

# Appendix H

## Traffic and transport assessment

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<b>Subject</b>	<b>Traffic and transport assessment</b>	<b>Project Name</b>	Great Western Highway - Raglan Duplication
		<b>Project No.</b>	IA214400
<b>From</b>	Richard Banzon		
<b>Date</b>	6 December 2019		

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## 1. Introduction

Transport for NSW (TfNSW) proposes to widen the existing two-lane section of Great Western Highway at Raglan, east of Bathurst, NSW (the proposal). About 3.7 kilometres of the Great Western Highway is proposed to be upgraded between about 385 metres east of Ceramic Avenue, Raglan and Ashworth Drive, Kelso.

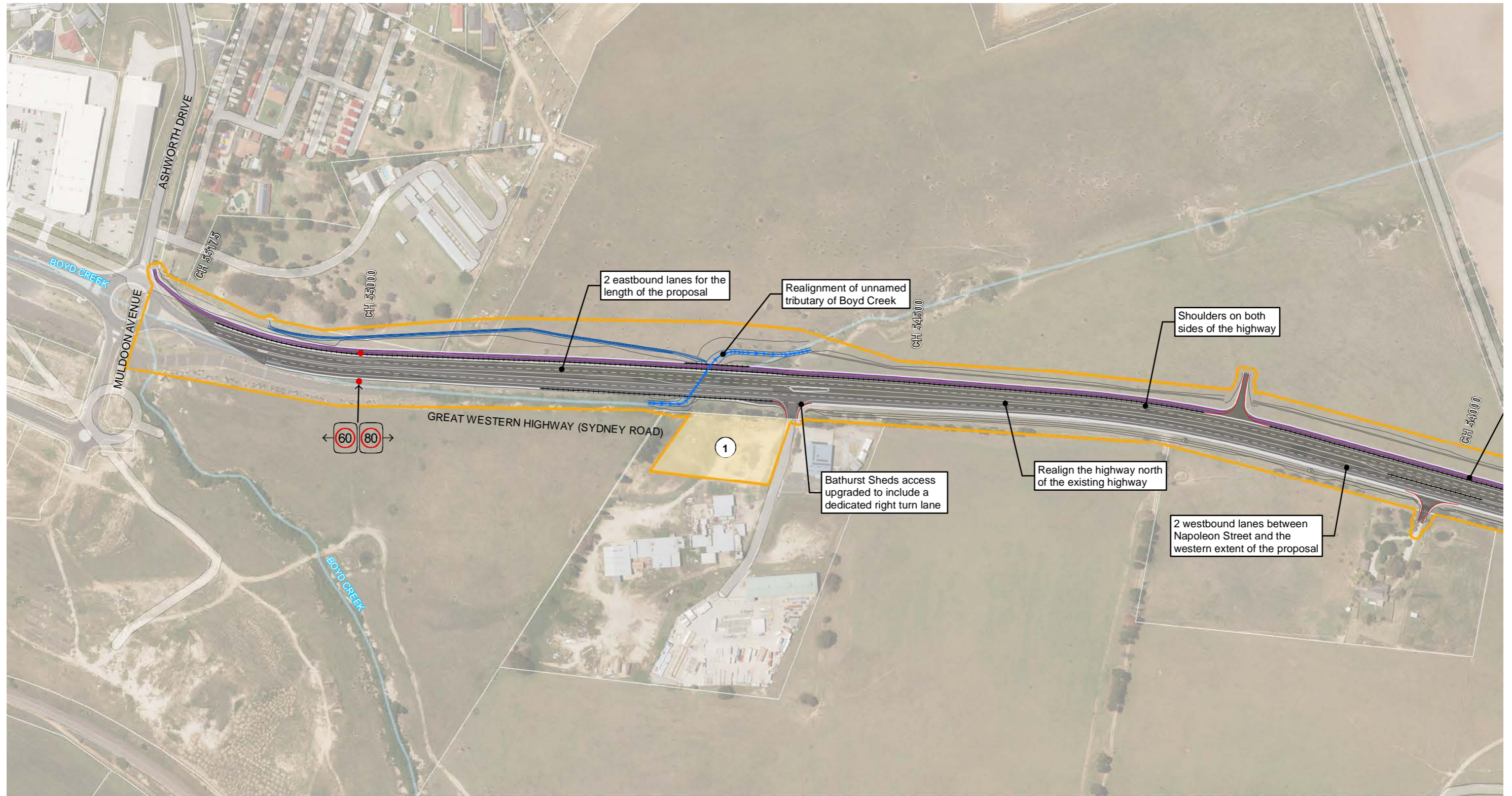
Key features of the proposal include:

- Realigning the highway up to 16 metres to the north of the existing highway
- Road widening up to 13 metres to provide:
  - Two eastbound lanes for the length of the proposal
  - Two westbound lanes west of Napoleon Street
  - One westbound lane east of Napoleon Street
  - Shoulders on both sides of the highway
  - A central variable width median for the length of the proposal with occasional traffic barriers
- A 2.5 metre wide shared path along the southern side of the highway between Eugenie Street and just west of Napoleon Street, where it crosses to the northern side of the highway and continues to Ashworth Drive
- Provision of a 5.5 metre wide verge between the shared path and the southern edge of the highway to allow for a second westbound lane east of Napoleon Street
- Re-using existing pavement material where the new highway overlies the existing highway
- Removing redundant highway pavement
- Raising the highway by up to one metre, with batters generally sloping at four to one
- Upgrading four intersections by providing or extending dedicated turn lanes at Napoleon, Locke, Nile Streets and Ceramic Avenue
- Upgrading the Eugenie Street and PJ Moodie Memorial Drive intersection with traffic signals and a light vehicle U-turn facility along Eugenie Street
- A widened median is provided at the Napoleon Street intersection to allow for future traffic signals
- Street lighting provided at:
  - PJ Moodie Memorial Drive and Napoleon, Eugenie, Locke and Nile Streets intersections
  - Pedestrian crossings
  - Bus stops
  - Bathurst Sheds access.
- Realignment of an unnamed tributary of Boyd Creek

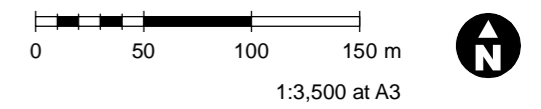
- Tie-in works with existing pavements and highway levels at the eastern and western extents
- Driveway adjustment and upgrade where required for properties with direct access to the Great Western Highway
- Upgrading the at-grade access to Bathurst Sheds with an improved right-turn lane
- Relocation and/or adjustments of public utilities and street lighting
- Property acquisitions and adjustments
- Minor relocation and provision of widened shoulders at three bus stops
- Drainage infrastructure including:
  - Replacement and augmentation of existing pipe drainage systems
  - Extension of the existing five cell box culvert
  - Installation of new drainage (including kerb and guttering and table drains) in various locations
  - A flood detention basin on the northern side of the Great Western Highway opposite Nelson Street
- Ancillary works including safety barriers, signage, line marking and environmental protection work
- Landscaping and rehabilitation work
- Temporary ancillary facilities including site compounds and stockpile sites.

**Figure 1-1 to Figure 1-3** presents an overview of the proposal.

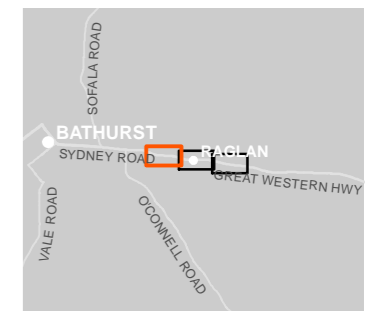




- |  |                   |                 |
|--|-------------------|-----------------|
| Proposal area                              | <b>Design</b>     | Kerb and gutter |
| Existing Roads and Maritime stockpile site | Batter slope      | Safety barrier  |
| Potential ancillary site/site number       | Table drain       | Driveway        |
| Proposed flood storage                     | Creek realignment | Shared path     |
| Waterway                                   |                   |                 |
| Alignment pavement                         |                   |                 |

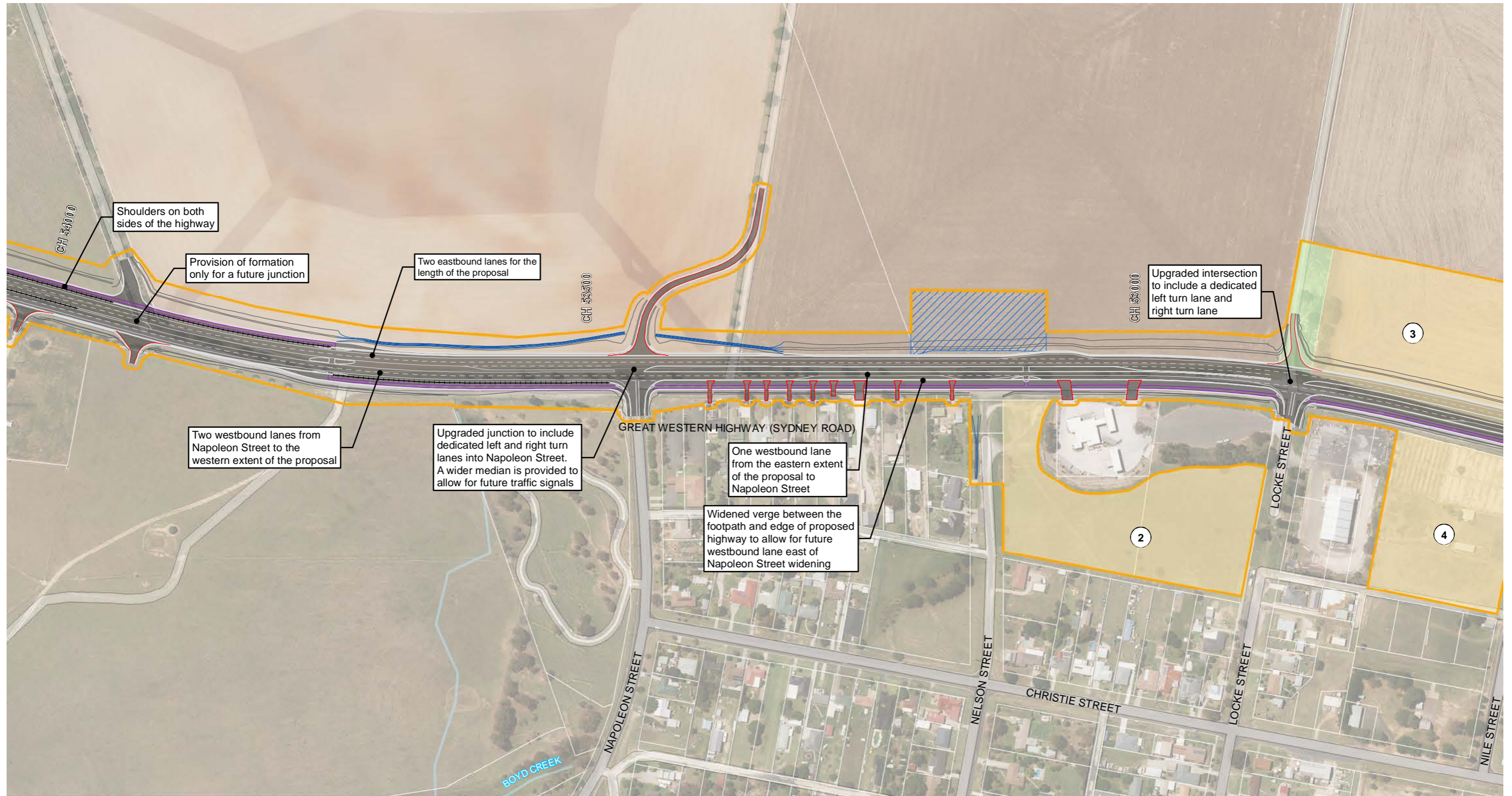


**Data sources**  
 Roads and Maritime Services 2019  
 Jacobs 2019  
 Aerometrex Dec 2018  
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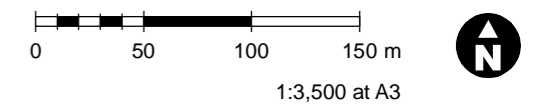


**Figure 1-1 (1)** Key features of the proposal



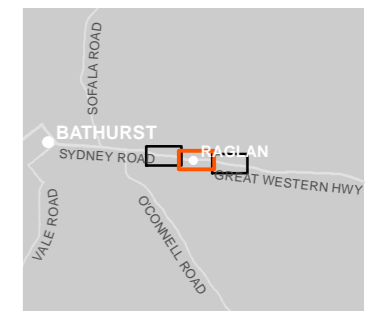


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|--|-------------------|-----------------|
| Proposal area                              | <b>Design</b>     | Kerb and gutter |
| Existing Roads and Maritime stockpile site | Batter slope      | Safety barrier  |
| Potential ancillary site/site number       | Table drain       | Driveway        |
| Proposed flood storage                     | Creek realignment | Shared path     |
| Waterway                                   |                   |                 |
| Alignment pavement                         |                   |                 |



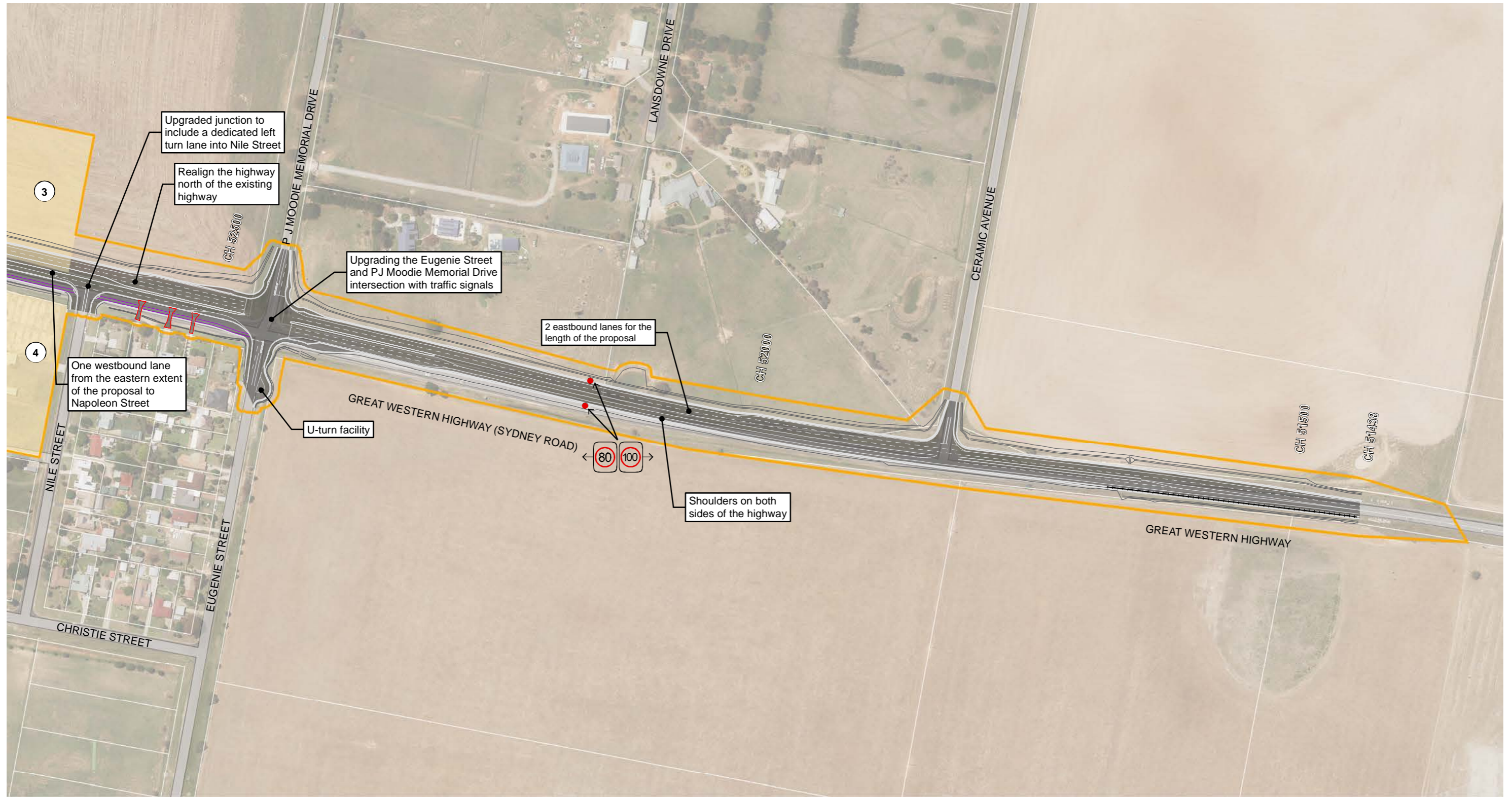
**Data sources**

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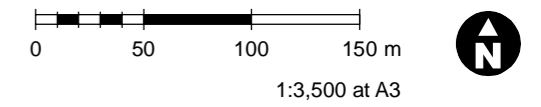


**Figure 1-1 (2)** Key features of the proposal

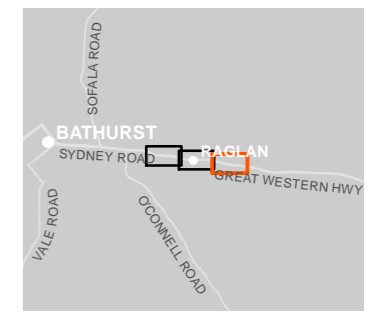




- |  |                   |                 |
|--|-------------------|-----------------|
| Proposal area                              | Design            | Kerb and gutter |
| Existing Roads and Maritime stockpile site | Batter slope      | Safety barrier  |
| Potential ancillary site/site number       | Table drain       | Driveway        |
| Proposed flood storage                     | Creek realignment | Shared path     |
| Waterway                                   |                   |                 |
| Alignment pavement                         |                   |                 |



**Data sources**  
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**Figure 1-1 (3)** Key features of the proposal

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The remainder of this memorandum is structured as follows:

- Section 2 describes the assessment methodology
- Section 3 describes the existing traffic and transport environment
- Section 3 outlines the traffic and transport construction impact assessment of the proposal
- Section 4 outlines the traffic and transport operational impact assessment of the proposal
- Section 5 outlines proposed traffic and transport safeguards and mitigation measures.

## **2. Assessment methodology**

### **2.1 Overall assessment approach**

To assess the impact of the proposal on the traffic and transport network, the following methodology has been used to identify and, where possible, quantify the following:

- Impacts during construction – assessed through the analysis of construction traffic generation, construction traffic routes and proposed changes to access, public transport and active transport
- Impacts on the road network performance – assessed through the use of intersection modelling to determine the performance of key intersections with and without the proposal
- Impacts on access, public transport, pedestrians and cyclists – assessed through an analysis of existing provisions and a comparison with proposal provisions.

### **2.2 Traffic modelling approach**

To assess the impacts of the proposal on road network performance, traffic modelling of key impacted intersections has been undertaken. These are:

- Great Western Highway / Napoleon Street
- Great Western Highway / Eugenie Street / P J Moodie Memorial Drive

The approach to traffic modelling undertaken for this assessment aligns with the *Traffic Modelling Guidelines* (Roads and Maritime, 2013) and includes the following broad steps:

- Development of base models to align with existing operational conditions at the intersections identified above
- Development of future year base models to align with anticipated operational conditions in the year of opening (2028) and year of opening plus 10 years (2038) without the proposal
- Application of the proposal upgrades to the future year base models to enable the identification of potential impacts on road network performance.

Models were developed using the Sidra Intersection modelling software package. Sidra was used to provide consistency with previous modelling undertaken by Roads and Maritime and documented in *HW5 Great Western Highway - Raglan Duplication Project Strategic Development Report*. A review of this document determined a future forecast growth rate of two per cent per annum. This growth rate was deemed suitable and applied to the future Sidra intersection models developed for the proposal assessment.



**2.3 Performance indicators**

The performance indicators that are reported for this assessment include Degree of Saturation, average delay, and 95<sup>th</sup> percentile queue length and is based on criteria outlined in Table 2-1 and defined in the *Guide to Traffic Generating Development* (Roads and Traffic Authority, 2002). The average delay assessed for signalised intersections is for all movements. The average delay assessed for priority (sign-controlled) intersections is for the worst movement and is expressed in seconds per vehicle.

**Table 2-1: Intersection Level of Service criteria**

Level of Service	Average delay per vehicle (seconds/vehicle)	Traffic signals and roundabouts
A	Less than 15	Good operation
B	15 to 28	Good with acceptable delays and spare capacity
C	29 to 42	Satisfactory
D	43 to 56	Operating near capacity
E	57 to 70	At capacity; at signals, incidents will cause delays Roundabouts require other control mode
F	Over 70	Extra capacity required

Source: *Guide to Traffic Generating Developments* (Roads and Traffic Authority, 2002)

**3. Existing traffic and transport environment**

**3.1 Road network**

Great Western Highway is a state highway that connects Sydney to Bathurst. Raglan, which is located east of Bathurst, is accessible from Great Western Highway at its intersection with local roads including Napoleon Street, Locke Street, Nile Street, Eugenie Street, P J Moodie Memorial Drive and Ceramic Avenue.

Great Western Highway in Raglan has a sign-posted speed limit of 80 km/h. East of Ceramic Avenue, Great Western Highway has a sign-posted speed limit of 100 km/h. On approach to Bathurst, a reduced speed limit of 60 km/h is sign posted near Ashworth Drive. A 50 km/h speed limit is imposed along local roads in Raglan.

Traffic volumes on Great Western Highway between Ashworth Drive and Napoleon Street average about 12,700 vehicles per day, with 12 per cent classified as heavy vehicles. This section of road exhibits a peak hour volume of 1,125 vehicles per hour. Between Napoleon Street and Ceramic Avenue, traffic volumes lower to about 10,400 vehicles per day, with 17 per cent classified as heavy vehicles. This section of road exhibits a peak hour volume of about 868 vehicles per hour. Traffic volumes increase substantially during infrequent special events such as car racing held in Bathurst.

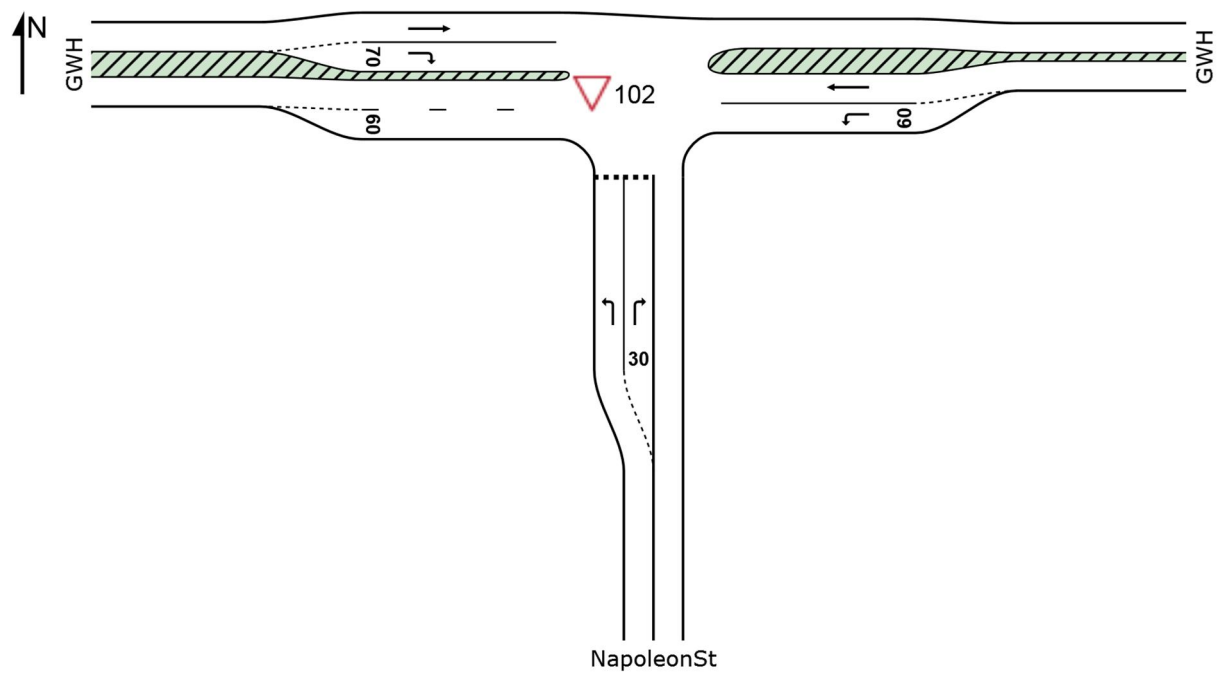
Traffic on Rural Roads (TRARR) modelling documented in the Roads and Maritime's *HW5 Great Western Highway - Raglan Duplication Project Strategic Development Report* showed a maximum Percent Time Spent Following (PTSF) of 54.5 per cent (equating to a Level of Service B) in the eastbound direction during the evening peak. With an assumed 20-year growth rate of two per cent per annum, the PTSF may reach 67 per cent (equating to Level of Service C). Given that the network planning target for capacity expansion is 65 per cent PTSF, the TRARR modelling indicates that a capacity upgrade may be required within the 20-year planning horizon.



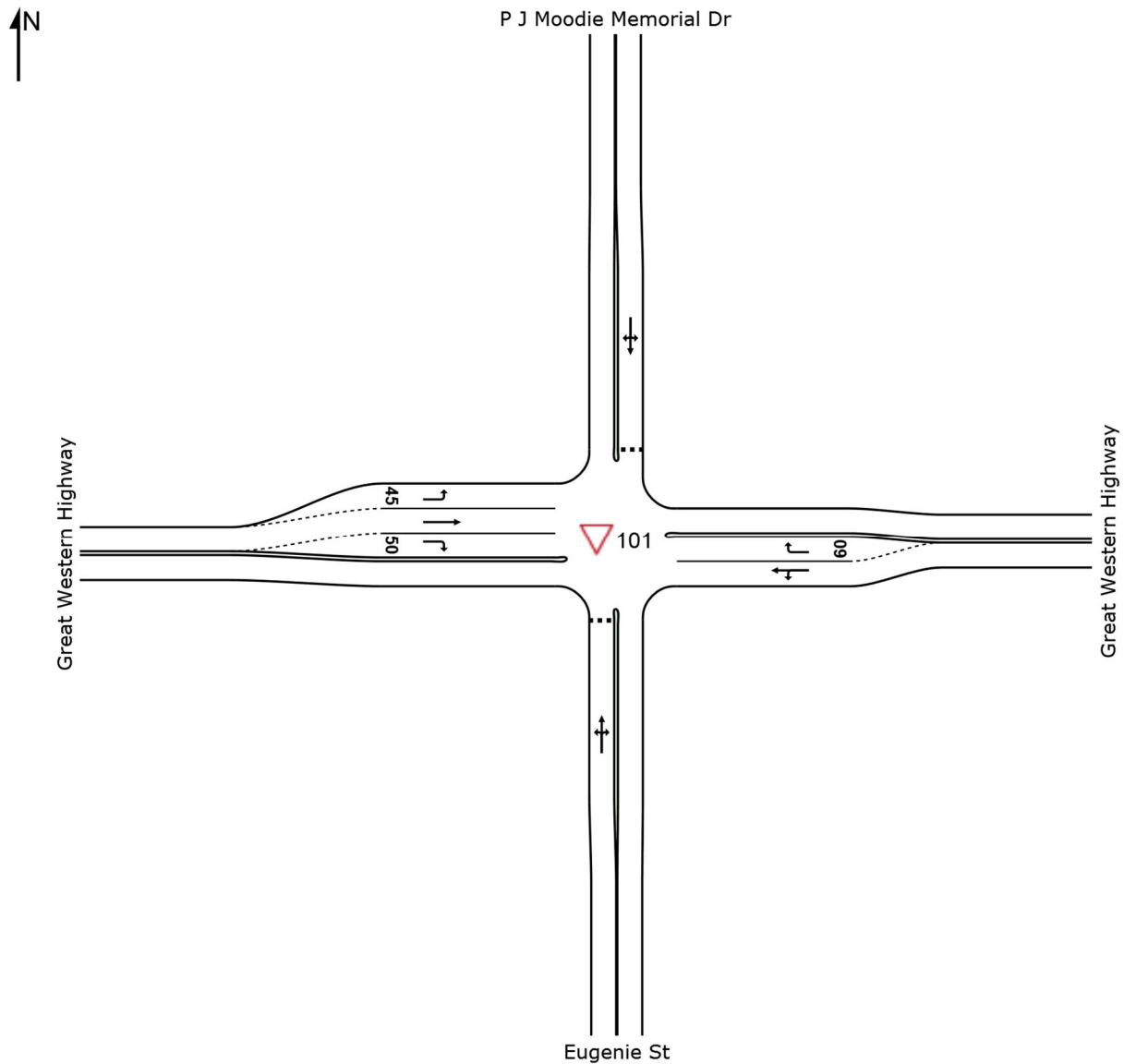
### 3.1.1 Existing intersection performance

As discussed in Section 2.2, the Great Western Highway / Napoleon Street and Great Western Highway / Eugenie Street / P J Moodie Memorial Drive intersections were modelled in Sidra. The existing intersection layouts modelled are shown in Figure 3-1 and Figure 3-2.

Sidra outputs for the existing intersections modelled are provided in Appendix A.



**Figure 3-1: Modelled existing intersection layout – Great Western Highway / Napoleon Street**



**Figure 3-2: Modelled existing intersection layout – Great Western Highway / Eugenie Street / P J Moodie Memorial Drive**

Modelled existing intersection performance during the morning and evening peak hour for key intersections impacted by the proposal is shown in Table 3-1.

Modelled intersection performance indicates that both intersections perform with spare capacity and at Level of Service C or better. In addition, 95<sup>th</sup> percentile queue lengths on all approaches are less than five metres.



**Table 3-1: Modelled peak hour existing intersection performance**

Intersection	2018 morning peak hour				2018 evening peak hour					
	Degree of Saturation	Average delay (seconds per vehicle)	Level of service	95 <sup>th</sup> percentile queue length (metres)	Degree of Saturation	Average delay (seconds per vehicle)	Level of service	95 <sup>th</sup> percentile queue length (metres)		
Great Western Highway / Napoleon Street	0.25	14	A	NB	<5	0.27	31	C	NB	<5
				EB	<5				EB	<5
				SB	-				SB	-
				WB	<5				WB	<5
Great Western Highway / Eugenie Street / P J Moodie Memorial Drive	0.24	25	B	NB	<5	0.24	28	B	NB	<5
				EB	<5				EB	<5
				SB	<5				SB	<5
				WB	<5				WB	<5

### 3.1.2 Crash analysis

A crash analysis was undertaken using historical crash data provided by Roads and Maritime for crashes occurring on Great Western Highway between Ashworth Drive and 250 metres east of Ceramic Avenue for the five-year period from 1 April 2014 to 31 March 2019.

The crash data conforms to the national guidelines for reporting and classifying road vehicle crashes and are based on the following criteria:

- The crash was reported to the police or self-reported
- The crash occurred on a road open to the public
- The crash involved at least one moving road vehicle
- The crash involved at least one person being killed or injured or at least one motor vehicle being towed away.

In the five-year period, a total of nine crashes were recorded on this section of road. Of these, there were:

- No crashes that resulted in a fatality
- Six crashes (67 per cent) that resulted in 13 injuries
- Seven crashes (78 per cent) that involved multiple vehicles
- No crashes that involved a pedestrian
- One crash that involved an emergency vehicle
- One crash that involved a motorcycle

- Two crashes that occurred at an intersection (22 per cent)
- Two rear-end crashes (22 per cent)
- Two crashes that occurred off-road where an object was hit (22 per cent)
- Three crashes (33 per cent) that occurred in dusk or darkness
- Two crashes (22 per cent) that occurred during overcast, foggy or misty weather conditions.

### 3.2 Public transport network

Three bus stops are located along the proposed alignment. Table 3-2 outlines the bus routes that operate at these stops.

Buses operate infrequently in Raglan, with coaches operating nil or one service a day. Only bus 524 operates on the local road network along Napoleon Street, Christie Street, Nelson Street, Landseer Street and Eugenie Street.

**Table 3-2: Bus stops and bus services**

Bus stop ID	Service	Route	Number of weekday services	Number of weekend services
279536 – Great Western Highway eastbound at Nelson Street	Bus 636	Bathurst to Lithgow	3	1
	Coach 562	Orange to Lithgow	1	1
	Coach 564	Orange to Lithgow	1	0
	Coach 566	Orange to Lithgow	0	1
	Coach 568	Orange to Lithgow	1	0
	Coach 580	Bathurst to Lithgow	0	1
279535 – Great Western Highway westbound at Nelson Street	Bus 636	Lithgow to Bathurst	3	1
	Coach 563	Lithgow to Orange	1	0
	Coach 565	Lithgow to Orange	1	1
	Coach 571	Lithgow to Parkes	1	1
2795198 – Great Western Highway westbound at Nile Street	Bus 524	Bathurst to Raglan (loop service)	11	3

The NSW train network is not directly accessible from Raglan, with the closest station located about six kilometres west in Bathurst.

### 3.3 Active transport network

There are currently no formal footpaths or designated bicycle routes or facilities within the immediate vicinity of the proposal area. Shared user paths and a designated on-road cycle route of moderate difficulty is located further west in Kelso.



## **4. Construction impact assessment**

### **4.1 Construction activities**

The work methodology for the proposal would be refined during the detailed design phase. Construction activities would be guided by a Construction Environmental Management Plan (CEMP) to ensure that works are located within the specified works area and are completed to incorporate all safeguards described in the Review of Environmental Factors (REF). The proposal is expected to involve the following general work methodology:

- Pre-construction identification and marking of sensitive areas as identified in this REF, the CEMP and relevant sub plans
- Installation of temporary erosion, sediment and water quality controls
- Establishment of permanent and temporary fencing, work compounds and access
- Installation of traffic controls
- Marking of trees requiring clearing
- Clearing of vegetation
- Stripping, stockpiling and management of topsoil
- Staged demolition of existing pavement and road structures in a manner that allows for continued traffic flow along and across the Great Western Highway
- Property adjustments such as fencing
- Utility adjustments
- Earthworks
- New drainage works and relocation of an unnamed tributary of Boyd Creek
- Sub-grade preparation and pavement works
- Topsoil rehabilitation and revegetation of batters
- Rehabilitation of temporary construction compounds and stockpile sites
- Landscaping
- Line marking and signposting
- Installation of lighting
- Finishing works, removal of temporary on-site management controls and opening to traffic.

### **4.2 Construction program**

The proposed construction program is as follows:

- Finalise acquisition or gain access arrangements for construction (by February 2020)
- Utility adjustments (February 2020 to May 2020)
- Establishment and construction of eastbound carriageway (March 2020 to December 2020)
- Construction of westbound carriageway (January 2021 to August 2021)
- Total duration of physical works about 18 months.

### 4.3 Construction hours

As discussed in Section 4.2, construction is expected to commence in February 2020 and take about 18 months to complete, weather permitting. Working hours during the construction phase are likely to be:

- Monday to Friday: 7am to 6pm
- Saturday: 8am to 1pm
- Sunday and Public Holidays: no work.

However, there is potential for work to be carried out outside of the standard working hours to minimise traffic impacts, including:

- Construction and utility adjustment works requiring road occupancy
- Construction of tie-ins with adjoining sections
- Placement of asphalt wearing course
- Intersection construction activities.

Should any out of hours work be required, works would be carried out in line with procedures contained in the then RTA Environmental Noise Management Manual 2001, “Practice Note vii – Roadworks Outside of Normal Working Hours” and the Interim Construction Noise Guidelines (DECC 2009). This would include notifying the local community of any works planned to be carried out outside standard construction hours.

### 4.4 Construction sites

Up to four sites have been identified for use as a construction compound and/or stockpiling materials as shown in Figure 1-1 to Figure 1-3 and Table 4-1.

All construction sites would have direct access to and from Great Western Highway

**Table 4-1: Proposed construction sites**

Site	Area (square metres)	Address	Description
1	7,268	5475 Sydney Road, Raglan	Former timber mill property
2	12,810	35 Sydney Road, Raglan	Rear of Raglan BP service station
	10,260	45 Sydney Road, Raglan	Rear of Raglan BP service station
3	3,375	Sydney Road, Raglan	Existing Roads and Maritime stockpile site
	25,880	P J Moodie Memorial Drive, Raglan	Part use of Bathurst airport land adjacent to existing Roads and Maritime stockpile site
4	17,190	61 Sydney Road, Raglan	Former plant nursery property

### 4.5 Construction vehicle movements

During normal working days about 20 to 30 heavy vehicle and 40 to 50 light vehicle movements per day would be required to and from site. Heavy vehicles would be used for the delivery of construction material to site and the removal of material from the site to temporary stockpile sites or other areas within the proposal area. The number of heavy vehicle movements may increase during the early



phase of construction when the bulk of earthworks are carried out. Truck movements would again increase after traffic is switched to the newly constructed road and the demolition of the existing pavement and subgrade preparation begins. Construction would be staged to allow the Great Western Highway to remain open to traffic during the construction period with only partial lane closures required.

Construction traffic would generally use the Great Western Highway to get to and from the proposal. Major quarries, concrete plants and other materials sources are accessible from the Great Western Highway in either direction. Construction traffic may also need to use Littlebourne Street if the asphaltting plant located in the industrial area to the south is to be used.

Impacts on the performance of the road network during construction is anticipated to be minor, given the low number of construction vehicles generated and construction sites directly accessed to and from Great Western Highway.

#### **4.6 Property access and parking**

During construction, access would be maintained for residents, businesses and through-traffic. In the case of properties adjoining the proposal, temporary driveways would be provided as required. Final driveway configurations with appropriate kerbs would be installed as part of the pavement construction.

Due to the confined nature of the proposal, on-street parking along the Great Western Highway would generally be prohibited during construction.

During the detailed design phase, the construction process would be further developed to incorporate alternate arrangements such as centralised shared parking areas, by leasing vacant land or similar, for those areas where off-street parking is not feasible.

#### **4.7 Traffic management, control and signage**

Where possible, construction would be programmed to minimise impact on traffic using the local and regional road network.

Standard traffic management measures would be used to minimise traffic impacts expected during construction. These measures would be identified in a Construction Traffic Management Plan (CTMP) for the proposal and would be developed in accordance with the Roads and Maritime's Traffic Control at Work Sites Manual (RTA 2010) and Roads and Maritime Specification G10 – Traffic Management and Council requirements.

The CTMP would provide details of traffic management to be implemented during construction. Impact to the public (including traffic, pedestrians and cyclists) during construction would be managed through the CTMP and detailed pedestrian traffic control plans. During all stages of construction, access to businesses and to work areas would be maintained.

#### **4.8 Public transport network**

Bus stops along Great Western Highway would be maintained during construction. If these bus stops are required to be relocated, they would be relocated to the closest practical alternative to minimise disruption to bus customers.

#### **4.9 Active transport network**

No impacts to the active transport networks are anticipated during construction.

## **5. Operational impact assessment**

### **5.1 Future road network**

The proposal includes modifications to the intersections previously modelled in Sidra, as shown in Section 3.1.1 . These modifications are:

- Great Western Highway / Napoleon Street (Figure 5-1)
  - New north leg providing access to Cutler's property
  - Additional eastbound approach and departure lane
  - Additional westbound departure lane
  - Increased right turn bay length in the eastbound direction
  - Increased left turn bay length in the westbound direction.
- Great Western Highway / Eugenie Street / P J Moodie Memorial Drive (Figure 5-2)
  - Conversion of the intersection from priority-control to traffic signals
  - Additional westbound approach and departure lane
  - New dedicated left turn bay in the westbound direction
  - Increase turn bay lengths on the eastbound and westbound approaches
  - New line-marking allowing for two lanes at the stop line on the Eugenie Street approach and the PJ Moodie Memorial Drive approach

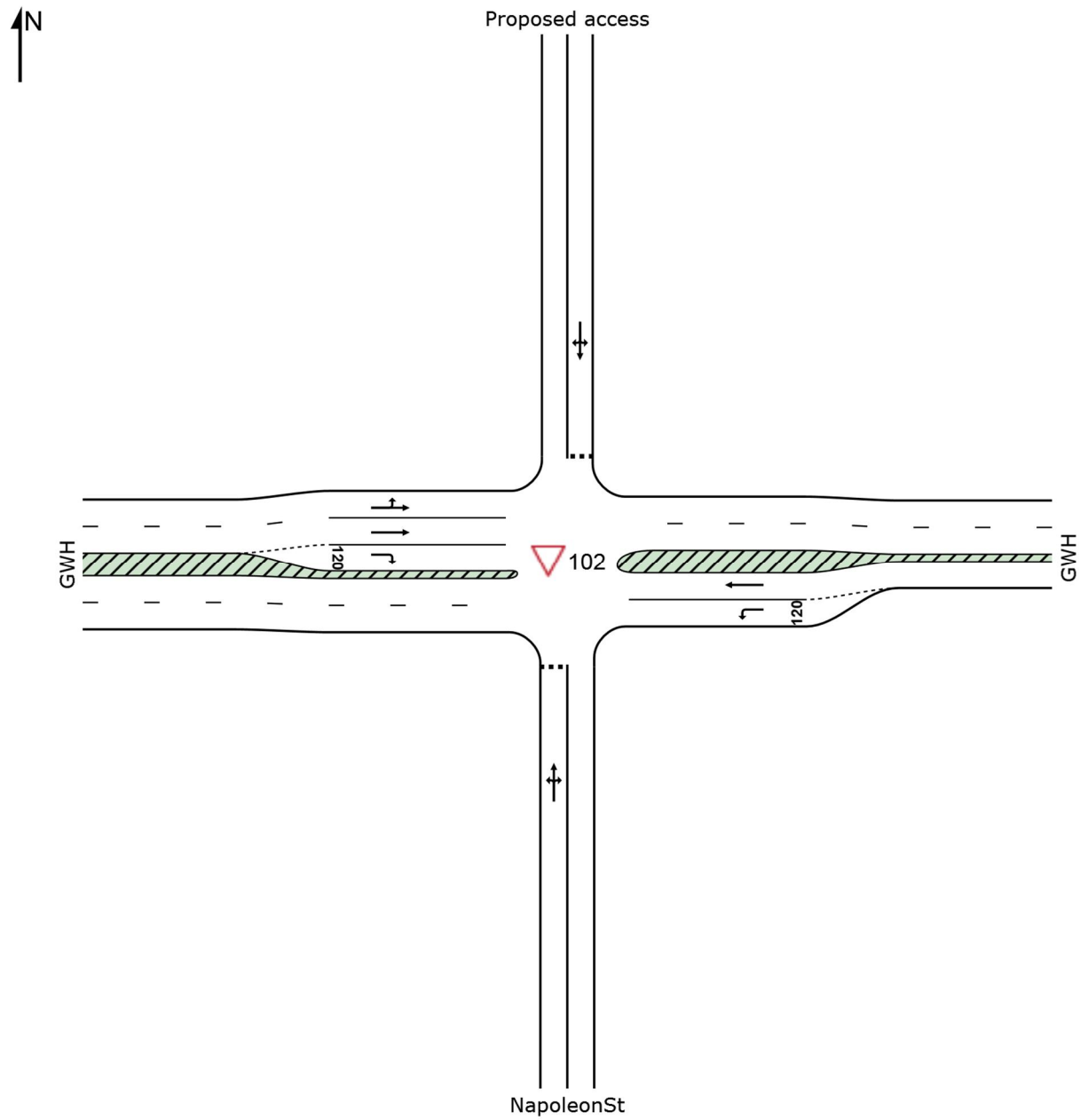
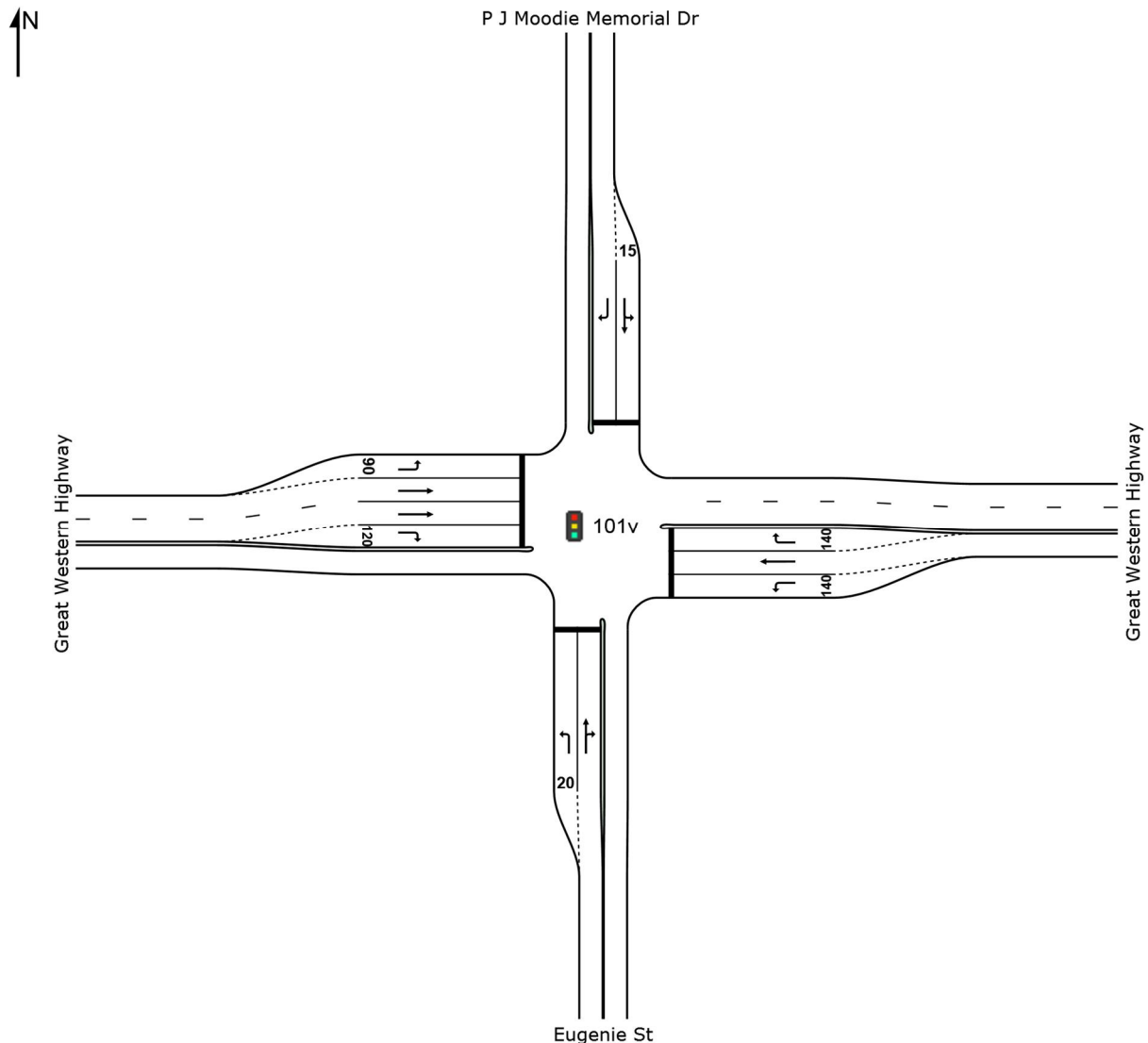


Figure 5-1: Modelled future intersection layout – Great Western Highway / Napoleon Street





**Figure 5-2: Modelled future intersection layout – Great Western Highway / Eugenie Street / P J Moodie Memorial Drive**

### 5.1.1 Future intersection performance

The performance of the Great Western Highway / Napoleon Street and Great Western Highway / Eugenie Street / P J Moodie Memorial Drive intersections for the 2028 and 2038 future years are shown in Table 5-1 and Table 5-2, respectively.

Sidra outputs for the future intersections modelled are provided in Appendix B.

Modelled future intersection performance with and without the proposal indicates the following:

- The Great Western Highway / Napoleon Street intersection would operate at Level of Service F by 2038. However, this is due to the intersection operating under priority control, where the performance of the worst movement is reported for the overall intersection. The poor performance at this intersection corresponds to the right turn out of Napoleon Street or the property access, where vehicles give-way to the majority of movements at the intersection. The forecast number of vehicles performing these movements (four or less) is very low and therefore

overall traffic impacts are anticipated to be minor, as evident in short queue lengths on all approaches (up to 15 metres) and available spare capacity (degree of saturation of 0.53 or less)

- The Great Western Highway / Eugenie Street / P J Moodie Memorial Drive intersection would operate at Level of Service A in 2028 and 2038, with reduced average vehicle delays. This is due to the introduction of traffic signals, improving the overall performance of the intersection.

**Table 5-1: 2028 modelled peak hour intersection performance during operation**

Intersection and peak hour	2028 without proposal				2028 with proposal					
	Degree of Saturation	Average delay (seconds per vehicle)	Level of service	95 <sup>th</sup> percentile queue length (metres)	Degree of Saturation	Average delay (seconds per vehicle)	Level of service	95 <sup>th</sup> percentile queue length (metres)		
<b>Great Western Highway / Napoleon Street</b>										
Morning	0.30	19	B	NB	5	0.30	48	D	NB	10
				EB	5				EB	5
				SB	-				SB	<5
				WB	<5				WB	<5
Evening	0.32	49	D	NB	5	0.32	>100	F	NB	10
				EB	5				EB	5
				SB	-				SB	<5
				WB	<5				WB	<5
<b>Great Western Highway / Eugenie Street / P J Moodie Memorial Drive</b>										
Morning	0.29	33	C	NB	<5	0.40	10	A	NB	15
				EB	<5				EB	25
				SB	<5				SB	<5
				WB	<5				WB	90
Evening	0.29	45	D	NB	<5	0.40	12	A	NB	10
				EB	<5				EB	35
				SB	5				SB	10
				WB	<5				WB	90

**Table 5-2: 2038 modelled peak hour intersection performance during operation**

Intersection and peak hour	2038 without proposal				2038 with proposal			
	Degree of Saturation	Average delay (seconds per vehicle)	Level of service	95 <sup>th</sup> percentile queue length (metres)	Degree of Saturation	Average delay (seconds per vehicle)	Level of service	95 <sup>th</sup> percentile queue length (metres)
<b>Great Western Highway / Napoleon Street</b>								

Intersection and peak hour	2038 without proposal				2038 with proposal					
	Degree of Saturation	Average delay (seconds per vehicle)	Level of service	95 <sup>th</sup> percentile queue length (metres)	Degree of Saturation	Average delay (seconds per vehicle)	Level of service	95 <sup>th</sup> percentile queue length (metres)		
Morning	0.35	26	B	NB	10	0.37	82	F	NB	10
				EB	5				EB	5
				SB	-				SB	<5
				WB	<5				WB	<5
Evening	0.37	72	F	NB	10	0.53	>100	F	NB	15
				EB	10				EB	10
				SB	-				SB	<5
				WB	<5				WB	<5
<b>Great Western Highway / Eugenie Street / P J Moodie Memorial Drive</b>										
Morning	0.34	47	D	NB	<5	0.46	10	A	NB	15
				EB	<5				EB	25
				SB	<5				SB	<5
				WB	<5				WB	110
Evening	0.53	85	F	NB	<5	0.47	12	A	NB	10
				EB	<5				EB	40
				SB	10				SB	15
				WB	<5				WB	115

### 5.1.2 Local road access

All existing movements between Great Western Highway and intersecting local roads such as Napoleon Street, Locke Street, Eugenie Street, P J Moodie Memorial Drive and Ceramic Avenue would be maintained. Access to Nile Street would be limited to left-in, left-out due to the raised median proposed along Great Western Highway between Eugenie Street and Napoleon Street. Vehicles that currently perform a right-in or right-out, to and from Nile Street would be required to use the Great Western Highway / Eugenie Street / P J Moodie Memorial Drive intersection, resulting in an additional travel distance of up to 650 metres.

### 5.1.3 Property access

The proposal would change existing access arrangements for properties fronting both sides of Great Western Highway. Table 5-3 provides an overview of existing and future access arrangements due to the proposal.



**Table 5-3: Property access arrangements**

Property	Existing access	Future access	Reason for change in access
Properties on the southern side of Great Western Highway	Left-in, left-out, right-in, right-out	Left-in, left-out	Installation of a raised median along Great Western Highway between Eugenie Street and Napoleon Street
Properties on the southern side of Great Western Highway	Left-in, left-out, right-in, right-out	Left-in, left-out	Raised median along Great Western Highway between Eugenie Street and Napoleon Street
Cutler property	Left-in, left-out, right-in, right-out	Left-in, left-out, right-out	Relocating property access to the intersection of Great Western Highway / Napoleon Street by providing a new north leg
Lenehan property	Left-in, left-out, right-in, right-out	Left-in, left-out, right-in	Relocating property access to a location between the two existing access locations and providing a right-turn bay and U-turn facility
Jackson property	Left-in, left-out, right-in, right-out	Left-in, left-out	Installation of a short median barrier opposite the existing access
Tigwych Pty Ltd property	Left-in, left-out, right-in, right-out	Left-in, left-out	Painted median opposite property access
Bathurst Sheds	Left-in, left-out, right-in, right-out	Left-in, left-out, right-in	Installation of a raised median opposite the existing access

The potential increase in travel distance for existing access arrangements that would not be provided by the proposal include the following:

- Properties on the southern side of Great Western Highway: vehicles would travel via Napoleon Street, Nile Street, Eugenie Street or Christie Street to perform an equivalent right-in or right-out, resulting in a potential increase in travel distance up to two kilometres
- Properties on the northern side of Great Western Highway: vehicles would travel via Napoleon Street, Nile Street, Eugenie Street, Christie Street or use the U-turn facility on Eugenie Street in the southbound direction to perform an equivalent right-in or right-out, resulting in a potential increase in travel distance up to 1.5 kilometres
- Cutler property: vehicles would use Napoleon Street, Nile Street, Eugenie Street or Christie Street to perform an equivalent right-in, resulting in a potential increase in travel distance of up to 550 metres
- Lenehan property: vehicles would use the roundabout at Ashworth Drive to perform an equivalent right-out, resulting in a potential increase in travel distance of up to 2.7 kilometres
- Jackson property: vehicles would use the proposed U-turn facility at the Lenehan property to perform an equivalent right-in, and use the roundabout at Ashworth Drive to perform an equivalent right-out, resulting in a potential increase in travel distance of up to 220 metres and 2.4 kilometres, respectively

- Tigwyich Pty Ltd property: vehicles would use the roundabout at Ashworth Drive to perform an equivalent right-in, and use the proposed U-turn facility at the Lenehan property to perform an equivalent right-out, resulting in a potential increase in travel distance of up to two kilometres and 560 metres, respectively
- Bathurst Sheds: vehicles would use the roundabout at Ashworth Drive to perform an equivalent right-out, resulting in a potential increase in travel distance of up to 1.2 kilometres.

### 5.2 Public transport network

No impact to the operation of bus services are anticipated with the proposal.

The three bus stops on Great Western Highway near Nelson Street and Nile Street are currently located in a partially sealed shoulder. With the proposal, these bus stops would be provided in a 3.5 metre to 5.0 metre sealed shoulder, improving overall safety.

### 5.3 Active transport network

A shared user path is proposed along the southern side of Great Western Highway from Eugenie Street to about 250 metres west of Napoleon Street. At this location, the shared user path continues along the northern side of Great Western Highway to Ashworth Drive. A pedestrian refuge island is proposed where the shared user path switches sides, allowing pedestrian and cyclists to safely cross the road. The new shared user paths and associated infrastructure would improve pedestrian and cyclist amenity and enhance the overall active transport network.

## 6. Safeguards and mitigation measures

Safeguards and mitigation measures are described in Table 6-1.

**Table 6-1: Safeguards and mitigation measures**

Impact	Safeguard	Responsibility	Timing
Traffic (construction)	A Construction Traffic Management Plan (CTMP) will be prepared and implemented as part of the Construction Environmental Management Plan (CEMP). The CTMP will be prepared in accordance with the <i>Roads and Maritime Traffic Control at Work Sites Manual</i> (RTA, 2010) and <i>QA Specification G10 Control of Traffic</i> (Roads and Maritime, 2008)	Construction contractor	Detailed design / pre-construction
Traffic (construction)	Directional signage and line marking will be used to direct and guide drivers and pedestrians past construction sites and on the surrounding road network. This would be supplemented by Variable Message Signs to advise drivers of potential delays, traffic	Construction contractor	Construction

Impact	Safeguard	Responsibility	Timing
	diversions, speed restrictions, or alternate routes.		
Bus operations (construction)	Bus operations are not expected to be impacted during construction. However, in the unlikely event that any changes are required, commuters and the bus operator are to be notified in advance.	Construction contractor	Construction
Property access (operation)	A local property access strategy will be developed that details new access arrangements. In addition, adequate notification to affected property owners will be provided.	Roads and Maritime	Pre-opening



**Appendix A Sidra model outputs - existing**

# MOVEMENT SUMMARY

Site: 102 [GWH - Napoleon St - 2018 AM]

Napoleon St 2018  
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: NapoleonSt											
1	L2	144	1.5	0.186	7.4	LOS A	0.7	4.8	0.51	0.74	51.7
3	R2	1	0.0	0.003	14.3	LOS A	0.0	0.1	0.72	0.72	47.3
Approach		145	1.4	0.186	7.4	LOS A	0.7	4.8	0.51	0.74	51.7
East: GWH											
4	L2	5	0.0	0.003	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
5	T1	459	12.4	0.252	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
Approach		464	12.2	0.252	0.1	NA	0.0	0.0	0.00	0.01	79.7
West: GWH											
11	T1	274	19.2	0.156	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	84	7.5	0.107	9.9	LOS A	0.4	3.0	0.52	0.75	52.4
Approach		358	16.5	0.156	2.4	NA	0.4	3.0	0.12	0.18	71.1
All Vehicles		967	12.2	0.252	2.0	NA	0.7	4.8	0.12	0.18	70.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).  
 Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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# MOVEMENT SUMMARY

Site: 102 [GWH - Napoleon St - 2018 PM]

Napoleon St 2018  
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows		Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
		Total veh/h	HV %				Vehicles veh	Distance m			
South: NapoleonSt											
1	L2	112	5.7	0.155	7.7	LOS A	0.6	4.1	0.52	0.75	50.6
3	R2	3	33.3	0.024	30.5	LOS C	0.1	0.7	0.86	0.94	35.4
Approach		115	6.4	0.155	8.4	LOS A	0.6	4.1	0.53	0.75	50.0
East: GWH											
4	L2	6	0.0	0.003	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
5	T1	488	11.6	0.267	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
Approach		495	11.5	0.267	0.1	NA	0.0	0.0	0.00	0.01	79.7
West: GWH											
11	T1	444	9.7	0.240	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	113	7.5	0.149	10.3	LOS A	0.6	4.3	0.54	0.79	52.1
Approach		557	9.3	0.240	2.1	NA	0.6	4.3	0.11	0.16	72.1
All Vehicles		1166	9.9	0.267	1.9	NA	0.6	4.3	0.10	0.15	71.9

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

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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# MOVEMENT SUMMARY

Site: 101 [GWH - Eugenie St - 2018 AM]

New Site  
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Eugenie St											
1	L2	28	7.4	0.058	7.0	LOS A	0.2	1.4	0.52	0.70	43.4
2	T1	1	0.0	0.058	14.9	LOS B	0.2	1.4	0.52	0.70	51.4
3	R2	4	0.0	0.058	18.1	LOS B	0.2	1.4	0.52	0.70	52.7
Approach		34	6.3	0.058	8.7	LOS A	0.2	1.4	0.52	0.70	45.1
East: Great Western Highway											
4	L2	4	0.0	0.239	7.0	LOS A	0.0	0.0	0.00	0.01	74.9
5	T1	427	12.6	0.239	0.0	LOS A	0.0	0.0	0.00	0.01	79.7
6	R2	2	0.0	0.002	7.7	LOS A	0.0	0.1	0.36	0.58	64.9
Approach		434	12.4	0.239	0.1	NA	0.0	0.1	0.00	0.01	79.5
North: P J Moodie Memorial Dr											
7	L2	1	0.0	0.039	8.1	LOS A	0.1	1.0	0.73	0.86	53.6
8	T1	1	0.0	0.039	17.1	LOS B	0.1	1.0	0.73	0.86	45.2
9	R2	6	16.7	0.039	24.8	LOS B	0.1	1.0	0.73	0.86	43.6
Approach		8	12.5	0.039	21.7	LOS B	0.1	1.0	0.73	0.86	45.4
West: Great Western Highway											
10	L2	7	0.0	0.004	6.9	LOS A	0.0	0.0	0.00	0.63	60.3
11	T1	258	21.2	0.150	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	7	0.0	0.006	8.2	LOS A	0.0	0.2	0.47	0.62	45.8
Approach		273	20.1	0.150	0.4	NA	0.0	0.2	0.01	0.03	78.0
All Vehicles		748	14.9	0.239	0.9	NA	0.2	1.4	0.04	0.06	75.8

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

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

# MOVEMENT SUMMARY

Site: 101 [GWH - Eugenie St - 2018 PM]

New Site  
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		per veh	km/h
South: Eugenie St											
1	L2	19	11.1	0.042	7.1	LOS A	0.1	1.1	0.54	0.69	42.7
2	T1	1	0.0	0.042	19.8	LOS B	0.1	1.1	0.54	0.69	51.0
3	R2	2	0.0	0.042	23.5	LOS B	0.1	1.1	0.54	0.69	52.3
Approach		22	9.5	0.042	9.3	LOS A	0.1	1.1	0.54	0.69	44.3
East: Great Western Highway											
4	L2	3	0.0	0.240	7.0	LOS A	0.0	0.0	0.00	0.00	74.9
5	T1	433	11.7	0.240	0.0	LOS A	0.0	0.0	0.00	0.00	79.8
6	R2	1	0.0	0.001	8.4	LOS A	0.0	0.0	0.45	0.59	64.4
Approach		437	11.6	0.240	0.1	NA	0.0	0.0	0.00	0.01	79.7
North: P J Moodie Memorial Dr											
7	L2	1	0.0	0.154	8.8	LOS A	0.5	3.4	0.82	0.93	50.0
8	T1	1	0.0	0.154	22.4	LOS B	0.5	3.4	0.82	0.93	42.4
9	R2	24	0.0	0.154	27.9	LOS B	0.5	3.4	0.82	0.93	40.8
Approach		26	0.0	0.154	26.9	LOS B	0.5	3.4	0.82	0.93	41.3
West: Great Western Highway											
10	L2	27	3.8	0.015	7.0	LOS A	0.0	0.0	0.00	0.63	58.7
11	T1	383	12.1	0.212	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	35	3.0	0.031	8.4	LOS A	0.1	0.9	0.48	0.67	45.6
Approach		445	10.9	0.212	1.1	NA	0.1	0.9	0.04	0.09	74.6
All Vehicles		931	10.9	0.240	1.6	NA	0.5	3.4	0.05	0.09	74.1

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

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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**Appendix B Sidra model outputs - future**

# MOVEMENT SUMMARY

▽ Site: 102 [GWH - Napoleon St - 2028 AM - Base]

Napoleon St 2018  
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows		Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	
		Total veh/h	HV %				Vehicles veh	Distance m				
South: NapoleonSt												
1	L2	173	1.2	0.255	8.6	LOS A	1.0	7.0	0.57	0.81	50.9	
3	R2	1	0.0	0.005	19.1	LOS B	0.0	0.1	0.80	0.80	44.5	
Approach		174	1.2	0.255	8.7	LOS A	1.0	7.0	0.57	0.81	50.9	
East: GWH												
4	L2	6	0.0	0.003	6.9	LOS A	0.0	0.0	0.00	0.63	65.4	
5	T1	551	12.4	0.302	0.0	LOS A	0.0	0.0	0.00	0.00	79.9	
Approach		557	12.3	0.302	0.1	NA	0.0	0.0	0.00	0.01	79.7	
West: GWH												
11	T1	328	19.2	0.188	0.0	LOS A	0.0	0.0	0.00	0.00	79.9	
12	R2	101	7.3	0.148	10.9	LOS A	0.6	4.2	0.57	0.82	51.7	
Approach		429	16.4	0.188	2.6	NA	0.6	4.2	0.13	0.19	70.8	
All Vehicles		1160	12.2	0.302	2.3	NA	1.0	7.0	0.14	0.20	70.4	

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

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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# MOVEMENT SUMMARY

▽ Site: 102 [GWH - Napoleon St - 2028 PM - Base]

Napoleon St 2018  
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows		Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
		Total veh/h	HV %				Vehicles veh	Distance m			
South: NapoleonSt											
1	L2	134	5.5	0.217	9.0	LOS A	0.8	5.7	0.58	0.81	49.8
3	R2	3	33.3	0.041	49.0	LOS D	0.1	1.1	0.92	0.96	30.0
Approach		137	6.2	0.217	9.9	LOS A	0.8	5.7	0.59	0.81	49.0
East: GWH											
4	L2	7	0.0	0.004	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
5	T1	586	11.7	0.320	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
Approach		594	11.5	0.320	0.1	NA	0.0	0.0	0.00	0.01	79.6
West: GWH											
11	T1	533	9.7	0.287	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	136	7.8	0.211	11.5	LOS A	0.8	6.1	0.60	0.85	51.2
Approach		668	9.3	0.287	2.4	NA	0.8	6.1	0.12	0.17	71.7
All Vehicles		1399	9.9	0.320	2.2	NA	0.8	6.1	0.12	0.17	71.5

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

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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# MOVEMENT SUMMARY

▽ Site: 102 [GWH - Napoleon St - 2038 AM - Base]

Napoleon St 2018  
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows		Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	
		Total veh/h	HV %				Vehicles veh	Distance m				
South: NapoleonSt												
1	L2	202	1.6	0.350	10.6	LOS A	1.5	10.7	0.66	0.90	49.5	
3	R2	1	0.0	0.007	26.3	LOS B	0.0	0.1	0.86	0.88	40.9	
Approach		203	1.6	0.350	10.7	LOS A	1.5	10.7	0.67	0.90	49.4	
East: GWH												
4	L2	7	0.0	0.004	6.9	LOS A	0.0	0.0	0.00	0.63	65.4	
5	T1	643	12.4	0.353	0.0	LOS A	0.0	0.0	0.00	0.00	79.8	
Approach		651	12.3	0.353	0.1	NA	0.0	0.0	0.00	0.01	79.6	
West: GWH												
11	T1	383	19.2	0.219	0.0	LOS A	0.0	0.0	0.00	0.00	79.9	
12	R2	118	7.1	0.202	12.2	LOS A	0.8	5.6	0.63	0.86	50.7	
Approach		501	16.4	0.219	2.9	NA	0.8	5.6	0.15	0.20	70.4	
All Vehicles		1355	12.2	0.353	2.7	NA	1.5	10.7	0.15	0.21	69.8	

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

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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\Raglan SIDRA models - REF Revision 1.sip7

# MOVEMENT SUMMARY

Site: 102 [GWH - Napoleon St - 2038 PM - Base]

Napoleon St 2018  
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: NapoleonSt											
1	L2	156	5.4	0.300	11.1	LOS A	1.2	8.7	0.68	0.89	48.4
3	R2	4	25.0	0.083	72.4	LOS F	0.2	2.0	0.95	0.98	25.6
Approach		160	5.9	0.300	12.7	LOS A	1.2	8.7	0.69	0.90	47.3
East: GWH											
4	L2	8	0.0	0.004	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
5	T1	684	11.7	0.374	0.1	LOS A	0.0	0.0	0.00	0.00	79.8
Approach		693	11.6	0.374	0.1	NA	0.0	0.0	0.00	0.01	79.6
West: GWH											
11	T1	621	9.7	0.335	0.0	LOS A	0.0	0.0	0.00	0.00	79.8
12	R2	158	7.3	0.291	13.6	LOS A	1.2	9.1	0.69	0.91	49.8
Approach		779	9.2	0.335	2.8	NA	1.2	9.1	0.14	0.18	71.1
All Vehicles		1632	9.9	0.374	2.6	NA	1.2	9.1	0.13	0.18	70.8

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

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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# MOVEMENT SUMMARY

Site: 101 [GWH - Eugenie St - 2028 AM Base]

New Site  
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Eugenie St											
1	L2	34	6.3	0.085	7.8	LOS A	0.3	2.1	0.58	0.76	42.2
2	T1	1	0.0	0.085	20.3	LOS B	0.3	2.1	0.58	0.76	50.2
3	R2	5	0.0	0.085	25.0	LOS B	0.3	2.1	0.58	0.76	51.6
Approach		40	5.3	0.085	10.4	LOS A	0.3	2.1	0.58	0.76	44.0
East: Great Western Highway											
4	L2	5	0.0	0.287	7.0	LOS A	0.0	0.0	0.00	0.01	74.9
5	T1	513	12.5	0.287	0.0	LOS A	0.0	0.0	0.00	0.01	79.7
6	R2	2	0.0	0.002	8.0	LOS A	0.0	0.1	0.40	0.59	64.8
Approach		520	12.3	0.287	0.1	NA	0.0	0.1	0.00	0.01	79.5
North: P J Moodie Memorial Dr											
7	L2	1	0.0	0.063	8.4	LOS A	0.2	1.5	0.81	0.90	48.7
8	T1	1	0.0	0.063	22.2	LOS B	0.2	1.5	0.81	0.90	41.4
9	R2	7	14.3	0.063	33.2	LOS C	0.2	1.5	0.81	0.90	38.7
Approach		9	11.1	0.063	29.2	LOS C	0.2	1.5	0.81	0.90	40.4
West: Great Western Highway											
10	L2	8	0.0	0.005	6.9	LOS A	0.0	0.0	0.00	0.63	60.3
11	T1	309	21.1	0.180	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	8	0.0	0.008	8.7	LOS A	0.0	0.2	0.51	0.65	45.4
Approach		326	20.0	0.180	0.4	NA	0.0	0.2	0.01	0.03	78.0
All Vehicles		896	14.8	0.287	1.0	NA	0.3	2.1	0.04	0.06	75.6

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

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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# MOVEMENT SUMMARY

Site: 101 [GWH - Eugenie St - 2028 PM Base]

New Site  
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Eugenie St											
1	L2	22	9.5	0.059	7.9	LOS A	0.2	1.4	0.60	0.75	41.5
2	T1	1	0.0	0.059	29.2	LOS C	0.2	1.4	0.60	0.75	49.8
3	R2	2	0.0	0.059	34.7	LOS C	0.2	1.4	0.60	0.75	51.2
Approach		25	8.3	0.059	11.0	LOS A	0.2	1.4	0.60	0.75	43.0
East: Great Western Highway											
4	L2	4	0.0	0.289	7.0	LOS A	0.0	0.0	0.00	0.01	74.9
5	T1	520	11.7	0.289	0.0	LOS A	0.0	0.0	0.00	0.01	79.7
6	R2	1	0.0	0.001	9.0	LOS A	0.0	0.0	0.49	0.61	63.8
Approach		525	11.6	0.289	0.1	NA	0.0	0.0	0.00	0.01	79.6
North: P J Moodie Memorial Dr											
7	L2	1	0.0	0.287	13.4	LOS A	0.9	6.5	0.90	0.99	41.4
8	T1	1	0.0	0.287	35.8	LOS C	0.9	6.5	0.90	0.99	35.5
9	R2	29	0.0	0.287	45.0	LOS D	0.9	6.5	0.90	0.99	32.1
Approach		32	0.0	0.287	43.6	LOS D	0.9	6.5	0.90	0.99	32.6
West: Great Western Highway											
10	L2	33	3.2	0.018	7.0	LOS A	0.0	0.0	0.00	0.63	59.0
11	T1	460	12.1	0.254	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	41	2.6	0.042	8.9	LOS A	0.2	1.2	0.53	0.71	45.2
Approach		534	10.8	0.254	1.1	NA	0.2	1.2	0.04	0.09	74.5
All Vehicles		1116	10.8	0.289	2.1	NA	0.9	6.5	0.06	0.09	73.2

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

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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# MOVEMENT SUMMARY

▽ Site: 101 [GWH - Eugenie St - 2038 AM - Base]

New Site  
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		per veh	km/h
South: Eugenie St											
1	L2	40	7.9	0.129	8.9	LOS A	0.4	3.1	0.68	0.85	40.4
2	T1	1	0.0	0.129	28.5	LOS C	0.4	3.1	0.68	0.85	48.6
3	R2	6	0.0	0.129	35.5	LOS C	0.4	3.1	0.68	0.85	50.0
Approach		47	6.7	0.129	12.8	LOS A	0.4	3.1	0.68	0.85	42.2
East: Great Western Highway											
4	L2	6	0.0	0.335	7.0	LOS A	0.0	0.0	0.00	0.01	74.9
5	T1	598	12.5	0.335	0.1	LOS A	0.0	0.0	0.00	0.01	79.7
6	R2	3	0.0	0.003	8.3	LOS A	0.0	0.1	0.44	0.61	64.5
Approach		607	12.3	0.335	0.2	NA	0.0	0.1	0.00	0.01	79.4
North: P J Moodie Memorial Dr											
7	L2	1	0.0	0.105	8.7	LOS A	0.3	2.3	0.88	0.94	42.6
8	T1	1	0.0	0.105	29.7	LOS C	0.3	2.3	0.88	0.94	36.5
9	R2	8	12.5	0.105	46.6	LOS D	0.3	2.3	0.88	0.94	32.7
Approach		11	10.0	0.105	41.1	LOS C	0.3	2.3	0.88	0.94	34.3
West: Great Western Highway											
10	L2	11	0.0	0.006	6.9	LOS A	0.0	0.0	0.00	0.63	60.3
11	T1	361	21.3	0.211	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	11	0.0	0.012	9.3	LOS A	0.0	0.3	0.55	0.69	44.9
Approach		382	20.1	0.211	0.5	NA	0.0	0.3	0.02	0.04	77.8
All Vehicles		1047	14.9	0.335	1.3	NA	0.4	3.1	0.05	0.07	75.0

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

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

# MOVEMENT SUMMARY

Site: 101 [GWH - Eugenie St - 2038 PM - Base]

New Site  
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		per veh	km/h
South: Eugenie St											
1	L2	26	12.0	0.101	9.1	LOS A	0.3	2.4	0.71	0.86	39.0
2	T1	1	0.0	0.101	44.2	LOS D	0.3	2.4	0.71	0.86	47.3
3	R2	3	0.0	0.101	52.9	LOS D	0.3	2.4	0.71	0.86	48.8
Approach		31	10.3	0.101	14.8	LOS B	0.3	2.4	0.71	0.86	40.6
East: Great Western Highway											
4	L2	4	0.0	0.336	7.0	LOS A	0.0	0.0	0.00	0.00	74.9
5	T1	605	11.7	0.336	0.1	LOS A	0.0	0.0	0.00	0.00	79.7
6	R2	1	0.0	0.001	9.6	LOS A	0.0	0.0	0.53	0.63	63.2
Approach		611	11.6	0.336	0.1	NA	0.0	0.0	0.00	0.01	79.6
North: P J Moodie Memorial Dr											
7	L2	1	0.0	0.526	31.8	LOS C	1.7	12.2	0.96	1.04	29.6
8	T1	1	0.0	0.526	68.0	LOS E	1.7	12.2	0.96	1.04	25.8
9	R2	34	0.0	0.526	84.5	LOS F	1.7	12.2	0.96	1.04	21.4
Approach		36	0.0	0.526	82.5	LOS F	1.7	12.2	0.96	1.04	21.9
West: Great Western Highway											
10	L2	38	2.8	0.021	7.0	LOS A	0.0	0.0	0.00	0.63	59.2
11	T1	537	12.2	0.297	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	48	2.2	0.055	9.6	LOS A	0.2	1.6	0.57	0.76	44.7
Approach		623	10.8	0.297	1.2	NA	0.2	1.6	0.04	0.10	74.4
All Vehicles		1300	10.9	0.526	3.2	NA	1.7	12.2	0.06	0.10	71.0

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

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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# MOVEMENT SUMMARY

Site: 102 [GWH - Napoleon St - 2028 AM - Proposed Access]

Napoleon St 2018  
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed	
		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		per veh	km/h	
South: NapoleonSt												
1	L2	173	1.2	0.270	8.7	LOS A	1.1	7.6	0.58	0.83	50.6	
2	T1	1	0.0	0.270	31.2	LOS C	1.1	7.6	0.58	0.83	47.5	
3	R2	1	0.0	0.270	39.2	LOS C	1.1	7.6	0.58	0.83	50.8	
Approach		175	1.2	0.270	9.0	LOS A	1.1	7.6	0.58	0.83	50.6	
East: GWH												
4	L2	6	0.0	0.003	6.9	LOS A	0.0	0.0	0.00	0.63	65.4	
5	T1	551	12.4	0.302	0.0	LOS A	0.0	0.0	0.00	0.00	79.9	
Approach		557	12.3	0.302	0.1	NA	0.0	0.0	0.00	0.01	79.7	
North: Proposed access												
7	L2	1	0.0	0.021	6.2	LOS A	0.1	0.4	0.71	0.75	40.8	
8	T1	1	0.0	0.021	26.6	LOS B	0.1	0.4	0.71	0.75	41.2	
9	R2	1	0.0	0.021	48.4	LOS D	0.1	0.4	0.71	0.75	40.9	
Approach		3	0.0	0.021	27.1	LOS B	0.1	0.4	0.71	0.75	40.9	
West: GWH												
10	L2	1	0.0	0.094	6.9	LOS A	0.0	0.0	0.00	0.00	74.4	
11	T1	328	19.2	0.094	0.0	LOS A	0.0	0.0	0.00	0.00	79.9	
12	R2	101	7.3	0.148	10.8	LOS A	0.6	4.2	0.57	0.83	51.5	
Approach		431	16.4	0.148	2.6	NA	0.6	4.2	0.13	0.20	70.7	
All Vehicles		1165	12.1	0.302	2.4	NA	1.1	7.6	0.14	0.20	70.1	

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

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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# MOVEMENT SUMMARY

Site: 102 [GWH - Napoleon St - 2028 PM - Proposed Access]

Napoleon St 2018  
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: NapoleonSt											
1	L2	134	5.5	0.318	10.0	LOS A	1.2	9.1	0.67	0.90	47.4
2	T1	1	0.0	0.318	52.0	LOS D	1.2	9.1	0.67	0.90	45.3
3	R2	3	33.3	0.318	120.5	LOS F	1.2	9.1	0.67	0.90	42.7
Approach		138	6.1	0.318	12.8	LOS A	1.2	9.1	0.67	0.90	47.2
East: GWH											
4	L2	7	0.0	0.004	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
5	T1	586	11.7	0.320	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
Approach		594	11.5	0.320	0.1	NA	0.0	0.0	0.00	0.01	79.6
North: Proposed access											
7	L2	1	0.0	0.036	6.6	LOS A	0.1	0.7	0.85	0.83	34.7
8	T1	1	0.0	0.036	44.0	LOS D	0.1	0.7	0.85	0.83	34.9
9	R2	1	0.0	0.036	78.3	LOS F	0.1	0.7	0.85	0.83	34.7
Approach		3	0.0	0.036	43.0	LOS D	0.1	0.7	0.85	0.83	34.8
West: GWH											
10	L2	1	0.0	0.144	7.0	LOS A	0.0	0.0	0.00	0.00	74.5
11	T1	533	9.7	0.144	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	136	7.8	0.211	11.4	LOS A	0.8	6.1	0.60	0.85	51.0
Approach		669	9.3	0.211	2.3	NA	0.8	6.1	0.12	0.17	71.6
All Vehicles		1404	9.9	0.320	2.5	NA	1.2	9.1	0.13	0.18	70.9

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

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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# MOVEMENT SUMMARY

▽ Site: 102 [GWH - Napoleon St - 2038 AM - Proposed Access]

Napoleon St 2018  
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed	
		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		per veh	km/h	
South: NapoleonSt												
1	L2	202	1.6	0.374	10.8	LOS A	1.6	11.7	0.68	0.92	49.0	
2	T1	1	0.0	0.374	48.4	LOS D	1.6	11.7	0.68	0.92	46.2	
3	R2	1	0.0	0.374	62.3	LOS E	1.6	11.7	0.68	0.92	49.2	
Approach		204	1.5	0.374	11.3	LOS A	1.6	11.7	0.68	0.92	49.0	
East: GWH												
4	L2	7	0.0	0.004	6.9	LOS A	0.0	0.0	0.00	0.63	65.4	
5	T1	643	12.4	0.353	0.0	LOS A	0.0	0.0	0.00	0.00	79.8	
Approach		651	12.3	0.353	0.1	NA	0.0	0.0	0.00	0.01	79.6	
North: Proposed access												
7	L2	1	0.0	0.036	6.3	LOS A	0.1	0.7	0.82	0.80	34.8	
8	T1	1	0.0	0.036	38.7	LOS C	0.1	0.7	0.82	0.80	35.1	
9	R2	1	0.0	0.036	82.3	LOS F	0.1	0.7	0.82	0.80	34.9	
Approach		3	0.0	0.036	42.5	LOS C	0.1	0.7	0.82	0.80	34.9	
West: GWH												
10	L2	1	0.0	0.110	6.9	LOS A	0.0	0.0	0.00	0.00	74.5	
11	T1	383	19.2	0.110	0.0	LOS A	0.0	0.0	0.00	0.00	79.9	
12	R2	118	7.1	0.202	12.1	LOS A	0.8	5.6	0.63	0.87	50.6	
Approach		502	16.4	0.202	2.9	NA	0.8	5.6	0.15	0.20	70.3	
All Vehicles		1360	12.2	0.374	2.9	NA	1.6	11.7	0.16	0.22	69.5	

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

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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# MOVEMENT SUMMARY

Site: 102 [GWH - Napoleon St - 2038 PM - Proposed Access]

Napoleon St 2018  
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: NapoleonSt											
1	L2	156	5.4	0.528	15.4	LOS B	2.3	17.2	0.80	1.07	42.8
2	T1	1	0.0	0.528	93.1	LOS F	2.3	17.2	0.80	1.07	41.2
3	R2	4	25.0	0.528	207.2	LOS F	2.3	17.2	0.80	1.07	40.0
Approach		161	5.9	0.528	21.0	LOS B	2.3	17.2	0.80	1.07	42.8
East: GWH											
4	L2	8	0.0	0.004	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
5	T1	684	11.7	0.374	0.1	LOS A	0.0	0.0	0.00	0.00	79.8
Approach		693	11.6	0.374	0.1	NA	0.0	0.0	0.00	0.01	79.6
North: Proposed access											
7	L2	1	0.0	0.070	6.8	LOS A	0.2	1.3	0.92	0.88	26.2
8	T1	1	0.0	0.070	73.2	LOS F	0.2	1.3	0.92	0.88	26.4
9	R2	1	0.0	0.070	151.2	LOS F	0.2	1.3	0.92	0.88	26.2
Approach		3	0.0	0.070	77.1	LOS F	0.2	1.3	0.92	0.88	26.3
West: GWH											
10	L2	1	0.0	0.168	7.0	LOS A	0.0	0.0	0.00	0.00	74.5
11	T1	621	9.7	0.168	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	158	7.3	0.291	13.5	LOS A	1.2	9.1	0.69	0.91	49.6
Approach		780	9.2	0.291	2.8	NA	1.2	9.1	0.14	0.19	71.1
All Vehicles		1637	9.8	0.528	3.6	NA	2.3	17.2	0.15	0.20	69.4

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

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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# MOVEMENT SUMMARY

 **Site: 101v [GWH - Eugenie St - 2028 AM - Proposed signalised]**

New Site

Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed	
		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		per veh	km/h	
South: Eugenie St												
1	L2	34	6.3	0.103	48.7	LOS D	1.6	12.2	0.87	0.71	25.6	
2	T1	1	0.0	0.053	58.5	LOS E	0.4	2.5	0.96	0.65	29.9	
3	R2	5	0.0	0.053	63.0	LOS E	0.4	2.5	0.96	0.65	31.0	
Approach		40	5.3	0.103	50.9	LOS D	1.6	12.2	0.88	0.70	26.7	
East: Great Western Highway												
4	L2	5	0.0	0.004	11.9	LOS A	0.1	0.6	0.29	0.65	52.6	
5	T1	513	12.5	0.397	7.1	LOS A	11.6	90.2	0.43	0.38	66.7	
6	R2	2	0.0	0.017	64.5	LOS E	0.1	0.8	0.95	0.62	34.0	
Approach		520	12.3	0.397	7.4	LOS A	11.6	90.2	0.43	0.39	66.1	
North: P J Moodie Memorial Dr												
7	L2	1	0.0	0.013	61.9	LOS E	0.1	0.8	0.94	0.61	35.4	
8	T1	1	0.0	0.013	58.3	LOS E	0.1	0.8	0.94	0.61	30.7	
9	R2	7	14.3	0.077	67.8	LOS E	0.4	3.4	0.97	0.66	24.4	
Approach		9	11.1	0.077	66.1	LOS E	0.4	3.4	0.96	0.65	26.5	
West: Great Western Highway												
10	L2	8	0.0	0.006	12.0	LOS A	0.1	0.9	0.29	0.65	53.8	
11	T1	309	21.1	0.126	5.6	LOS A	2.8	22.7	0.33	0.28	69.2	
12	R2	8	0.0	0.068	65.3	LOS E	0.5	3.4	0.96	0.67	22.5	
Approach		326	20.0	0.126	7.3	LOS A	2.8	22.7	0.35	0.30	65.7	
All Vehicles		896	14.8	0.397	9.9	LOS A	11.6	90.2	0.42	0.37	61.2	

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

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

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

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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# MOVEMENT SUMMARY

 Site: 101v [GWH - Eugenie St - 2028 PM - Proposed signalised]

New Site

Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed	
		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		per veh	km/h	
South: Eugenie St												
1	L2	22	9.5	0.069	48.4	LOS D	1.1	8.1	0.86	0.70	25.6	
2	T1	1	0.0	0.027	58.0	LOS E	0.2	1.2	0.96	0.62	30.2	
3	R2	2	0.0	0.027	62.6	LOS E	0.2	1.2	0.96	0.62	31.3	
Approach		25	8.3	0.069	50.0	LOS D	1.1	8.1	0.87	0.69	26.5	
East: Great Western Highway												
4	L2	4	0.0	0.003	11.9	LOS A	0.1	0.5	0.29	0.64	52.6	
5	T1	520	11.7	0.400	7.1	LOS A	11.8	91.3	0.43	0.39	66.7	
6	R2	1	0.0	0.009	64.1	LOS E	0.1	0.4	0.95	0.59	34.2	
Approach		525	11.6	0.400	7.3	LOS A	11.8	91.3	0.43	0.39	66.3	
North: P J Moodie Memorial Dr												
7	L2	1	0.0	0.013	61.9	LOS E	0.1	0.8	0.94	0.61	35.4	
8	T1	1	0.0	0.013	58.3	LOS E	0.1	0.8	0.94	0.61	30.7	
9	R2	29	0.0	0.272	68.7	LOS E	1.7	12.2	0.99	0.72	24.4	
Approach		32	0.0	0.272	68.2	LOS E	1.7	12.2	0.99	0.71	25.1	
West: Great Western Highway												
10	L2	33	3.2	0.025	12.1	LOS A	0.5	3.8	0.30	0.67	52.7	
11	T1	460	12.1	0.178	5.8	LOS A	4.3	32.9	0.35	0.30	68.8	
12	R2	41	2.6	0.338	67.6	LOS E	2.4	17.3	0.99	0.74	22.0	
Approach		534	10.8	0.338	10.9	LOS A	4.3	32.9	0.39	0.35	59.2	
All Vehicles		1116	10.8	0.400	11.7	LOS A	11.8	91.3	0.44	0.39	58.6	

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

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

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

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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# MOVEMENT SUMMARY

 Site: 101v [GWH - Eugenie St - 2038 AM - Proposed signalised]

New Site

Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed	
		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		per veh	km/h	
South: Eugenie St												
1	L2	40	7.9	0.124	49.0	LOS D	2.0	14.7	0.87	0.72	25.5	
2	T1	1	0.0	0.062	58.6	LOS E	0.4	2.9	0.96	0.66	29.9	
3	R2	6	0.0	0.062	63.1	LOS E	0.4	2.9	0.96	0.66	30.9	
Approach		47	6.7	0.124	51.1	LOS D	2.0	14.7	0.88	0.71	26.6	
East: Great Western Highway												
4	L2	6	0.0	0.005	11.9	LOS A	0.1	0.7	0.29	0.65	52.6	
5	T1	598	12.5	0.463	7.6	LOS A	14.5	112.7	0.46	0.42	66.0	
6	R2	3	0.0	0.026	64.7	LOS E	0.2	1.2	0.96	0.63	34.0	
Approach		607	12.3	0.463	7.9	LOS A	14.5	112.7	0.46	0.42	65.3	
North: P J Moodie Memorial Dr												
7	L2	1	0.0	0.013	61.9	LOS E	0.1	0.8	0.94	0.61	35.4	
8	T1	1	0.0	0.013	58.3	LOS E	0.1	0.8	0.94	0.61	30.7	
9	R2	8	12.5	0.092	69.0	LOS E	0.5	3.8	0.98	0.67	24.1	
Approach		11	10.0	0.092	67.2	LOS E	0.5	3.8	0.97	0.65	26.1	
West: Great Western Highway												
10	L2	11	0.0	0.008	12.0	LOS A	0.2	1.2	0.30	0.65	53.8	
11	T1	361	21.3	0.147	5.7	LOS A	3.3	27.0	0.34	0.29	69.1	
12	R2	11	0.0	0.085	65.5	LOS E	0.6	4.2	0.97	0.68	22.4	
Approach		382	20.1	0.147	7.5	LOS A	3.3	27.0	0.35	0.31	65.3	
All Vehicles		1047	14.9	0.463	10.3	LOS A	14.5	112.7	0.45	0.39	60.6	

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

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

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

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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# MOVEMENT SUMMARY

 Site: 101v [GWH - Eugenie St - 2038 PM - Proposed signalised]

New Site

Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		per veh	km/h
South: Eugenie St											
1	L2	26	12.0	0.084	48.6	LOS D	1.3	9.9	0.86	0.71	25.5
2	T1	1	0.0	0.036	58.2	LOS E	0.2	1.7	0.96	0.63	30.1
3	R2	3	0.0	0.036	62.8	LOS E	0.2	1.7	0.96	0.63	31.2
Approach		31	10.3	0.084	50.4	LOS D	1.3	9.9	0.87	0.70	26.5
East: Great Western Highway											
4	L2	4	0.0	0.003	11.9	LOS A	0.1	0.5	0.29	0.64	52.6
5	T1	605	11.7	0.466	7.6	LOS A	14.8	113.7	0.46	0.42	65.9
6	R2	1	0.0	0.009	64.1	LOS E	0.1	0.4	0.95	0.59	34.2
Approach		611	11.6	0.466	7.8	LOS A	14.8	113.7	0.46	0.42	65.6
North: P J Moodie Memorial Dr											
7	L2	1	0.0	0.013	61.9	LOS E	0.1	0.8	0.94	0.61	35.4
8	T1	1	0.0	0.013	58.3	LOS E	0.1	0.8	0.94	0.61	30.7
9	R2	34	0.0	0.321	69.2	LOS E	2.0	14.1	0.99	0.73	24.3
Approach		36	0.0	0.321	68.6	LOS E	2.0	14.1	0.99	0.72	24.9
West: Great Western Highway											
10	L2	38	2.8	0.029	12.1	LOS A	0.6	4.5	0.30	0.67	52.8
11	T1	537	12.2	0.207	5.9	LOS A	5.1	39.4	0.36	0.31	68.6
12	R2	48	2.2	0.397	67.9	LOS E	2.9	20.5	1.00	0.74	21.9
Approach		623	10.8	0.397	11.1	LOS A	5.1	39.4	0.40	0.36	59.0
All Vehicles		1300	10.9	0.466	12.0	LOS A	14.8	113.7	0.46	0.41	58.2

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

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

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

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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