traffic will travel along Busby Street to/from Prospect Street to access Havannah Street. Therefore, all traffic generated by the adjacent site is assumed to travel through the study intersections. Where traffic from 34 Busby Street uses Brilliant Street to access Havannah Street the cumulative traffic impact on the study intersections would be lessened.

Based on the above, Figure 20 and Figure 21 show how the estimated cumulative traffic volumes generated by the proposed development and adjacent site are anticipated to be distributed through the surrounding road network.

Figure 20 AM Peak Hour Cumulative Development Traffic Volumes

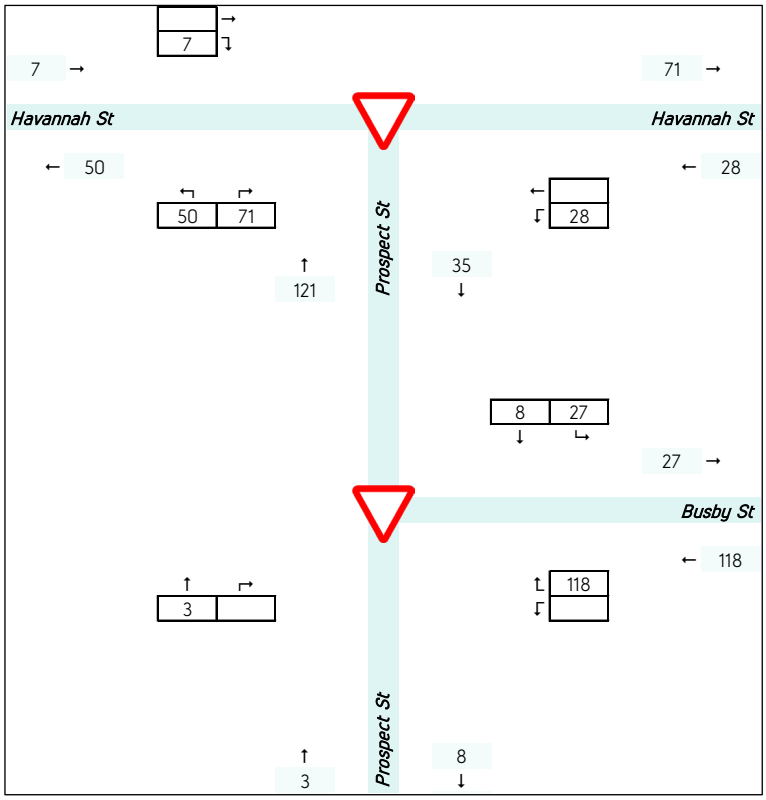
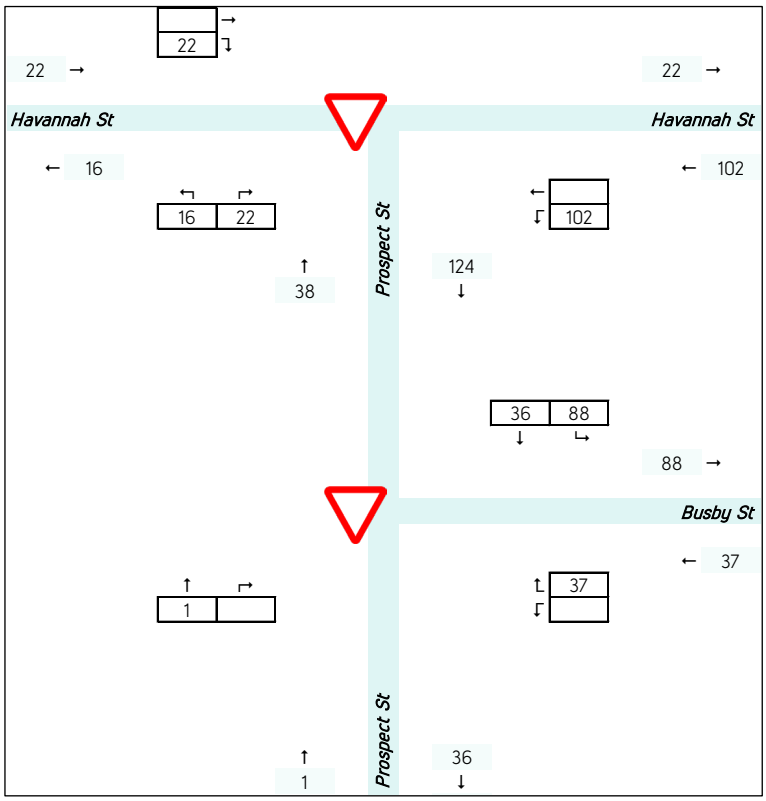


Figure 21 PM Peak Hour Cumulative Development Traffic Volumes



5.4.3 CUMULATIVE TRAFFIC IMPACT

The 10-year post development SIDRA analysis has been adjusted to consider the additional traffic anticipated to be generated by the adjacent site. As noted above, the 10-year design horizon includes 2% per annum background growth applied to the existing through movements along Havannah Street.

The 10-year post development intersection operation considering traffic generated by the subject site at 50 Busby Street and adjacent site at 34 Busby Street is summarized in Table 12, with full results presented in Appendix 2.

Table 12 SIDRA Summary – Cumulative Post Development Intersection Operation

Intersection	Peak Period	Approach	Movement	DOS	95% queue length (m)	Average Delay (s)	LOS
Havannah Street / Prospect Street	AM Peak	South	R	0.192	2.0	5.4	A
		North East	L	1.65	0.0	4.9	A
		South West	R	0.180	0.3	9.8	A
		Intersection	-	**0.192**	**2.0**	**1.2**	-
	PM Peak	South	R	0.071	0.7	4.5	A
		North East	L	0.161	0.0	4.8	A
		South West	R	0.182	0.8	9.7	A
		Intersection	-	**0.182**	**0.8**	**1.6**	-
Prospect Street / Busby Street	AM Peak	South	R	0.011	0.0	5.6	A
		East	R	0.108	1.0	5.8	A
		North	L	0.024	0.0	2.3	A
		Intersection	-	**0.108**	**1.0**	**4.2**	-
	PM Peak	South	R	0.007	0.0	6.6	A
		East	R	0.044	0.4	6.0	A
		North	L	0.078	0.0	2.3	A
		Intersection	-	**0.078**	**0.4**	**2.4**	-

Table 12 shows that the study intersections continue to operate at LOS A when considering the cumulative impact, with minimal delays and queuing on all approaches.

The traffic generated by the proposed development combined with traffic anticipated to be generated by the adjacent site has a negligible impact on the surrounding road network and is anticipated to be able to be accommodated.

As noted above, some traffic generated by the adjacent development at 34 Busby Street is anticipated to use Torch Street and Brilliant Street to access Havannah Street. As such, the intersection operation presented above is anticipated to be a worst-case scenario with all traffic assumed to use this intersection.

6 CONCLUSIONS

Based on the preceding analysis, the following can be concluded:

- A Planning Proposal is to be lodged for a proposed medium density residential development at 50 Busby Street, South Bathurst incorporating 34 townhouses, 63 apartments and small scale retail and café spaces to service the local community.
- The proposed development generates a statutory parking requirement of 182 spaces, including 56 visitor parking spaces for the townhouses and apartments.
- All townhouses are proposed to include a one or two car garage with ample space to provide on-site visitor parking, therefore meeting the DCP requirements.
- A total of 65 parking spaces are provided within the apartment precinct on site, meeting the requirements for the apartment unit residential parking.
- Generally, apartment visitor parking and parking associated with the retail spaces and café/ deli will be required to be accommodated off site. Parking surveys of the surrounding area indicates there is sufficient capacity to accommodate the estimated demand.
- The proposed development is expected to generate up to 69 and 75 vehicle movements in the AM and PM peak hours respectively.
- The 10-year design horizon modelling (adopting a 2% background growth rate) indicate the surrounding intersections would continue to operate well post development, with minimal queuing and delays on all approaches.
- Assessment of the cumulative traffic impact at the 10-year design horizon, taking into consideration the concept masterplan for 150 dwellings on the adjacent site at 34 Busby Street, indicates the surrounding intersections would also continue to operate well at LoS A, with minimal queuing and delays on all approaches.

Subsequently, the proposal is supported from a traffic engineering perspective. Further matters of design details will be resolved at the Development Application stage.

APPENDIX 1 PARKING SURVEY RESULTS

Parking 50 Busby Street, South Bathurst

TRANS TRAFFIC SURVEY
trafficsurvey.com.au

Parking Occupancy Survey

Date:	Thursday, 12 October 2023
Location:	50 Busby Street, South Bathurst
GPS:	-33.431602, 149.572876
Weather:	Fine
Customer:	Salt3

Public Parking (1/0)	Map Ref	Street	Section	Side	Restriction	Clear Way	Capacity	Parking Occupancy										
								8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00
1		Havannah St	Pine St to Spencer St	N	Unrestricted		23	0	0	0	0	1	2	2	0	0	0	0
1					Taxi Zone		2	0	0	0	0	0	0	0	0	0	0	0
1					Unrestricted		29	0	0	0	0	2	1	1	1	1	1	0
1			Spencer St to Prospect St	S	Unrestricted		11	0	0	0	0	0	0	0	0	0	0	1
1			Prospect St to Pine St	S	Unrestricted		19	1	1	2	1	1	2	2	2	1	1	2
1		Prospect St	Busby St to 26 Prospect St	E	Unrestricted		20	0	0	0	0	0	0	1	1	1	1	0
1			19 Prospect St to Havannah St	W	Unrestricted		19	0	0	0	0	0	0	0	0	0	0	0
1		Busby St	Prospect St to Spencer St	N	Unrestricted		15	0	1	2	2	1	0	0	1	0	0	0
1			Spencer St to Torch St	N	Unrestricted		6	0	1	2	1	2	1	1	1	1	2	2
1			Torch St to Prospect St	S	Unrestricted		29	0	1	2	2	1	2	2	1	0	0	0
1		Spencer St	Havannah St to Busby St	E	Unrestricted		19	3	4	5	3	5	4	3	3	3	6	8
1			Busby St to Havannah St	W	Unrestricted		18	3	4	5	5	5	4	5	5	6	7	7
	PUBLIC CAPACITY							**210**	**210**	**210**	**210**	**210**	**210**	**210**	**210**	**210**	**210**	**210**
	PUBLIC OCCUPANCIES							**7**	**12**	**18**	**14**	**18**	**16**	**17**	**15**	**13**	**18**	**20**
	PUBLIC VACANCIES							**203**	**198**	**192**	**196**	**192**	**194**	**193**	**195**	**197**	**192**	**190**
	PUBLIC % OCCUPANCIES							**3%**	**6%**	**9%**	**7%**	**9%**	**8%**	**8%**	**7%**	**6%**	**9%**	**10%**

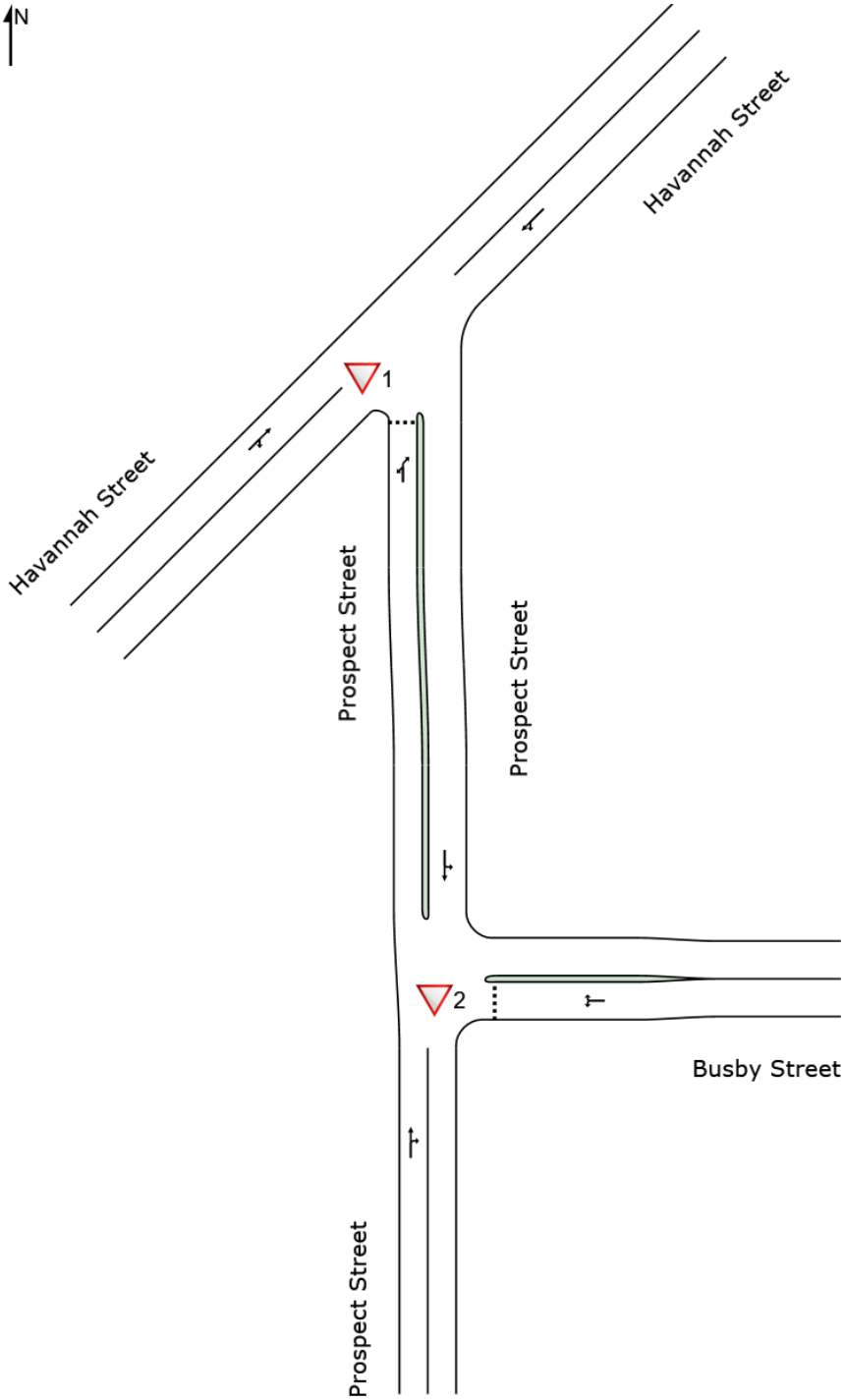
APPENDIX 2 SIDRA OUTPUTS

NETWORK LAYOUT

Network: N101 [Existing AM Peak (Network Folder: Existing)]

New Network
Network Category: (None)

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



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
▽1	NA	Havannah Street / Propsect Street - AM
▽2	NA	Prospect Street / Busby Street - AM

MOVEMENT SUMMARY

Site: 1 [Havannah Street / Propsect Street - AM (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [Existing AM Peak (Network Folder: Existing)]

Havannah Street / Busby Street Intertsection
Site Category: Existing Design
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: Prospect Street															
1b	L3	All MCs	11	0.0	11	0.0	0.029	4.0	LOS A	0.1	0.7	0.41	0.58	0.41	49.4
3a	R1	All MCs	15	7.1	15	7.1	0.029	4.1	LOS A	0.1	0.7	0.41	0.58	0.41	49.3
Approach			25	4.2	25	4.2	0.029	4.1	LOS A	0.1	0.7	0.41	0.58	0.41	49.4
NorthEast: Havannah Street															
24a	L1	All MCs	8	25.0	8	25.0	0.126	5.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.7
8	T1	All MCs	247	6.0	247	6.0	0.126	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach			256	6.6	256	6.6	0.126	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.8
SouthWest: Havannah Street															
2	T1	All MCs	284	10.4	284	10.4	0.145	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	59.9
32b	R3	All MCs	2	0.0	2	0.0	0.145	6.9	LOS A	0.0	0.1	0.01	0.01	0.01	59.8
Approach			286	10.3	286	10.3	0.145	0.1	NA	0.0	0.1	0.01	0.01	0.01	59.9
All Vehicles			567	8.3	567	8.3	0.145	0.3	NA	0.1	0.7	0.02	0.04	0.02	59.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data 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: 2 [Prospect Street / Busby Street - AM (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [Existing AM Peak (Network Folder: Existing)]

Prospect Street / Busby Street Intersection
Site Category: Existing Design
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: Prospect Street															
2	T1	All MCs	18	5.9	18	5.9	0.010	0.0	LOS A	0.0	0.0	0.01	0.03	0.01	59.3
3	R2	All MCs	1	0.0	1	0.0	0.010	5.6	LOS A	0.0	0.0	0.01	0.03	0.01	57.3
Approach			19	5.6	19	5.6	0.010	0.3	NA	0.0	0.0	0.01	0.03	0.01	59.1
East: Busby Street															
4	L2	All MCs	1	0.0	1	0.0	0.007	5.6	LOS A	0.0	0.1	0.07	0.54	0.07	52.6
6	R2	All MCs	7	0.0	7	0.0	0.007	5.7	LOS A	0.0	0.1	0.07	0.54	0.07	50.4
Approach			8	0.0	8	0.0	0.007	5.7	LOS A	0.0	0.1	0.07	0.54	0.07	50.9
North: Prospect Street															
7	L2	All MCs	1	0.0	1	0.0	0.006	2.3	LOS A	0.0	0.0	0.00	0.05	0.00	54.9
8	T1	All MCs	9	22.2	9	22.2	0.006	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	59.5
Approach			11	20.0	11	20.0	0.006	0.2	NA	0.0	0.0	0.00	0.05	0.00	59.0
All Vehicles			38	8.3	38	8.3	0.010	1.5	NA	0.0	0.1	0.02	0.15	0.02	56.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data 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: 1 [Havannah Street / Propsect Street - PM (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [Existing PM Peak (Network Folder: Existing)]

Havannah Street / Busby Street Intertsection
Site Category: Existing Design
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prospect Street															
1b	L3	All MCs	9	11.1	9	11.1	0.023	3.8	LOS A	0.0	0.2	0.34	0.53	0.34	49.5
3a	R1	All MCs	14	0.0	14	0.0	0.023	3.3	LOS A	0.0	0.2	0.34	0.53	0.34	50.7
Approach			23	4.5	23	4.5	0.023	3.5	LOS A	0.0	0.2	0.34	0.53	0.34	50.2
NorthEast: Havannah Street															
24a	L1	All MCs	24	0.0	24	0.0	0.092	4.8	LOS A	0.0	0.0	0.00	0.07	0.00	58.7
8	T1	All MCs	163	7.1	163	7.1	0.092	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	59.3
Approach			187	6.2	187	6.2	0.092	0.6	NA	0.0	0.0	0.00	0.07	0.00	59.3
SouthWest: Havannah Street															
2	T1	All MCs	263	9.2	263	9.2	0.135	0.0	LOS A	0.0	0.1	0.02	0.02	0.02	59.8
32b	R3	All MCs	5	0.0	5	0.0	0.135	7.0	LOS A	0.0	0.1	0.02	0.02	0.02	59.6
Approach			268	9.0	268	9.0	0.135	0.1	NA	0.0	0.1	0.02	0.02	0.02	59.8
All Vehicles			479	7.7	479	7.7	0.135	0.5	NA	0.0	0.2	0.03	0.06	0.03	59.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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: 2 [Prospect Street / Busby Street - PM (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [Existing PM Peak (Network Folder: Existing)]

Prospect Street / Busby Street Intersection
Site Category: Existing Design
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prospect Street															
2	T1	All MCs	13	0.0	13	0.0	0.007	0.0	LOS A	0.0	0.0	0.02	0.05	0.02	59.0
3	R2	All MCs	1	0.0	1	0.0	0.007	5.6	LOS A	0.0	0.0	0.02	0.05	0.02	57.1
Approach			14	0.0	14	0.0	0.007	0.4	NA	0.0	0.0	0.02	0.05	0.02	58.8
East: Busby Street															
4	L2	All MCs	1	0.0	1	0.0	0.010	5.6	LOS A	0.0	0.1	0.10	0.53	0.10	52.6
6	R2	All MCs	11	10.0	11	10.0	0.010	5.8	LOS A	0.0	0.1	0.10	0.53	0.10	50.3
Approach			12	9.1	12	9.1	0.010	5.8	LOS A	0.0	0.1	0.10	0.53	0.10	50.7
North: Prospect Street															
7	L2	All MCs	5	0.0	5	0.0	0.014	2.3	LOS A	0.0	0.0	0.00	0.10	0.00	54.7
8	T1	All MCs	24	0.0	24	0.0	0.014	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	59.2
Approach			29	0.0	29	0.0	0.014	0.4	NA	0.0	0.0	0.00	0.10	0.00	58.4
All Vehicles			55	1.9	55	1.9	0.014	1.6	NA	0.0	0.1	0.03	0.18	0.03	56.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.

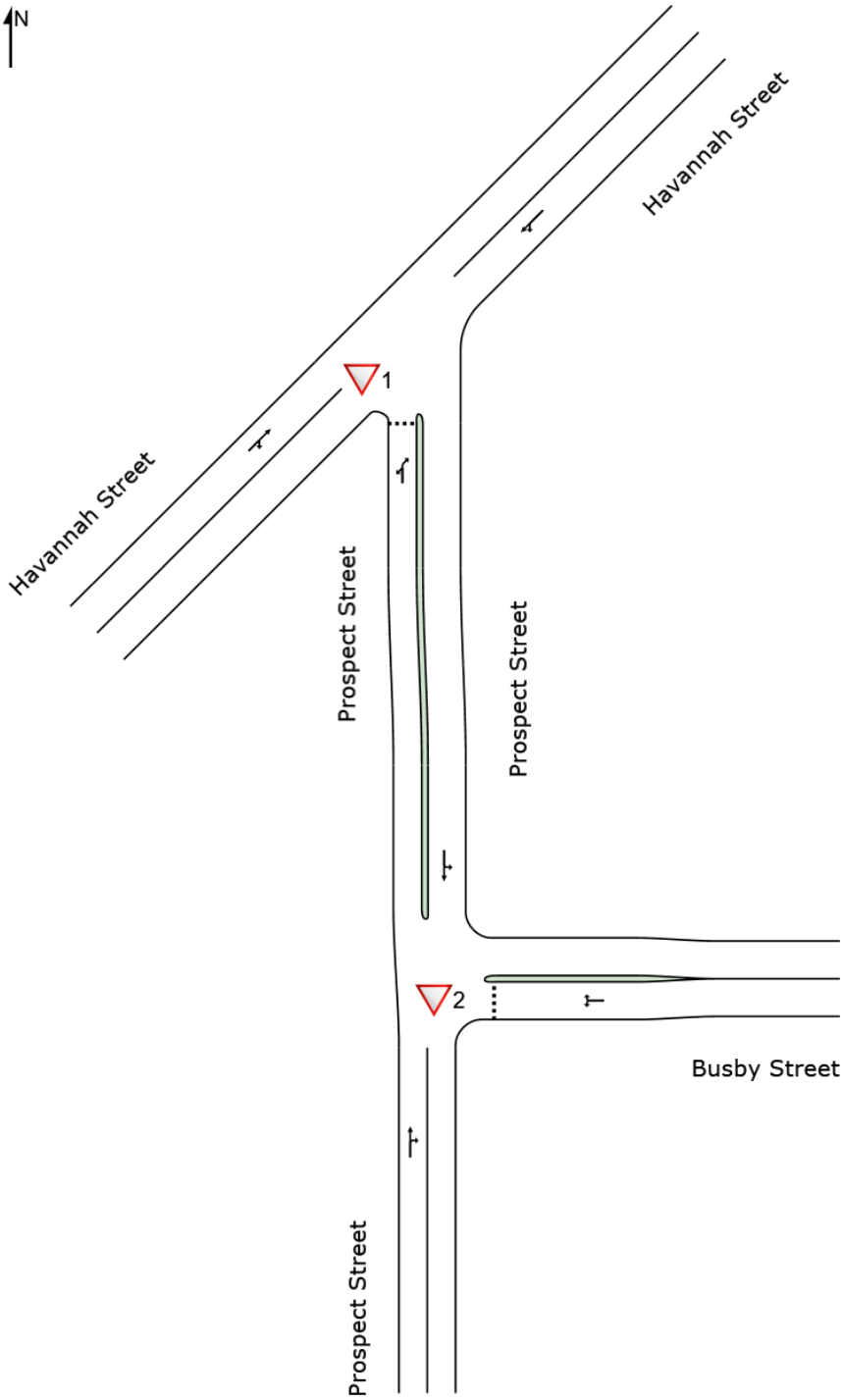
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

NETWORK LAYOUT

Network: N101 [Development AM Peak (Network Folder: Development)]

New Network
Network Category: (None)

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



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
▽1	NA	Havannah Street / Propsect Street - AM Dev
▽2	NA	Prospect Street / Busby Street - AM Dev

MOVEMENT SUMMARY

Site: 1 [Havannah Street / Propsect Street - AM Dev (Site Folder: Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [Development AM Peak (Network Folder: Development)]

Havannah Street / Busby Street Intertsection
Site Category: Existing Design
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prospect Street															
1b	L3	All MCs	33	0.0	33	0.0	0.099	4.3	LOS A	0.1	1.0	0.47	0.66	0.47	48.6
3a	R1	All MCs	46	2.3	46	2.3	0.099	5.1	LOS A	0.1	1.0	0.47	0.66	0.47	48.8
Approach			79	1.3	79	1.3	0.099	4.8	LOS A	0.1	1.0	0.47	0.66	0.47	48.7
NorthEast: Havannah Street															
24a	L1	All MCs	23	9.1	23	9.1	0.158	4.9	LOS A	0.0	0.0	0.00	0.04	0.00	59.3
8	T1	All MCs	301	4.9	301	4.9	0.158	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.6
Approach			324	5.2	324	5.2	0.158	0.4	NA	0.0	0.0	0.00	0.04	0.00	59.6
SouthWest: Havannah Street															
2	T1	All MCs	346	8.5	346	8.5	0.177	0.0	LOS A	0.0	0.2	0.02	0.02	0.02	59.8
32b	R3	All MCs	6	0.0	6	0.0	0.177	8.5	LOS A	0.0	0.2	0.02	0.02	0.02	59.6
Approach			353	8.4	353	8.4	0.177	0.2	NA	0.0	0.2	0.02	0.02	0.02	59.8
All Vehicles			756	6.3	756	6.3	0.177	0.7	NA	0.1	1.0	0.06	0.10	0.06	58.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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: 2 [Prospect Street / Busby Street - AM Dev (Site Folder: Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [Development AM Peak (Network Folder: Development)]

Prospect Street / Busby Street Intersection
Site Category: Existing Design
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prospect Street															
2	T1	All MCs	21	5.0	21	5.0	0.011	0.0	LOS A	0.0	0.0	0.01	0.03	0.01	59.4
3	R2	All MCs	1	0.0	1	0.0	0.011	5.6	LOS A	0.0	0.0	0.01	0.03	0.01	57.3
Approach			22	4.8	22	4.8	0.011	0.3	NA	0.0	0.0	0.01	0.03	0.01	59.2
East: Busby Street															
4	L2	All MCs	1	0.0	1	0.0	0.047	5.6	LOS A	0.1	0.4	0.11	0.54	0.11	52.5
6	R2	All MCs	58	0.0	58	0.0	0.047	5.7	LOS A	0.1	0.4	0.11	0.54	0.11	50.2
Approach			59	0.0	59	0.0	0.047	5.7	LOS A	0.1	0.4	0.11	0.54	0.11	50.3
North: Prospect Street															
7	L2	All MCs	12	0.0	12	0.0	0.015	2.3	LOS A	0.0	0.0	0.00	0.21	0.00	53.8
8	T1	All MCs	18	11.8	18	11.8	0.015	0.0	LOS A	0.0	0.0	0.00	0.21	0.00	58.2
Approach			29	7.1	29	7.1	0.015	0.9	NA	0.0	0.0	0.00	0.21	0.00	56.4
All Vehicles			111	2.9	111	2.9	0.047	3.3	NA	0.1	0.4	0.06	0.35	0.06	53.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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: 1 [Havannah Street / Propsect Street - PM Dev (Site Folder: Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [Development PM Peak (Network Folder: Development)]

Havannah Street / Busby Street Intertsection
Site Category: Existing Design
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prospect Street															
1b	L3	All MCs	19	5.6	19	5.6	0.050	3.9	LOS A	0.1	0.5	0.40	0.57	0.40	49.2
3a	R1	All MCs	26	0.0	26	0.0	0.050	4.1	LOS A	0.1	0.5	0.40	0.57	0.40	49.9
Approach			45	2.3	45	2.3	0.050	4.0	LOS A	0.1	0.5	0.40	0.57	0.40	49.6
NorthEast: Havannah Street															
24a	L1	All MCs	71	0.0	71	0.0	0.131	4.8	LOS A	0.0	0.0	0.00	0.15	0.00	57.5
8	T1	All MCs	199	5.8	199	5.8	0.131	0.0	LOS A	0.0	0.0	0.00	0.15	0.00	58.7
Approach			269	4.3	269	4.3	0.131	1.3	NA	0.0	0.0	0.00	0.15	0.00	58.5
SouthWest: Havannah Street															
2	T1	All MCs	321	7.5	321	7.5	0.171	0.0	LOS A	0.1	0.4	0.05	0.06	0.05	59.5
32b	R3	All MCs	16	0.0	16	0.0	0.171	9.0	LOS A	0.1	0.4	0.05	0.06	0.05	59.0
Approach			337	7.2	337	7.2	0.171	0.4	NA	0.1	0.4	0.05	0.06	0.05	59.5
All Vehicles			652	5.7	652	5.7	0.171	1.0	NA	0.1	0.5	0.05	0.13	0.05	58.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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: 2 [Prospect Street / Busby Street - PM Dev (Site Folder: Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [Development PM Peak (Network Folder: Development)]

Prospect Street / Busby Street Intersection
Site Category: Existing Design
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prospect Street															
2	T1	All MCs	14	0.0	14	0.0	0.007	0.0	LOS A	0.0	0.0	0.03	0.05	0.03	59.0
3	R2	All MCs	1	0.0	1	0.0	0.007	5.9	LOS A	0.0	0.0	0.03	0.05	0.03	57.1
Approach			15	0.0	15	0.0	0.007	0.4	NA	0.0	0.0	0.03	0.05	0.03	58.7
East: Busby Street															
4	L2	All MCs	1	0.0	1	0.0	0.028	5.7	LOS A	0.0	0.3	0.16	0.54	0.16	52.4
6	R2	All MCs	32	3.3	32	3.3	0.028	5.9	LOS A	0.0	0.3	0.16	0.54	0.16	49.9
Approach			33	3.2	33	3.2	0.028	5.9	LOS A	0.0	0.3	0.16	0.54	0.16	50.1
North: Prospect Street															
7	L2	All MCs	24	0.0	24	0.0	0.041	2.3	LOS A	0.0	0.0	0.00	0.15	0.00	54.3
8	T1	All MCs	62	0.0	62	0.0	0.041	0.0	LOS A	0.0	0.0	0.00	0.15	0.00	58.8
Approach			86	0.0	86	0.0	0.041	0.6	NA	0.0	0.0	0.00	0.15	0.00	57.5
All Vehicles			134	0.8	134	0.8	0.041	1.9	NA	0.0	0.3	0.04	0.23	0.04	55.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.

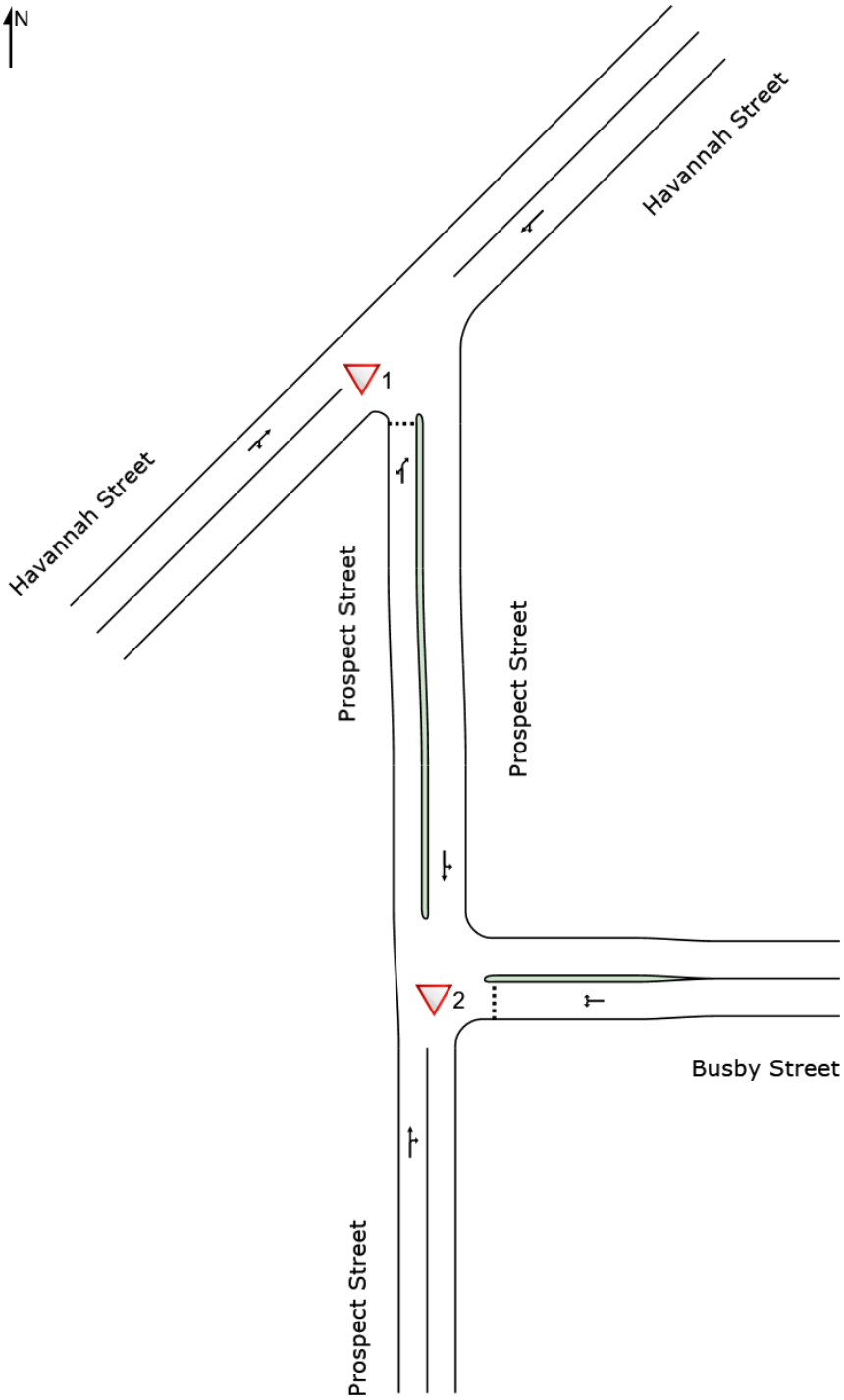
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

NETWORK LAYOUT

Network: N101 [Development Cumulative AM Peak (Network Folder: Development - Cumulative Impact)]

New Network
Network Category: (None)

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



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
▽1	NA	Havannah Street / Propsect Street - AM Dev Cumulative
▽2	NA	Prospect Street / Busby Street - AM Dev Cumulative

MOVEMENT SUMMARY

Site: 1 [Havannah Street / Propsect Street - AM Dev Cumulative (Site Folder: Development - Cumulative Impact)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [Development Cumulative AM Peak (Network Folder: Development - Cumulative Impact)]

Havannah Street / Busby Street Intertsection
Site Category: Existing Design
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prospect Street															
1b	L3	All MCs	63	0.0	63	0.0	0.192	4.4	LOS A	0.3	2.0	0.50	0.68	0.50	48.3
3a	R1	All MCs	89	1.2	89	1.2	0.192	5.4	LOS A	0.3	2.0	0.50	0.68	0.50	48.6
Approach			153	0.7	153	0.7	0.192	5.0	LOS A	0.3	2.0	0.50	0.68	0.50	48.5
NorthEast: Havannah Street															
24a	L1	All MCs	38	5.6	38	5.6	0.165	4.9	LOS A	0.0	0.0	0.00	0.06	0.00	58.9
8	T1	All MCs	301	4.9	301	4.9	0.165	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	59.4
Approach			339	5.0	339	5.0	0.165	0.6	NA	0.0	0.0	0.00	0.06	0.00	59.4
SouthWest: Havannah Street															
2	T1	All MCs	346	8.5	346	8.5	0.180	0.0	LOS A	0.0	0.3	0.03	0.04	0.03	59.7
32b	R3	All MCs	9	0.0	9	0.0	0.180	9.8	LOS A	0.0	0.3	0.03	0.04	0.03	59.4
Approach			356	8.3	356	8.3	0.180	0.3	NA	0.0	0.3	0.03	0.04	0.03	59.7
All Vehicles			847	5.6	847	5.6	0.192	1.2	NA	0.3	2.0	0.10	0.16	0.10	58.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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: 2 [Prospect Street / Busby Street - AM Dev Cumulative (Site Folder: Development - Cumulative Impact)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [Development Cumulative AM Peak (Network Folder: Development - Cumulative Impact)]

Prospect Street / Busby Street Intersection
Site Category: Existing Design
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prospect Street															
2	T1	All MCs	21	5.0	21	5.0	0.011	0.0	LOS A	0.0	0.0	0.01	0.03	0.01	59.3
3	R2	All MCs	1	0.0	1	0.0	0.011	5.6	LOS A	0.0	0.0	0.01	0.03	0.01	57.3
Approach			22	4.8	22	4.8	0.011	0.3	NA	0.0	0.0	0.01	0.03	0.01	59.1
East: Busby Street															
4	L2	All MCs	1	0.0	1	0.0	0.108	5.6	LOS A	0.1	1.0	0.13	0.54	0.13	52.5
6	R2	All MCs	132	0.0	132	0.0	0.108	5.8	LOS A	0.1	1.0	0.13	0.54	0.13	50.1
Approach			133	0.0	133	0.0	0.108	5.8	LOS A	0.1	1.0	0.13	0.54	0.13	50.2
North: Prospect Street															
7	L2	All MCs	29	0.0	29	0.0	0.024	2.3	LOS A	0.0	0.0	0.00	0.32	0.00	53.1
8	T1	All MCs	18	11.8	18	11.8	0.024	0.0	LOS A	0.0	0.0	0.00	0.32	0.00	57.3
Approach			47	4.4	47	4.4	0.024	1.4	NA	0.0	0.0	0.00	0.32	0.00	54.6
All Vehicles			202	1.6	202	1.6	0.108	4.2	NA	0.1	1.0	0.09	0.43	0.09	52.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.

Organisation: SUSTAINABLE TRANSPORT SURVEYS PTY LTD T/A SALT3 | Licence: NETWORK / 1PC | Processed: Tuesday, 30 January 2024 1:00:39 PM
Project: \\sts.local\Data\Projects\2023\23474T - 50 Busby Street, South Bathurst\07 Analysis\23474_SIDRA Analysis - 24.01.29 - Logan Brae Update.sip9

MOVEMENT SUMMARY

Site: 1 [Havannah Street / Propsect Street - PM Dev Cumulative (Site Folder: Development - Cumulative Impact)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [Development Cumulative PM Peak (Network Folder: Development - Cumulative Impact)]

Havannah Street / Busby Street Intertsection
Site Category: Existing Design
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prospect Street															
1b	L3	All MCs	24	4.3	24	4.3	0.071	3.9	LOS A	0.1	0.7	0.42	0.59	0.42	49.0
3a	R1	All MCs	37	0.0	37	0.0	0.071	4.5	LOS A	0.1	0.7	0.42	0.59	0.42	49.6
Approach			61	1.7	61	1.7	0.071	4.2	LOS A	0.1	0.7	0.42	0.59	0.42	49.3
NorthEast: Havannah Street															
24a	L1	All MCs	132	0.0	132	0.0	0.161	4.8	LOS A	0.0	0.0	0.00	0.22	0.00	56.3
8	T1	All MCs	199	5.8	199	5.8	0.161	0.0	LOS A	0.0	0.0	0.00	0.22	0.00	58.0
Approach			331	3.5	331	3.5	0.161	1.9	NA	0.0	0.0	0.00	0.22	0.00	57.6
SouthWest: Havannah Street															
2	T1	All MCs	321	7.5	321	7.5	0.182	0.0	LOS A	0.1	0.8	0.09	0.11	0.09	59.1
32b	R3	All MCs	28	0.0	28	0.0	0.182	9.7	LOS A	0.1	0.8	0.09	0.11	0.09	58.2
Approach			349	6.9	349	6.9	0.182	0.8	NA	0.1	0.8	0.09	0.11	0.09	59.0
All Vehicles			741	5.0	741	5.0	0.182	1.6	NA	0.1	0.8	0.08	0.20	0.08	57.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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: 2 [Prospect Street / Busby Street - PM Dev Cumulative (Site Folder: Development - Cumulative Impact)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [Development Cumulative PM Peak (Network Folder: Development - Cumulative Impact)]

Prospect Street / Busby Street Intersection
Site Category: Existing Design
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prospect Street															
2	T1	All MCs	14	0.0	14	0.0	0.007	0.0	LOS A	0.0	0.0	0.05	0.06	0.05	58.8
3	R2	All MCs	1	0.0	1	0.0	0.007	6.6	LOS A	0.0	0.0	0.05	0.06	0.05	57.0
Approach			15	0.0	15	0.0	0.007	0.5	NA	0.0	0.0	0.05	0.06	0.05	58.6
East: Busby Street															
4	L2	All MCs	1	0.0	1	0.0	0.044	5.7	LOS A	0.1	0.4	0.20	0.54	0.20	52.2
6	R2	All MCs	49	2.1	49	2.1	0.044	6.0	LOS A	0.1	0.4	0.20	0.54	0.20	49.7
Approach			51	2.1	51	2.1	0.044	6.0	LOS A	0.1	0.4	0.20	0.54	0.20	49.8
North: Prospect Street															
7	L2	All MCs	98	0.0	98	0.0	0.078	2.3	LOS A	0.0	0.0	0.00	0.32	0.00	53.2
8	T1	All MCs	62	0.0	62	0.0	0.078	0.0	LOS A	0.0	0.0	0.00	0.32	0.00	57.4
Approach			160	0.0	160	0.0	0.078	1.4	NA	0.0	0.0	0.00	0.32	0.00	54.8
All Vehicles			225	0.5	225	0.5	0.078	2.4	NA	0.1	0.4	0.05	0.35	0.05	53.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.

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