86-92 Old Bar Road, Old Bar

Transport Assessment

Prepared for:

Oatrain Pty Ltd

17 July 2023

PROJECT INFORMATION

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Client:	Oatrain Pty Ltd
Project Number:	2218
Prepared By:	JMT Consulting

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1 Introduction

1.1 Background

JMT Consulting was engaged by Enspire Solutions on behalf of Oatrain Pty Ltd to prepare a transport impact assessment to support a Development Application (DA) to MidCoast Council for a residential subdivision project located at 86-92 Old Bar Road, Old Bar.

1.2 Site location

The location of the site is shown in Figure 1 below. The site covers an area of approximately 3.2 hectares and is bounded by Old Bar Road to the north and Noroy Place to the east. Wyden Street is the closest north-south street that runs parallel to the site.

Figure 1 Site location

Image Source: NearMap

1.3 Development description

The development involves the subdivision of the site to facilitate the development of residential dwellings on the site, including:

- 8 torrens title lots
- 55 townhouses
- 23 apartments

The proposed ground floor site plan is shown in Figure 2 below.

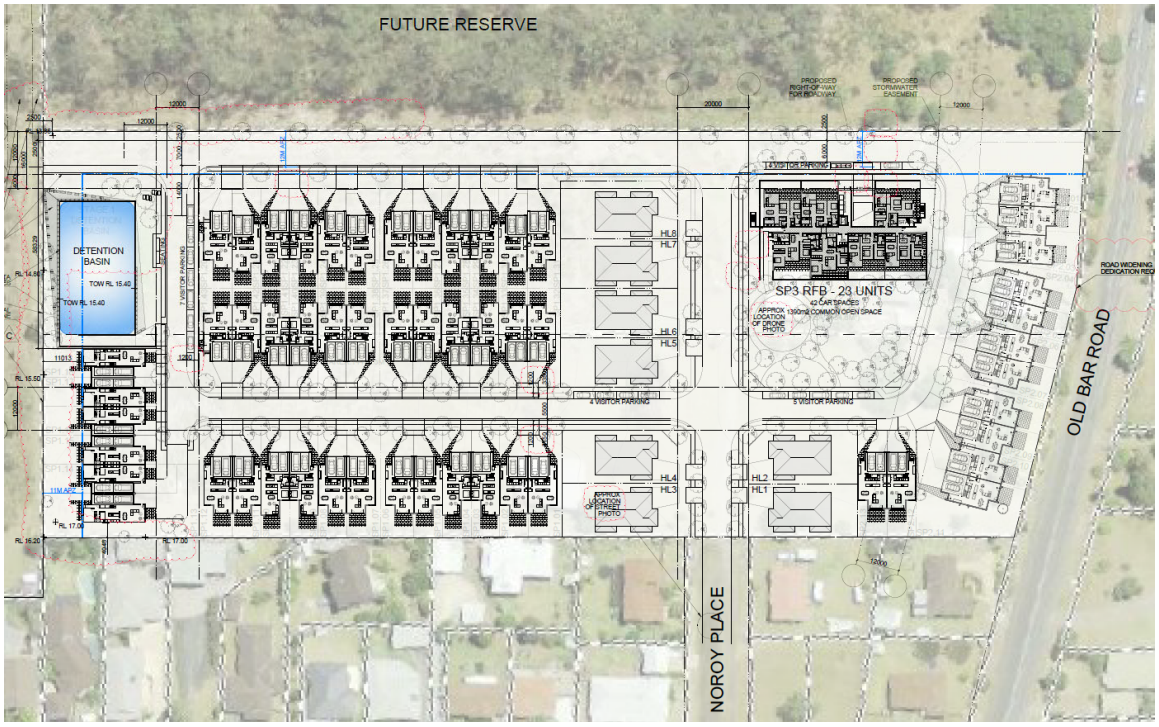


Figure 2 Ground floor site plan

Source: Mijollo International

1.4 Report purpose

The purpose of this report is to describe the traffic and transport implications of the proposal, including:

- Proposed vehicle site access
- Internal site circulation and movements
- Car parking provision for the various residential dwellings
- Future traffic generation and impacts on the adjoining road network

2 Transport Impact Assessment

2.1 Vehicle site access

The proposed vehicle access point into the developed would be via Noroy Place as indicated in Figure 3 below. These proposed access arrangements are generally consistent with current conditions for the site, although the existing Old Bar Road access point would not be utilised as part of the future site development. The removal of the Old Bar Road access point will benefit the overall safety and operation of this street.

The proposed access arrangements meets the objectives of the MidCoast Council Development Control Plan (DCP) by consolidating vehicle access to a single location which in turn reduces the number of conflict points between vehicles and pedestrians.

Figure 3 Proposed vehicle site access

2.2 Internal site circulation

The proposal will include an internal road network to facilitate the safe and efficient movement of vehicles. This road network includes:

- Extension of Noroy Place to the west which will provide for a 7m wide carriageway through to the western boundary of the site. This 7m carriageway width is consistent with the geometric requirements for 'Access Streets' noted in Council's Infrastructure Specifications document
- 5.5m wide private strata development roads throughout the remainder of the development which allows for the safe passing of two vehicles at one time.

The proposed 20m road reserve provides more than sufficient width for safe and efficient vehicle movements in both directions as well as on-street car parking. This includes:

- 4m wide traffic lanes in each direction
- 2.1m wide on-street parking bays
- 2.9m wide verge

We note that Council's DCP requires a 17m wide road reserve for collector roadways and the 20m width proposed is in exceedance of this DCP requirement. Importantly the 20m road reserve exceeds with the width currently in place for the eastern end of Noroy Place as shown in the figure below.

Figure 4 Existing Noroy Place road reserve width

Vehicle swept path analysis has been undertaken to confirm the suitability of the internal road network as illustrated below. These swept paths indicate the ability of a 12.5m Heavy Rigid Vehicle (HRV), similar to a Council waste vehicle, to manoeuvre within the site. This size of vehicle is also equivalent to a fire and rescue service vehicle which will have the ability to travel within the site and attend to emergencies if required.

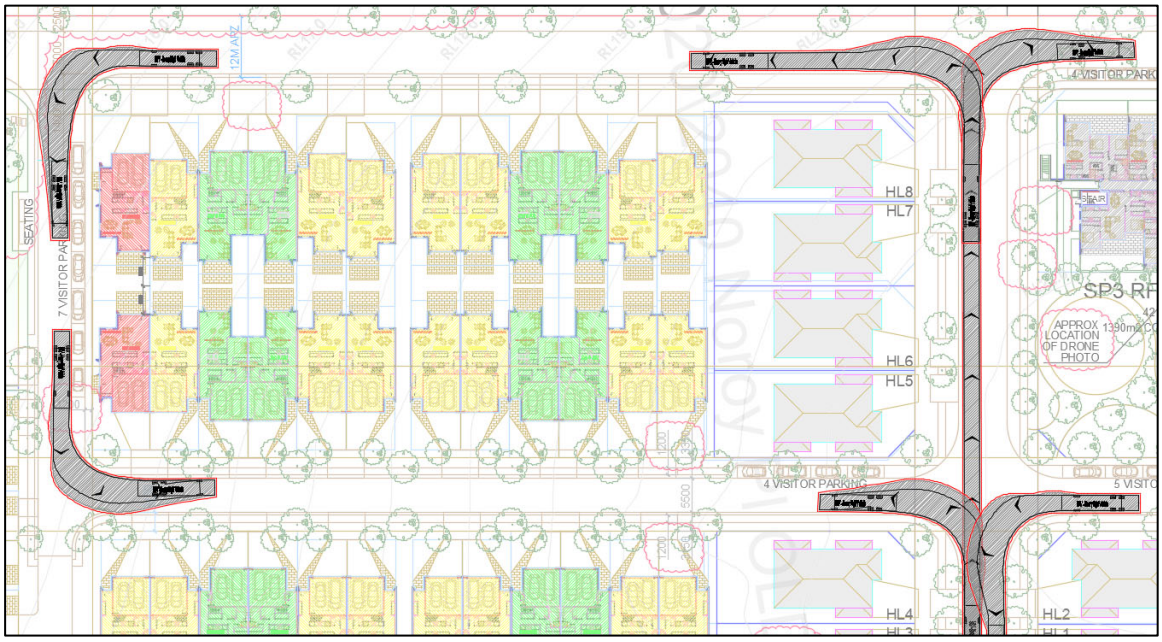


Figure 5 Vehicle swept path analysis – Heavy Rigid Vehicle

Council have raised concern that a Heavy Rigid Vehicle (HRV) must cross the centre-line at certain locations within the site when turning the corner. JMT Consulting has considered this arrangement and detail and would make the following comment:

- Allowance is made for a B99 vehicle to pass a B85 vehicle, as recommended in AUSTROADS and AS2890.1, on all sections of roadway within the site. This passing ability includes around all bends in the internal roadways as shown in Figure 6.

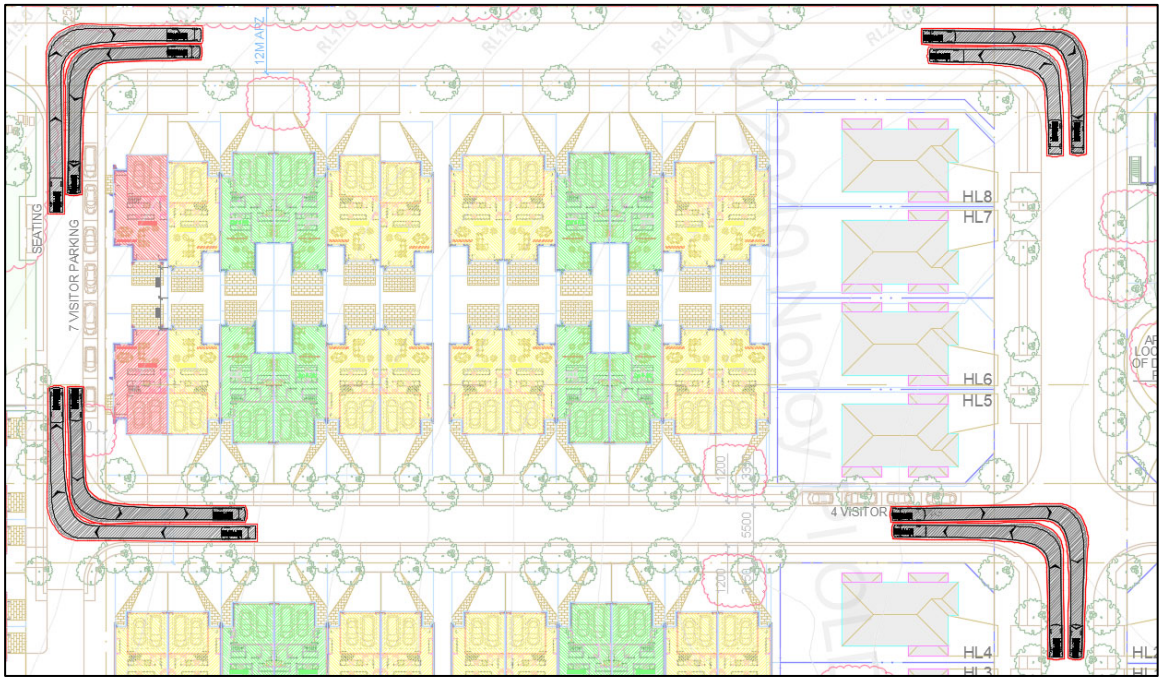


Figure 6 B99 vehicle passing a B85 vehicle

- The road widths available within the site allows for an HRV to pass a B99 vehicle for the majority of the site, particularly the longer straight sections of roadway.
- Drivers will have strong lines of sight to view oncoming vehicles at all points within the site
- Council waste vehicles and typical delivery vehicles are between 8m and 11m in length, whereas an HRV is 12.5m long. Therefore the swept path for an HRV would over-represent the size of vehicle that would utilise the internal roadways within the site.
- Widening the roadway at the bend to accommodate simultaneous passing of a HRV and B99 vehicle would result in a significant amount of additional road width and not represent a suitable allocation of land within the site given the expected traffic flows. Large service vehicles would only be expected to utilise the internal roadways within the site 1-2 times per week, and typically early in the morning in the case of waste vehicles when passenger vehicle movements are lower.
- Neither Australian Standards AS2890.1/2 nor AUSTROADS requires that road or driveways accommodate a large service vehicle (e.g. HRVs) passing passenger vehicles at all points along the roadway.
- The situation where cars give way to large trucks on residential streets is commonplace, including on surrounding streets in the area. Residents are accustomed to this arrangement and adjust their driving behaviour accordingly.

2.3 Car parking provision

The proposed level of car parking for the site is summarised in Table 1 below with reference to the minimum requirements of the MidCoast Council DCP. It can be seen that the proposal provides for on-site car parking in excess of the minimum DCP requirements and therefore will be able to accommodate the future parking demands.

Table 1 Proposed car parking provision

Dwelling type	Number Proposed	DCP car parking rate	Min. parking spaces required	Parking spaces proposed
Torrens title lots	8	2 / dwelling	16	16
Townhouses	55	2 / dwelling	110	110
2 bedroom apartments	23	1.2 / dwelling + 0.2 / dwelling (visitors)	32	42
Total			**158**	**168**

In addition to the above 20 on-street visitor car parking spaces would be delivered as part of the future site development. The location of these on-street car parking spaces is indicated in Figure 7 below.

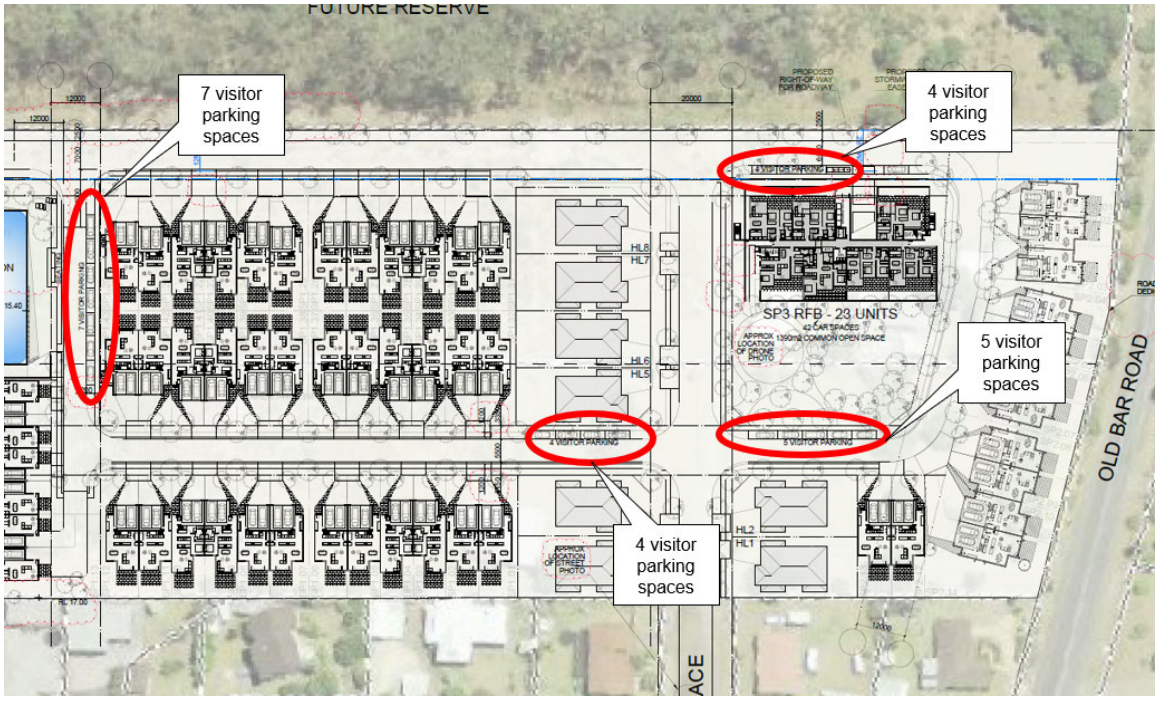


Figure 7 On-street parking locations within the site

The MidCoast Council DCP requires visitor car parking for residential apartment buildings to be provided at the rate of 0.2 spaces per dwelling. Based on the 23 (2 bedroom) apartments proposed a minimum of 5 visitor parking spaces are required. These 5 spaces are provided wholly within Strata Lot 3.

With respect to visitor parking for the townhouses including Strata Lot 1:

- MidCoast Council's DCP does not specify a parking rate for visitors for townhouses, instead only requiring a minimum of 2 spaces per dwelling. This requirement is 2 spaces per dwelling is provided as part of the proposal.
- In addition to the 2 spaces per dwelling, there is also the ability for vehicles (including visitors) to park in the driveways of each townhouse – providing a further 55 spaces for use.
- In addition to the opportunities to park in each driveway, the design provides for a further 20 on-street car parking spaces within the site for use of visitors.

In the above context the visitor car parking provision exceeds Council's minimum requirements and is considered suitable to accommodate expected demands.

2.4 Car park and ramp design

The car park has been designed in accordance with AS2890.1 with respect to ramp gradients, circulation aisle widths and car space dimensions. A review of the plans has found that the car park layout complies with the requirements of AS2890.1-2004 for Class 1 parking areas (aisles minimum 5.8 metres wide with parking spaces 2.4 metres wide by 5.4 metres long and 2.4 metre wide shared zones for accessible spaces). A 5.5m wide ramp (kerb to kerb) is provided which is in accordance with the requirements of AS2890.1.

Accessible parking spaces (including adjacent shared areas) are provided in the basement which has been designed in accordance with AS2890.6.

2.5 Existing traffic movements

Traffic surveys were undertaken on Wednesday 23 March 2022 by Northern Transport Planning and Engineering at the intersection of Old Bar Road and Wyden Street. These traffic counts, which are provided as Appendix A to this document, have been used as the basis for the traffic modelling undertaken to support this assessment.

2.6 Forecast traffic generation

The forecast traffic generation associated with the development during the critical morning and afternoon peak hours is summarised in Table 2 below. The expected traffic generation rates for each of the dwelling types proposed within the site are consistent with the upper limits of those noted in the *RMS Guide to Traffic Generating Developments* document. The analysis indicates the development may generate up to 55 vehicle movements during the AM and PM peak hours of the day.

Table 2 Forecast traffic generation

Dwelling type	Number Proposed	Traffic generation rate	Peak hour traffic movements
Torrens title lots	8	0.85 / dwelling	7
Townhouses	55	0.65 / dwelling	36
2 bedroom apartments	23	0.50 / dwelling	12
Total			**55**

The expected directions of travel for vehicles, based again off guidance within the *RMS Guide to Traffic Generating Developments* document, is as follows:

- AM peak hour: 80% departing, 20% arriving
- PM peak hour: 20% departing, 80% arriving

2.7 Traffic distribution

As a conservative assumption the traffic modelling has considered all additional traffic movements from the site to travel through the Wyden Street / Old Bar Road intersection. Based on the existing traffic movements recorded at this intersection in March 2022, 80% of the development traffic is assumed to travel west along Old Bar Road with the remaining 20% to travel east. This forecast traffic distribution is illustrated in Figure 8 below.

Figure 8 Forecast traffic distribution

2.8 Road network impacts

Traffic modelling has been undertaken using SIDRA Network (version 9) software to understand the existing and future performance of the following intersections in the vicinity of the site:

- Old Bar Road / Wyden Street
- Noroy Place / Wyden Street

The traffic modelling metric used to analyse the performance of the intersections is intersection Level of Service (LOS). Level of Service is a measure that uses the average delay experienced by vehicles to categorically assign each approach and movement with a qualitative ordinal grade (A through F, with A being the best and F being the worst). RMS Traffic Modelling Guidelines indicate the average delay relating to each grade, this is outlined in Table 3. In typical urban environments it is typical for intersections to operate at Level of Service D or E and still remain within acceptable performance levels.

Table 3 Level of service grades / description

Level of service grade	Average delay (seconds)	Description
A	Less than 14	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 excessive delays. Roundabouts require other control mode
F	Greater than 71	Unsatisfactory with excessive queuing

The traffic modelling has considered the following two scenarios:

(i) 'Base Case' - Traffic flows as per the counts undertaken in March 2022

(ii) 'Base Case + Development' - Traffic flows following the development of the subject site as envisaged in this Development Application

The outcomes of the traffic modelling are summarised in Table 4 below, with detailed SIDRA outputs provided in Appendix B of this document.

Table 4 Intersection modelling

Peak Hour	Intersection	Existing			Existing + Proposal		
		Degree of Saturation	Level of Service*	Average delay (seconds)	Degree of Saturation	Level of Service	Average delay (seconds)
AM Peak Hour	Old Bar Road / Wyden Street	0.10	A	2	0.18	A	2
	Noroy Place / Wyden Street	0.07	A	<1	0.07	A	1
PM Peak Hour	Old Bar Road / Wyden Street	0.27	A	2	0.30	A	2
	Noroy Place / Wyden Street	0.07	A	<1	0.10	A	1

* Representative of worst movement for the intersection

The modelling demonstrates that the proposal does not significantly impact the operation of the road network. All intersections are forecast to maintain their current Level of Service A with the future development in place. In this context the development will not result in any adverse operational or safety impacts on the road network, with no additional transport infrastructure required to support the proposal.

3 Summary

This transport impact assessment report has been prepared by JMT Consulting to describe the implications of the proposed residential subdivision project located at 86-92 Old Bar Road, Old Bar. Key findings from the assessment are as follows:

- Vehicle site access would be provided via Noroy Place which is consistent with current access arrangements. The existing Old Bar Road access point would not be utilised as part of the future site development which will benefit the operation and safety of Old Bar Road traffic.
- The proposal will include an internal road network to facilitate the safe and efficient movement of vehicles, including large waste collection vehicles.
- Car parking will be provided for future residents within the site in excess of the minimum requirements outlined in Council's Development Control Plan. 20 visitor car parking spaces will also be provided on the internal street network.
- Traffic modelling indicates that the two key intersections in the vicinity of the site will continue to operate at a very good Level of Service (A) following the proposed site development.

In the above context, the traffic and transport impacts arising from the proposal are considered acceptable with no further infrastructure required.

Appendix A: Existing Traffic Data

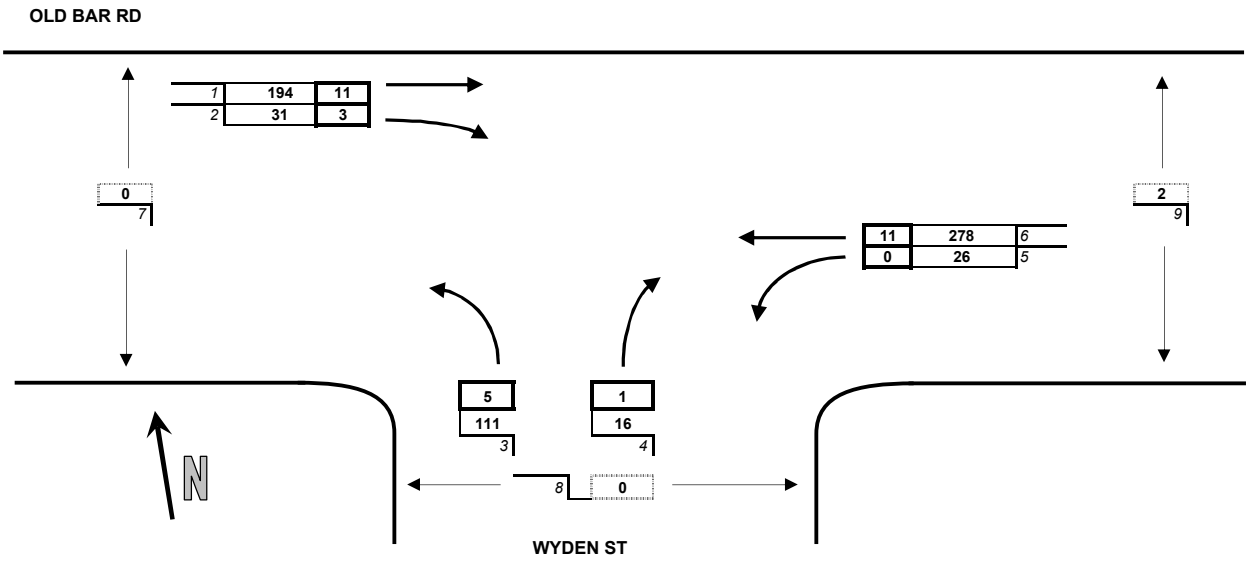
23/3/2022 - OLD BAR RD / WYDEN ST, OLD BAR

9:00 <<< HOUR ENDING **Wednesday**

Summary:	OLD BAR RD / WYDEN ST
656	Total Light Vehicles
31	Total Heavy Vehicles
2	Total Pedestrians

Quality Surveys
223457

194 Light Vehicles
11 Heavy Vehicles
0 Pedestrians



23/3/2022 - OLD BAR RD / WYDEN ST, OLD BAR

	Light Vehicles 1	2	3	4	5	6	Total Vehicles 15 MIN HOUR		Pedestrians 7	8	9
07:15	19	5	18	4	1	46	93		0	0	1
07:30	18	10	34	6	4	64	136		0	1	2
07:45	33	0	34	4	5	78	154		0	0	0
08:00	31	12	50	2 <	10	67	172	555	0	0 <	2 <
08:15	31	5	29 <	3	4	76 <	148	610	0	0 <	0
08:30	48	6	24	3	7 <	53	141	615	0	0	2
08:45	52	9 <	33	3	5 <	78	180	641	0	0	0
09:00	63 <	11	25	7 <	10 <	71	187	656 <	0	0	0

	Heavy Vehicles 1	2	3	4	5	6	Total Vehicles 15 MIN HOUR	
07:15	0	1	0	0	0	2	3	
07:30	2	0	0	0	0	1	3	
07:45	4	1	0	0	0	0	5	
08:00	5	2	1	0	0	2	10	21
08:15	3	1	4 <	0	0	3	11	29
08:30	3 <	1 <	0 <	0	0	2	6	32 <
08:45	2	0	0 <	1 <	0	2	5	32 <
09:00	3	1	1 <	0 <	0	4 <	9	31

	All Vehicles 1	2	3	4	5	6	Total Vehicles 15 MIN HOUR	
07:15	19	6	18	4	1	48	96	
07:30	20	10	34	6	4	65	139	
07:45	37	1	34	4	5	78	159	
08:00	36	14	51	2	10	69	182	576
08:15	34	6	33 <	3	4	79 <	159	639
08:30	51	7	24	3	7 <	55	147	647
08:45	54	9 <	33	4	5 <	80	185	673
09:00	66 <	12	26	7 <	10 <	75	196	687 <

Note : Arrows "<" indicate the end time for the peak hour for each turning movement.

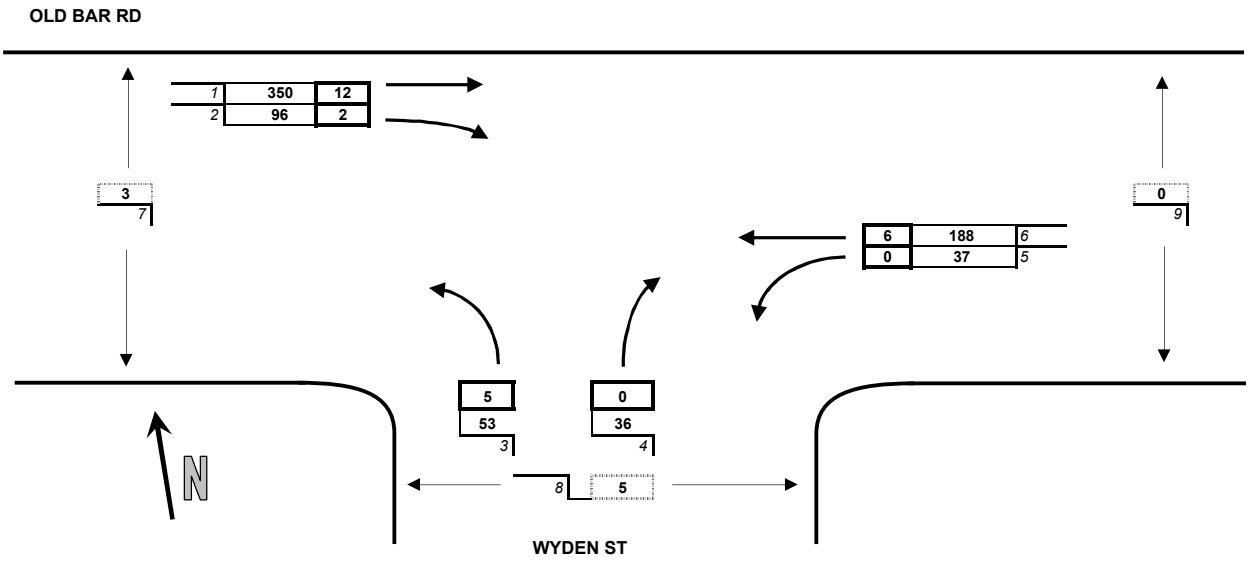
22/3/2022 - OLD BAR RD / WYDEN ST, OLD BAR

17:00 <<< HOUR ENDING **Tuesday**

Summary:	OLD BAR RD / WYDEN ST
760	Total Light Vehicles
25	Total Heavy Vehicles
8	Total Pedestrians

Quality Surveys
223457

350	Light Vehicles
12	Heavy Vehicles
3	Pedestrians



22/3/2022 - OLD BAR RD / WYDEN ST, OLD BAR

Light Vehicles

	1	2	3	4	5	6	Total Vehicles 15 MIN HOUR		Pedestrians 7	8	9
16:15	81	21	20	8	5	53	188		0	1	0
16:30	97	20	6	10	9	44	186		3	4	0
16:45	82	29	14	11	11	47	194		0	0	0
17:00	90 <	26	13 <	7 <	12	44 <	192	760 <	0 <	0 <	0
17:15	74	36	16	5	8 <	42	181	753	0 <	0	0
17:30	98	28	5	4	6	45	186	753	0	0	0
17:45	87	32	13	4	8	53	197	756	0	0	0
18:00	75	27 <	8	5	6	46	167	731	0	0	0

Heavy Vehicles

	1	2	3	4	5	6	Total Vehicles 15 MIN HOUR	
16:15	6	0	1	0	0	0	7	
16:30	3	1	1	0	0	2	7	
16:45	2	1	3	0	0	3	9	
17:00	1 <	0 <	0 <	0	0	1	2	25 <
17:15	0	0 <	0	0	0	1 <	1	19
17:30	1	0	0	0	0	1	2	14
17:45	2	0	0	0	0	0	2	7
18:00	0	1	0	0	0	1	2	7

All Vehicles

	1	2	3	4	5	6	Total Vehicles 15 MIN HOUR	
16:15	87	21	21	8	5	53	195	
16:30	100	21	7	10	9	46	193	
16:45	84	30	17	11	11	50	203	
17:00	91 <	26	13 <	7 <	12	45 <	194	785 <
17:15	74	36	16	5	8 <	43	182	772
17:30	99	28	5	4	6	46	188	767
17:45	89	32	13	4	8	53	199	763
18:00	75	28 <	8	5	6	47	169	738

Note : Arrows "<" indicate the end time for the peak hour for each turning movement.

Appendix B: Traffic Modelling Outputs

MOVEMENT SUMMARY

Site: 101 [AM Existing Old Bar Road (Site Folder: Existing Conditions)]

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

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wyden Street (S)														
1	L2	122	4.3	122	4.3	0.102	5.7	LOS A	0.2	1.2	0.38	0.61	0.38	49.0
3	R2	18	5.9	18	5.9	0.025	7.2	LOS A	0.0	0.2	0.47	0.68	0.47	47.1
Approach		140	4.5	140	4.5	0.102	5.9	LOS A	0.2	1.2	0.39	0.62	0.39	48.7
East: Old Bar Road (E)														
4	L2	27	0.0	27	0.0	0.175	5.6	LOS A	0.0	0.0	0.00	0.05	0.00	59.0
5	T1	304	3.8	304	3.8	0.175	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	59.5
Approach		332	3.5	332	3.5	0.175	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.4
West: Old Bar Road (W)														
11	T1	216	5.4	216	5.4	0.145	0.3	LOS A	0.1	1.0	0.15	0.09	0.15	58.6
12	R2	36	8.8	36	8.8	0.145	7.1	LOS A	0.1	1.0	0.15	0.09	0.15	57.3
Approach		252	5.9	252	5.9	0.145	1.3	NA	0.1	1.0	0.15	0.09	0.15	58.5
All Vehicles		723	4.5	723	4.5	0.175	1.8	NA	0.2	1.2	0.13	0.17	0.13	57.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [AM Existing Noroy Place (Site Folder: Existing Conditions)]

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

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wyden Street (S)														
1	L2	1	0.0	1	0.0	0.071	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	58.3
2	T1	134	4.7	134	4.7	0.071	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		135	4.7	135	4.7	0.071	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
North: Wyden Street (N)														
8	T1	60	5.3	60	5.3	0.032	0.0	LOS A	0.0	0.0	0.01	0.01	0.01	59.8
9	R2	1	0.0	1	0.0	0.032	4.8	LOS A	0.0	0.0	0.01	0.01	0.01	56.0
Approach		61	5.2	61	5.2	0.032	0.1	NA	0.0	0.0	0.01	0.01	0.01	59.7
West: Noroy Place (W)														
10	L2	1	0.0	1	0.0	0.002	5.9	LOS A	0.0	0.0	0.23	0.54	0.23	49.7
12	R2	1	0.0	1	0.0	0.002	6.1	LOS A	0.0	0.0	0.23	0.54	0.23	52.4
Approach		2	0.0	2	0.0	0.002	6.0	LOS A	0.0	0.0	0.23	0.54	0.23	51.5
All Vehicles		198	4.8	198	4.8	0.071	0.1	NA	0.0	0.0	0.01	0.01	0.01	59.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [AM Future Old Bar Road (Site Folder: Future Conditions)]

Network: N101 [AM Future (Network Folder: AM Peak Hour)]

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wyden Street (S)														
1	L2	159	3.3	159	3.3	0.132	5.7	LOS A	0.2	1.6	0.39	0.62	0.39	49.0
3	R2	27	3.8	27	3.8	0.039	7.3	LOS A	0.0	0.4	0.47	0.70	0.47	47.1
Approach		186	3.4	186	3.4	0.132	5.9	LOS A	0.2	1.6	0.40	0.63	0.40	48.7
East: Old Bar Road (E)														
4	L2	29	0.0	29	0.0	0.176	5.6	LOS A	0.0	0.0	0.00	0.05	0.00	58.9
5	T1	304	3.8	304	3.8	0.176	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	59.4
Approach		334	3.5	334	3.5	0.176	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.4
West: Old Bar Road (W)														
11	T1	216	5.4	216	5.4	0.152	0.4	LOS A	0.2	1.2	0.19	0.11	0.19	58.3
12	R2	45	7.0	45	7.0	0.152	7.0	LOS A	0.2	1.2	0.19	0.11	0.19	56.7
Approach		261	5.6	261	5.6	0.152	1.6	NA	0.2	1.2	0.19	0.11	0.19	58.1
All Vehicles		781	4.2	781	4.2	0.176	2.2	NA	0.2	1.6	0.16	0.21	0.16	57.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [AM Future Noroy Place (Site Folder: Future Conditions)]

Network: N101 [AM Future (Network Folder: AM Peak Hour)]

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wyden Street (S)														
1	L2	1	0.0	1	0.0	0.071	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	58.3
2	T1	134	4.7	134	4.7	0.071	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		135	4.7	135	4.7	0.071	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
North: Wyden Street (N)														
8	T1	60	5.3	60	5.3	0.039	0.1	LOS A	0.0	0.2	0.09	0.09	0.09	58.2
9	R2	12	0.0	12	0.0	0.039	4.8	LOS A	0.0	0.2	0.09	0.09	0.09	54.6
Approach		72	4.4	72	4.4	0.039	0.9	NA	0.0	0.2	0.09	0.09	0.09	57.6
West: Noroy Place (W)														
10	L2	45	0.0	45	0.0	0.032	5.9	LOS A	0.1	0.4	0.23	0.55	0.23	49.6
12	R2	1	0.0	1	0.0	0.032	6.2	LOS A	0.1	0.4	0.23	0.55	0.23	52.4
Approach		46	0.0	46	0.0	0.032	5.9	LOS A	0.1	0.4	0.23	0.55	0.23	49.7
All Vehicles		253	3.8	253	3.8	0.071	1.4	NA	0.1	0.4	0.07	0.13	0.07	57.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PM Existing Old Bar Road (Site Folder: Existing Conditions)]

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

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wyden Street (S)														
1	L2	61	8.6	61	8.6	0.047	5.2	LOS A	0.1	0.6	0.30	0.55	0.30	49.1
3	R2	38	0.0	38	0.0	0.061	8.2	LOS A	0.1	0.5	0.54	0.78	0.54	46.3
Approach		99	5.3	99	5.3	0.061	6.4	LOS A	0.1	0.6	0.39	0.64	0.39	48.0
East: Old Bar Road (E)														
4	L2	39	0.0	39	0.0	0.128	5.7	LOS A	0.0	0.0	0.00	0.10	0.00	58.2
5	T1	204	3.1	204	3.1	0.128	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	59.1
Approach		243	2.6	243	2.6	0.128	0.9	NA	0.0	0.0	0.00	0.10	0.00	59.0
West: Old Bar Road (W)														
11	T1	381	3.3	381	3.3	0.274	0.4	LOS A	0.4	2.6	0.20	0.13	0.20	58.0
12	R2	103	2.0	103	2.0	0.274	6.6	LOS A	0.4	2.6	0.20	0.13	0.20	56.2
Approach		484	3.0	484	3.0	0.274	1.7	NA	0.4	2.6	0.20	0.13	0.20	57.8
All Vehicles		826	3.2	826	3.2	0.274	2.0	NA	0.4	2.6	0.16	0.18	0.16	57.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PM Existing Noroy Place (Site Folder: Existing Conditions)]

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

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wyden Street (S)														
1	L2	1	0.0	1	0.0	0.050	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	58.3
2	T1	94	5.6	94	5.6	0.050	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach		95	5.6	95	5.6	0.050	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
North: Wyden Street (N)														
8	T1	140	1.5	140	1.5	0.073	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	1	0.0	1	0.0	0.073	4.7	LOS A	0.0	0.0	0.00	0.00	0.00	56.1
Approach		141	1.5	141	1.5	0.073	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
West: Noroy Place (W)														
10	L2	1	0.0	1	0.0	0.002	5.8	LOS A	0.0	0.0	0.20	0.54	0.20	49.9
12	R2	1	0.0	1	0.0	0.002	6.2	LOS A	0.0	0.0	0.20	0.54	0.20	52.5
Approach		2	0.0	2	0.0	0.002	6.0	LOS A	0.0	0.0	0.20	0.54	0.20	51.6
All Vehicles		238	3.1	238	3.1	0.073	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PM Future Old Bar Road (Site Folder: Future Conditions)]

Network: N101 [PM Future (Network Folder: PM Peak Hour)]

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wyden Street (S)														
1	L2	71	7.5	71	7.5	0.054	5.2	LOS A	0.1	0.6	0.30	0.56	0.30	49.1
3	R2	40	0.0	40	0.0	0.069	8.6	LOS A	0.1	0.6	0.56	0.80	0.56	45.9
Approach		111	4.8	111	4.8	0.069	6.4	LOS A	0.1	0.6	0.39	0.65	0.39	47.9
East: Old Bar Road (E)														
4	L2	48	0.0	48	0.0	0.133	5.8	LOS A	0.0	0.0	0.00	0.11	0.00	57.9
5	T1	204	3.1	204	3.1	0.133	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	58.9
Approach		253	2.5	253	2.5	0.133	1.1	NA	0.0	0.0	0.00	0.11	0.00	58.8
West: Old Bar Road (W)														
11	T1	381	3.3	381	3.3	0.301	0.5	LOS A	0.5	3.4	0.25	0.17	0.25	57.5
12	R2	140	1.5	140	1.5	0.301	6.7	LOS A	0.5	3.4	0.25	0.17	0.25	55.3
Approach		521	2.8	521	2.8	0.301	2.2	NA	0.5	3.4	0.25	0.17	0.25	57.2
All Vehicles		884	3.0	884	3.0	0.301	2.4	NA	0.5	3.4	0.20	0.21	0.20	56.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PM Future Noroy Place (Site Folder: Future Conditions)]

Network: N101 [PM Future (Network Folder: PM Peak Hour)]

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wyden Street (S)														
1	L2	1	0.0	1	0.0	0.050	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	58.3
2	T1	94	5.6	94	5.6	0.050	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach		95	5.6	95	5.6	0.050	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
North: Wyden Street (N)														
8	T1	140	1.5	140	1.5	0.101	0.1	LOS A	0.1	0.8	0.11	0.14	0.11	57.6
9	R2	45	0.0	45	0.0	0.101	4.7	LOS A	0.1	0.8	0.11	0.14	0.11	54.0
Approach		185	1.1	185	1.1	0.101	1.2	NA	0.1	0.8	0.11	0.14	0.11	56.7
West: Noroy Place (W)														
10	L2	12	0.0	12	0.0	0.009	5.8	LOS A	0.0	0.1	0.18	0.54	0.18	49.9
12	R2	1	0.0	1	0.0	0.009	6.4	LOS A	0.0	0.1	0.18	0.54	0.18	52.6
Approach		13	0.0	13	0.0	0.009	5.9	LOS A	0.0	0.1	0.18	0.54	0.18	50.3
All Vehicles		293	2.5	293	2.5	0.101	1.1	NA	0.1	0.8	0.08	0.11	0.08	57.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.