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Centric Architects

Traffic and Parking Impact Assessment Report

Bungaree Street, Maitland

1 March 2024

ENGINEERING
PLANNING
SURVEYING
CERTIFICATION
PROJECT MANAGEMENT

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1 Introduction

Barker Ryan Stewart have been engaged by Centric Architects to prepare a Traffic and Parking Impact Assessment in accordance with the requirements of Maitland City Council DCP 2011 (C11) and the NSW Government's *'Guide to Traffic Generating Developments'* to accompany a Development Application for alterations and additions at Maitland Heritage Mazda.

The purpose of this report is to assess and address traffic, access, car parking and pedestrian impacts generated by the proposed development. This can be briefly outlined as follows:

- The expected traffic generation to/from the proposed development.
- The impact of the proposed development on the road network.
- Intersection analysis based on traffic counts.
- Vehicle parking provisions.
- Access design requirements.
- Delivery and Waste Collection.
- Provision for pedestrians.
- Availability of public transport.

This Traffic and Parking Impact Assessment Report concludes that the subject site is suitable for the proposed development in relation to traffic impact, car parking provision, vehicle and pedestrian access and safety considerations.

2 Existing Conditions

2.1 Site Location

The Maitland Heritage Mazda site is on 19 Bungaree Street, Maitland, otherwise known as Lot 22 DP746311.

The site has two accesses to Bungaree Street – a left-only entry north of the site and an entry-exit further south.

The site is bound by bulky retail in the west, residential lots and a fast food development to the north and local retail in the east. Figure 2.1 shows the site and its surrounds.

Figure 2.1: Aerial Photo of Site (Nearmap 2023)

2.2 Existing Development

The site is currently still operational as a car showroom for Mazda, Suzuki and Mitsubishi, totalling 685.10m² GFA. The development also includes a 1,596.20m² GFA service centre, a 385.11m² GFA shed, 175 parking spaces for display/ sale vehicles and 69 spaces for parking.

2.3 Existing Road Conditions

A schedule of surrounding roads is shown below.

Table 2.1: Schedule of Surrounding Roads

Road Name	Use Class	Speed	No of Lanes	Parking Restrictions
New England Hwy	Sub-Arterial	80km/h	4	No Stopping
Bungaree St	Collector	50km/h	2	No Stopping
High St	Collector	50km/h	2	No Stopping
Johnson St	Local	50km/h	2	Permitted

BRS had commissioned a traffic survey at the site's main access onto Bungaree Street on Tuesday 12 December 2023. The entry-only access north of the main access has been excluded, as this would only allow left-in entry and would not have any significant effect on the wider traffic network.

The results of the survey have been shown in Figure 2.2 and Figure 2.3.

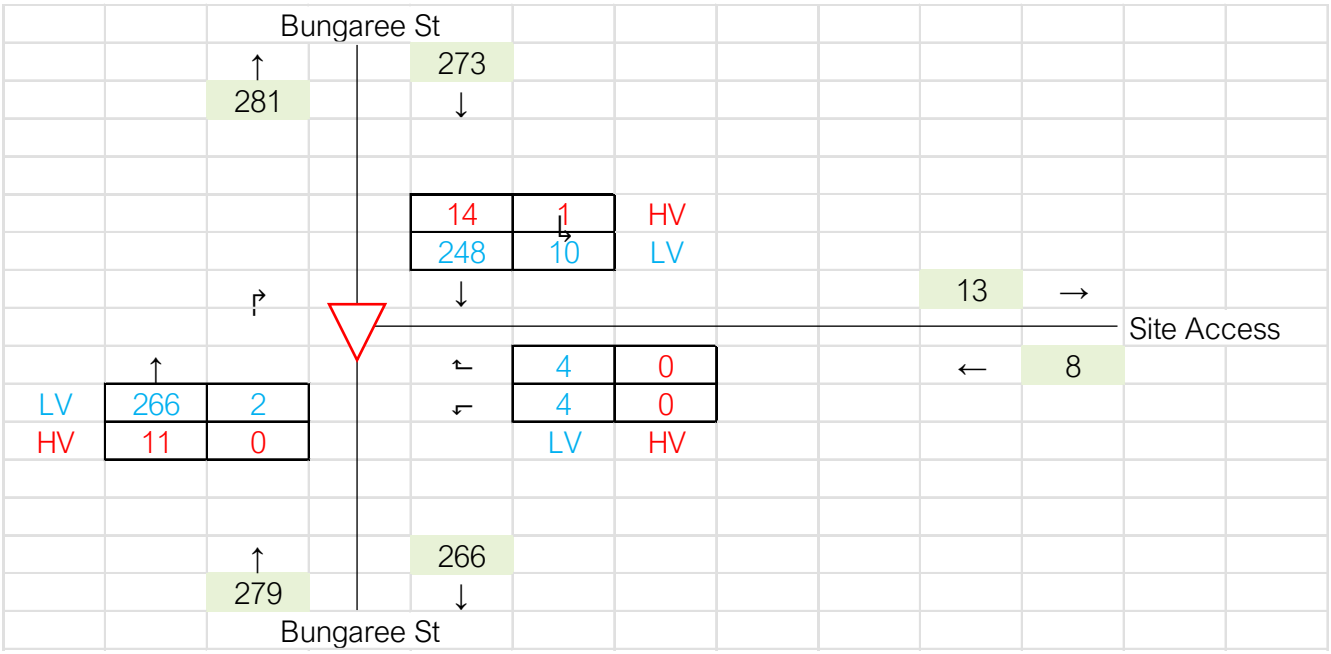

Figure 2.2: Intersection Survey Results (Existing AM Peak)

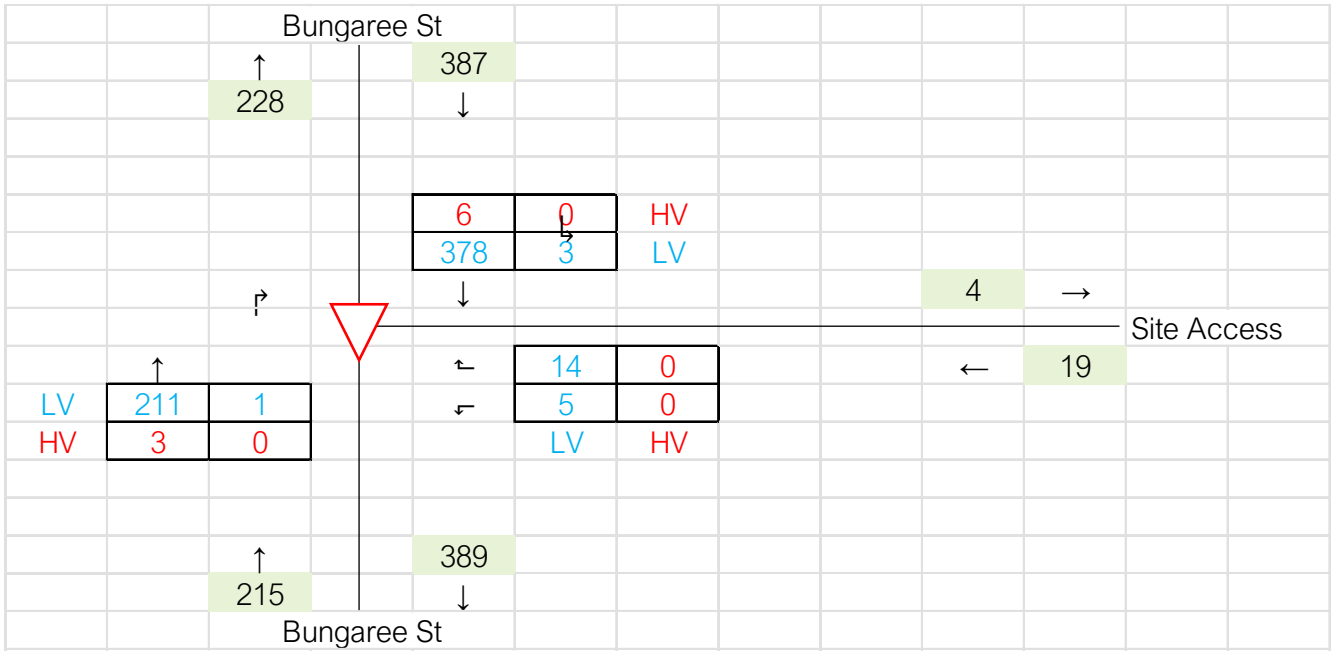

Figure 2.3: Intersection Survey Results (Existing PM Peak)

2.4 Public Transport, Pedestrians and Cyclists

The area is well connected to public transport through public bus connections located in close proximity to the site, including the Telarah train station 420m from the site, and bus stops along New England Highway, Bungaree Street and High Street service the 178, 179, 180, 181, 182 and 183 bus routes. A schedule of public transport is shown below.

Table 2.2: Schedule of Public Transport

Travel Mode	Route Code	Route Description	AM Peak Frequency	PM Peak Frequency
Train	HUN	Hunter Line – Newcastle to Dungog	1 per 20 minutes	1 per 20 minutes
Bus	178	Rutherford to Anambah Rd via Rutherford Industrial Estate (Loop)	1 per 1 hour	1 per 1 hour
	179	North Rothbury to Green hills Shopping Centre via Maitland	1 per 30 minutes	1 per 30 minutes
	180	Singleton Heights to Green Hills Shopping Centre via Maitland	9:29AM	5:29PM
	181	Rutherford to Woodbury via Maitland, Green Hills Shopping Centre & Beresfield	1 per hour	1 per hour
	182	Rutherford to Thornton via Maitland, Green Hills Shopping Centre & Ashtonfield	1 per 1 hour	1 per 1 hour

	183	Rutherford to Tenambit via Maitland & Green Hills Shopping Centre	1 per 30 minutes	1 per 40 minutes

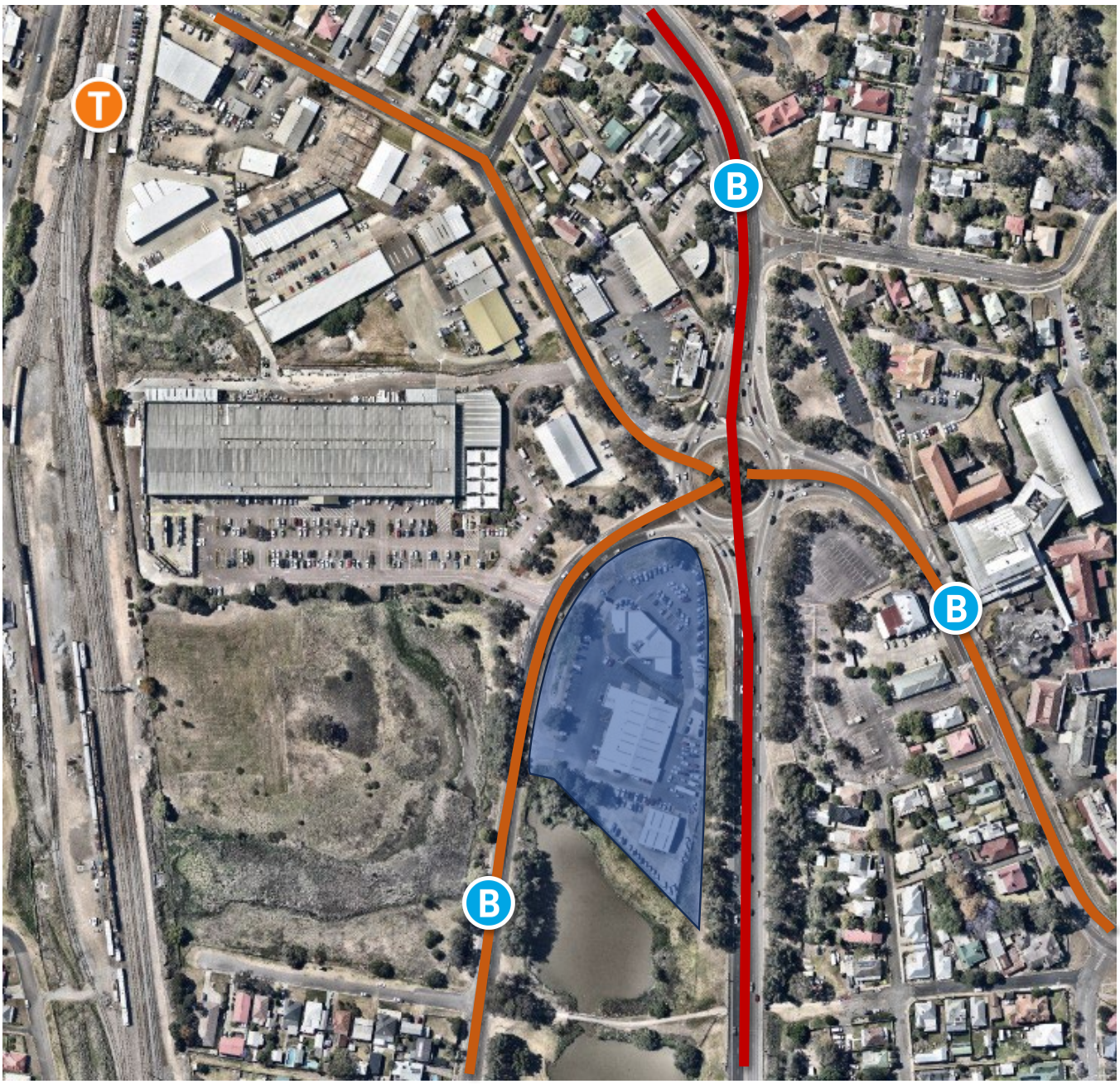

Figure 2.4: Surrounding Public Transport (Nearmap 2023)

3 Proposed Development

3.1 Development Description

The proposal includes alterations and additions to the existing development, totalling a (existing & proposed) showroom of 2,091.58m^2 GFA and a 2,039.81m^2 GFA workshop. In detail, the development includes:

- A proposed Kia Showroom
- A proposed Mazda Showroom
- Refurbished existing Mitsubishi and Suzuki Showrooms
- Extension of the existing Mitsubishi Showroom
- Extension to the workshop with additional work bays and service drop-off awnings
- Reconfiguration of parking and driveways, and
- External hardstand increased with new retaining walls & ramp to suit proposed car parking configuration.
- 143 visitor or overflow workshop parking spaces, and
- 47 showroom or workshop storage parking spaces

3.2 Access

The existing accesses will be retained for use, including the northern left-only entry, and the main access. It is noted that the northern entry is not likely to affect road speeds or safety and can only serve to improve access queueing or conflicts, and has mostly been excluded from traffic impact assessments.

The entry/exit driveways comply with *AS/NZS 2890.1-2004 Parking Facilities – Off Street Car Parking, AS 2890.2-2018 Parking Facilities – Off Street Commercial Vehicle Facilities*.

The proposed driveway locations comply with *Figure 3.3 – Minimum Sight Distance for Pedestrian Safety AS/NZS 2890.1* and the proposed driveway gradients comply with *AS/NZS 2890.1*.

3.3 Parking

The proposed development will include 141 visitor & workshop parking spaces, and 42 showroom or workshop storage parking spaces. The 42 spaces will be parked exclusively by staff and be internally managed and will be linemarked.

The proposed parking facilities have been designed in accordance with the requirements of *AS/NZS 2890.1, AS 2890.2* and *AS/NZS 2890.6 – Off-street Parking for People with Disabilities*. It is noted that existing parking spaces are already operational, and no change is proposed.

- User Class = 3 (short-term parking)
- Parking bays: 2.60m x 5.40m
- Small car bays: 2.60m x 5.00m
- Aisle Widths: 5.80m
- Accessible Parking Spaces: 2.40m x 5.40m plus a 2.40m x 5.40m shared space

A swept path review of the site alongside a design review has been undertaken, and has been shown in Appendix B.

Figure 3.1: Extract from Ground Floor Plan and Parking

3.4 Service / Heavy Vehicles

Commercial vehicle access and circulation is as existing, which is operational. The existing arrangement involve cars being delivered from port to a pre-delivery centre off-site, and sale cars either being driven a short distance to the site, or shipped via a single car carrier, which is the size of an 8.8m Medium Rigid Vehicle (MRV).

Similarly, an HRV needs to access the waste collection area. It is noted that waste collection will primarily be done at the back of the workshop (primary waste collection area) but can also be done when required along the corner of the KIA showroom and workshop (secondary waste collection area).

It is noted that a HRV stopping in the secondary waste collection area will affect contraflow on the roadway. However, this is unlikely to affect flow in practice, as:

- Waste collection in this corner is modest compared to the primary waste collection area and obstruction would be for a very short amount of time,
- Waste collection will occur far outside of peak times (likely before operating times) and is unlikely to encounter any vehicle conflict.
- On the odd occasion where conflict may occur, considering it would occur outside of peak times, vehicles can either use the car parking spaces to maneuver around, or use a parking space as a turning bay and go the other direction.

Both MRV and HRV have been reviewed in the swept path plans.

4 Car Parking Assessment

4.1 Parking Requirements

The proposed access and car parking provision has been assessed against the requirements of the Maitland DCP 2011 Party C.11(DCP 2011) and the RMS Guide to Traffic-Generating Developments 2002 (GTGD 2002).

Maitland DCP 2011

The DCP 2011 requires the following parking provisions:

- Vehicle sale or hire premises:
  - 1 space per 130m^2
- Ancillary/ associated vehicle servicing facilities:
  - 6 spaces per work bay

'Guide to Traffic Generating Developments'

The *'Guide to Traffic Generating Developments'* requires the following parking provision:

- Motor showroom:
  - 0.75 customer/ visitor spaces per 100m^2
- Ancillary/ associated vehicle servicing facilities:
  - 6 spaces per work bay

4.2.1 Parking Calculation Methodology

Table 4.1 outlines the minimum parking requirements as per the DCP and GTGD.

Table 4.1: Assessment of Parking Calculation

Source	Use Case	Size	Parking Rate	Parking Requirement
Maitland DCP 2011	Vehicle Showroom	2,091.58m^2 GFA	1 space per 130m^2	16.09 (rounded up to 17 as per DCP)
	Car Workshop	26 bays	6 spaces per work bay	156 spaces
	TOTAL			173 spaces
Guide to Traffic Generating Developments 2002	Vehicle Showroom	2,091.58m^2 GFA	0.75 space per 100m^2	15.69 (rounded up to 16 as per GTGD)
	Car Workshop	26 bays	6 spaces per work bay	156 spaces
	TOTAL			172 spaces

172-173 spaces are required as a minimum, with 16-17 spaces allocated to the showroom and 156 spaces allocated to the car service shop. It is noted that no distinction is made between visitor parking and inter/ post-servicing parking for the car service shops.

The development has 141 spaces exclusively allocated to visitor parking, and 42 spaces allocated for staff use including demonstration vehicles and storing inter/ post-servicing vehicles. This amounts to 183 spaces provided in total. This is some 10 spaces greater than the minimum rate outlined in Maitland DCP.

BRS assess that the provision of additional parking will ultimately be able to accommodate both staff and visitor needs.

5 Traffic Assessment

5.1 Trip Generation

5.1.1 Existing Development

The assessment of the existing trips generated by the site has been based on the traffic surveys that were conducted for the site entrance. However, this has been compared with the TfNSW GTGD 2002 rate to validate. The GTGD 2002 rate is 0.7 per 100m^2 GFA.

The existing development size is a 685.10m^2 GFA. The development also includes a 1,596.20m^2 GFA service centre, a 385.11m^2 GFA shed. It has been presumed that the shed would generate no significant traffic. For a 2281.3m^2 total GFA, the site would be expected to generate 16 trips per hour.

The peak periods as recorded by the traffic survey conducted on Tuesday 12/12/2023 were 8:15AM to 9:15AM in the AM peak, and 4:00PM to 5:00PM in the PM peak.

During the AM peak, a total of 17 trips were recorded (13 in and 4 out. In the PM peak, a total of 24 trips were recorded (4 in and 20 out). Based on an existing GFA of 2666.41m^2 this equates to a trip rate of:

- 0.7 trips per hour / 100m^2 GFA in the AM, and:
- 1.1 trips per hour/ 100m^2 GFA in the PM peak,

These rates are generally in agreement with GTGD 2002 values and have been adopted for the proposed development.

In terms of existing in/ out, the intersection survey indicates that:

- For the AM peak period:
  - 55% of trips enter the site and:
  - 45% of trips exit the site

- For the PM peak period:
  - 17.5% of trips enter the site, and:
  - 82.5% of trips exit the site

In terms of existing north-south, the intersection survey indicates that:

- Generally, in both peak periods:
  - 75% of trips are to/ from the north, and
  - 25% of trips are to/ from the south

5.1.2 Proposed Development

The proposed development would include a showroom of 2,091.58m^2 GFA and a 2,039.81m^2 GFA workshop. This represents an increase of 1850.09m^2 GFA. Using the above-surveyed rates, the proposed development would be expected to generate:

- 13 trips in the AM peak, and
- 20 trips in the PM peak.

It has been presumed that in/ out and directional distribution will be the same as existing/ operational. Subsequently, the traffic distribution is tabulated in Table 5.1 and shown in Figure 5.1 and Figure 5.2.

Table 5.1: Development Traffic Distribution

Traffic Type	% Share	Traffic Volume
AM Peak		
Total	100%	13.0
In	55%	7.2
In (North)	41%	5.4
In (South)	14%	1.8
Out	45%	5.9
Out (North)	34%	4.4
Out (South)	8%	1.1
PM Peak		
Total	100%	20.0
In	18%	3.5
In (North)	13%	2.6
In (South)	4%	0.9
Out	83%	16.5
Out (North)	62%	12.4
Out (South)	15%	3.1

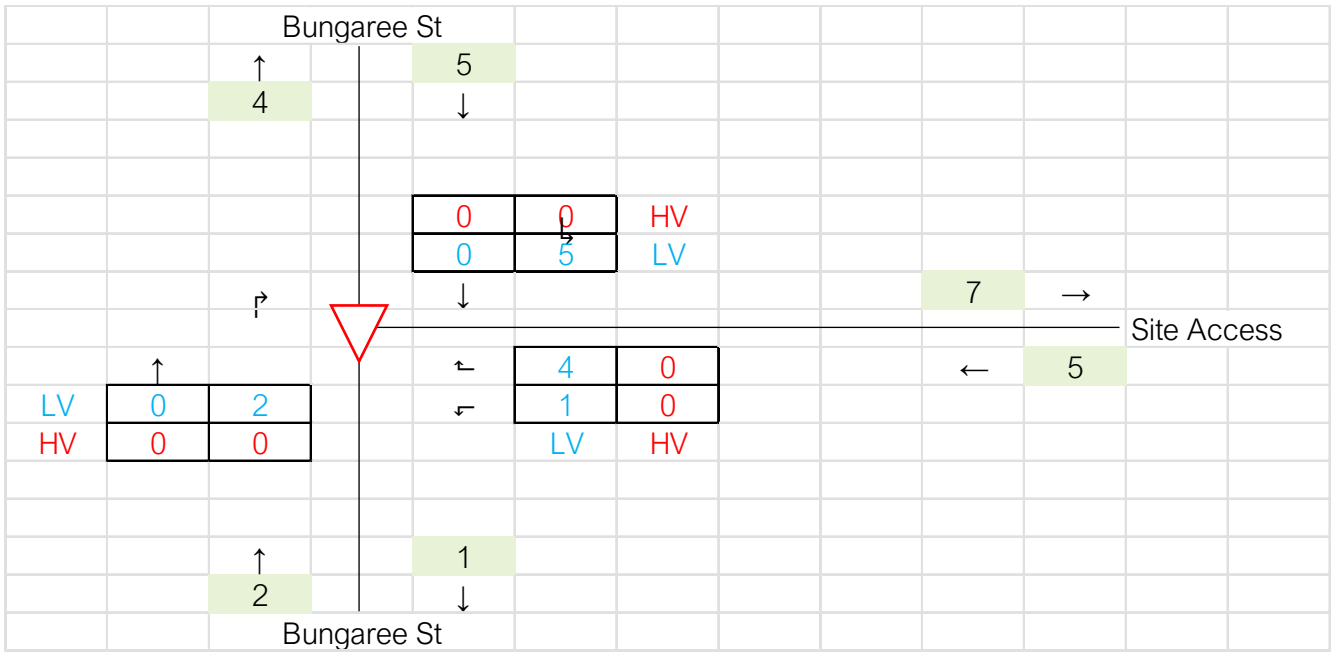

Figure 5.1: Development Traffic Distribution (AM)

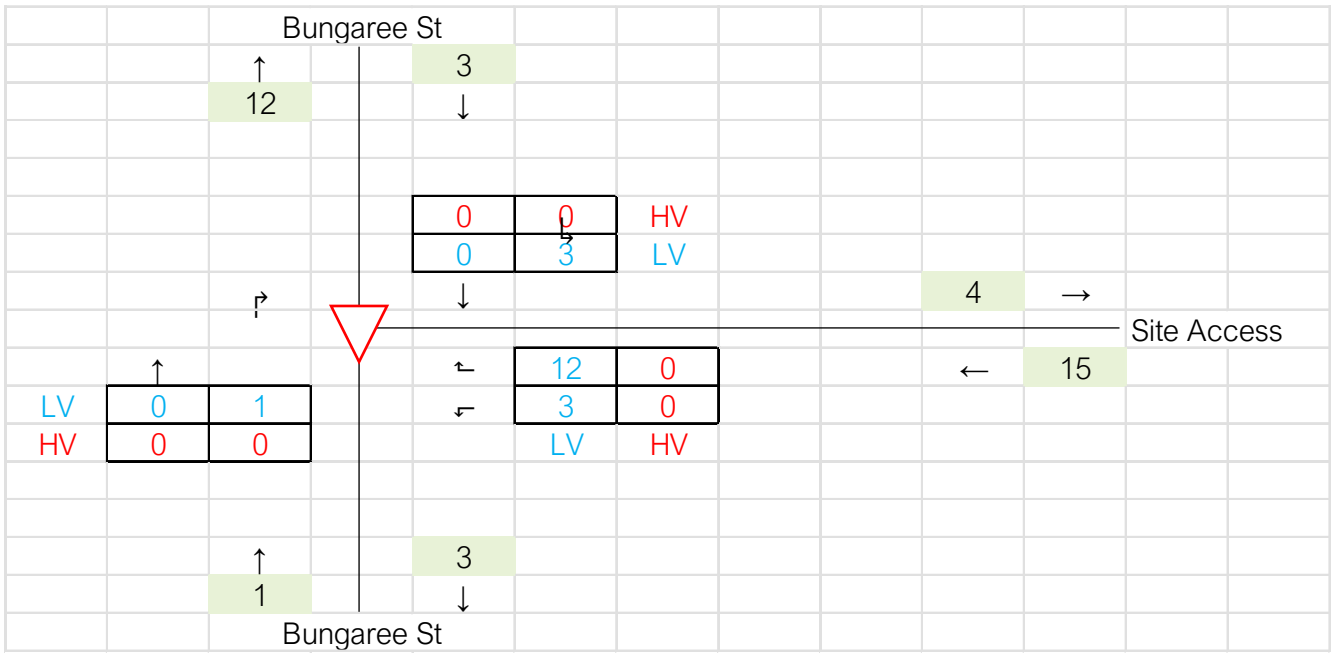

Figure 5.2: Development Traffic Distribution (PM)

5.1.3 SIDRA Intersection Modelling Assessment

BRS have created a model of the site access along Bungaree Road for the 2024 period and the 2034 10-year projection. The 10-year projection has been modelled assuming a 2% per-annum growth rate for the background volume.

In summary, four scenarios have been assessed:

1. 2024 Base
2. 2024 Base + Development
3. 2034 Base
4. 2034 Base + Development

These volumes have been shown in Figure 2.2, Figure 2.3, Figure 5.3, Figure 5.4 and Figure 5.5.

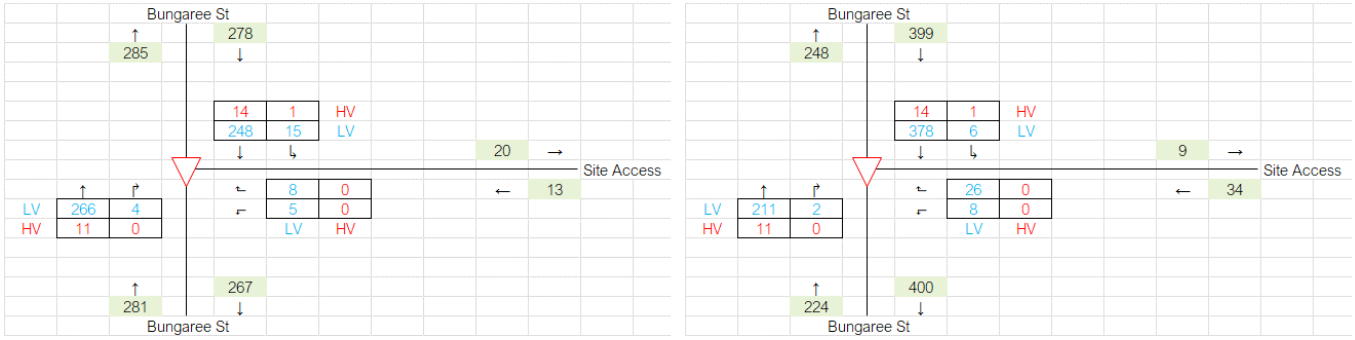

Figure 5.3: 2024 Base + Development Volumes (Left: AM, Right: PM)

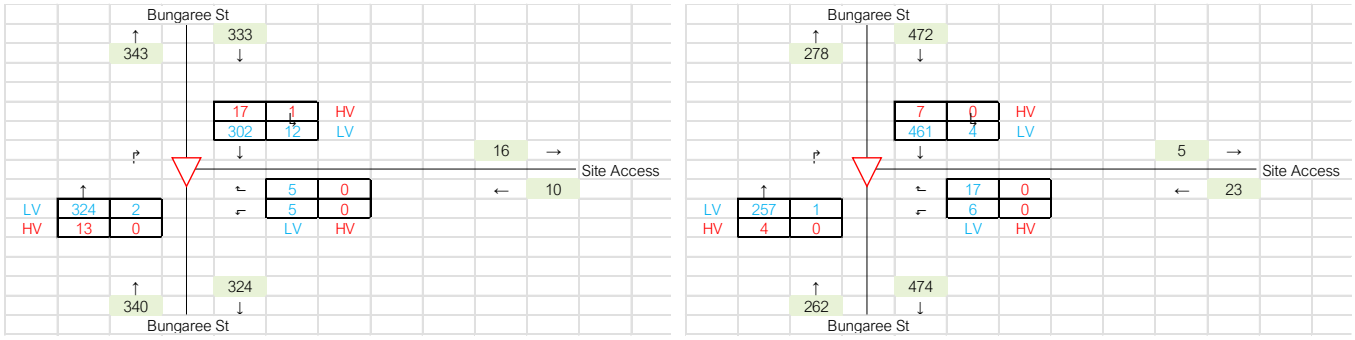

Figure 5.4: 2034 Base Volumes (Left: AM, Right: PM)

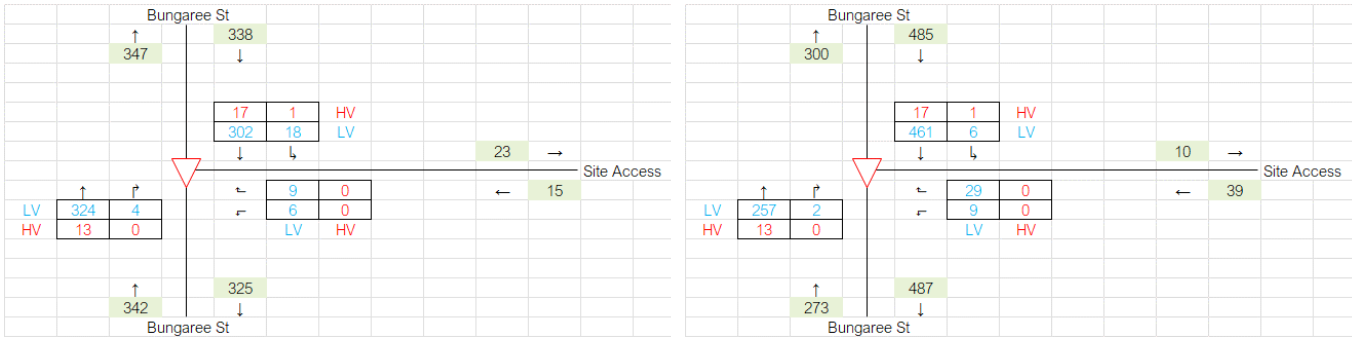

Figure 5.5: 2034 Base + Development Volumes (Left: AM, Right: PM)

5.1.4 SIDRA Intersection Results

The results of the analysis have been shown in Table 5.2 and Table 5.3.

Table 5.2: 2024 SIDRA Intersection Results

Peak Period	Leg	DOS	Average Delay	95% Queue	LOS
1. 2024 Base					
AM	S – Bungaree St	0.155	6.9	0.2	A
	E – Site Access	0.011	9.5	0.3	A
	N – Bungaree St	0.146	5.6	0.0	A
	TOTAL	**0.011**	**9.5**	**0.3**	**A**
PM	S – Bungaree St	0.118	7.6	0.1	0.1
	E – Site Access	0.032	10.3	0.8	0.8
	N – Bungaree St	0.209	5.5	0.0	0.0
	TOTAL	**0.032**	**10.3**	**0.8**	**0.8**
2. 2024 Development					

AM	S – Bungaree St	0.157	8.0	0.3	A
	E – Site Access	0.019	9.6	0.5	A
	N – Bungaree St	0.009	5.6	0.0	A
	TOTAL	**0.019**	**9.6**	**0.5**	**A**
PM	S – Bungaree St	0.119	7.6	0.2	A
	E – Site Access	0.059	10.5	1.5	A
	N – Bungaree St	0.003	5.5	0.0	A
	TOTAL	**0.059**	**10.5**	**1.5**	**A**

Table 5.3: 2034 SIDRA Intersection Results

Peak Period	Leg	DOS	Average Delay	95% Queue	LOS
1. 2024 Base					
AM	S – Bungaree St	0.189	7.4	0.2	A
	E – Site Access	0.015	11.0	0.4	A
	N – Bungaree St	0.008	5.6	0.0	A
	TOTAL	**0.015**	**11.0**	**0.4**	**A**
PM	S – Bungaree St	0.144	8.4	0.1	A
	E – Site Access	0.048	12.3	1.2	A
	N – Bungaree St	0.002	5.5	0.0	A
	TOTAL	**0.048**	**12.3**	**1.2**	**A**
2. 2024 Development					
AM	S – Bungaree St	0.191	7.5	0.4	A
	E – Site Access	0.025	11.1	0.6	A
	N – Bungaree St	0.011	5.6	0.0	A
	TOTAL	**0.025**	**11.1**	**0.6**	**A**
PM	S – Bungaree St	0.145	8.5	0.2	A
	E – Site Access	0.081	12.5	2.0	A

	N – Bungaree St	0.004	5.5	0.0	A
	TOTAL	**0.081**	**12.5**	**2.0**	**A**

As shown, it can be observed that the intersection will experience very negligible increase in delay as a result of the additional development and will continue to operate without significant delay in 2034.

6 Conclusion/Recommendations

This Traffic and Parking Impact Assessment has been prepared in accordance with the requirements of Maitland DCP 2011 and the NSW Government's 'Guide to Traffic Generating Developments' to accompany a Development Application for alterations and additions to the car dealership at 19 Bungaree Street, otherwise known as Maitland Heritage Mazda.

The proposal includes alterations and additions to the existing car dealership including increasing the existing dealership from 685.10m^2 GFA to 2,091.58m^2 GFA, and the existing workshop from 1,596.20m^2 GFA to 2,039.81m^2 GFA. This is associated with 183 car parking spaces, including 42 marked parking spaces exclusive for staff use. This is shown in Appendix A.

All existing accesses will be retained and have been assessed on swept path plans shown in Appendix B.

An assessment of the parking requirements provided in the Maitland DCP 2011 and TfNSW Guide to Traffic-Generating Developments 2002 indicate that the site would require 172-173 car parking spaces. The site provides an additional 10 spaces; however it is noted that many of these spaces are intended for staff/ showroom/ mechanic use only, and not intended to be used by visitors. Hence, it is expected that parking will be sufficient for visitor use without oversupply, and the additional supply will be used for staff/ commercial use only (as required).

The proposed additional facilities are expected to generate an additional 13 trips in the AM peak, and 20 trips in the PM peak. This has been assessed in SIDRA Intersection 9, which indicates that the existing site access onto Bungaree Rd is at LOS A and will continue to operate at LOS A after development and after 10 years, assuming normal growth behaviour.

The Traffic and Parking Impact Assessment concludes that the subject site is suitable for the proposed development in relation to the impact of traffic, car parking provision, vehicle and pedestrian access and safety considerations.

7 References

Australian Standards, *'AS/NZS 2890.1:2004 Off-Street Car Parking'*.

Australian Standards, *'AS 2890.2:2018 Off-Street Commercial Vehicle Facilities'*.

Australian Standards, 'AS/NZS 2890.6:2002 Off-Street Parking for People with Disabilities'.

Roads and Maritime Services, *'Guide to Traffic Generating Developments'* Version 2.2 dated October 2002.

NSW Department of Planning, *'SEPP (Infrastructure) 2007'*

Maitland DCP 2011

Attachment A - Site Plan

LEGEND

- BOUNDARY LINES
- SITE FENCES
- EXISTING LEVEL
- NOMINAL ARCHITECTURAL LEVEL
- EXISTING DISPLAY PARKING
- PROPOSED DISPLAY PARKING
- PROPOSED PARKING
- DEPICTS RELEVANT EXISTING TREES TO REMAIN INDICATIVELY LOCATED FROM GOOGLE AERIAL IMAGERY

NOTES

1. ALL FINAL LEVELS TO BE CONFIRMED ON SITE BY THE BUILDER AND TO BE IN ACCORDANCE WITH COUNCIL CONSENT AND STATUTORY AUTHORITY REQUIREMENTS.

2. LINES OF BOUNDARY AND ALL SITE EXTENTS BASED FROM SURVEY BY "SCOPE SURVEYING (02-4934 3612)", DATED 13/06/2022.

3. WHERE OFFSETS ARE CRITICAL THEY SHOULD BE VERIFIED FURTHER BY A REGISTERED SURVEYOR. FURTHER IF CONSTRUCTION ON OR NEAR BOUNDARIES IS REQUIRED THAT THE BOUNDARIES OF THE LAND BE MARKED WITH A PEG-OUT SURVEY BY A REGISTERED SURVEYOR.

WORD ABBREVIATION

BOK	BOTTOM OF KERB
COL	COLUMN
CONC	CONCRETE
DP	DOWNPIPE
DW	DRIVEWAY
EX	EXISTING
FP	FOOTPATH
HYD	HYDRANT
LP	LIGHT POLE
P	PIT
RL	RELATED LEVEL
RWB	RETAINING WALL BOTTOM
RW	RETAINING WALL
RWT	RETAINING WALL TOP
TOS	TOP OF SOIL

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PROJECT NAME: **NEWCASTLE HERITAGE**

SITE ADDRESS: **BUNGAREE ST, MAITLAND, NSW**

CLIENT: **EAGERS AUTOMOTIVE PTY LTD**

ARCHITECT: **D.D** DRAWN: **K.T**

PROJECT PHASE: **PRE-DA SUBMISSION**

DATE LAST PRINTED: **21/2/2024**

DRAWING TITLE: **SITE PLAN - PROPOSED**

DRAWING NUMBER: **0451 - 2002** ISSUE: **M**

SCALE: 0m 5 10 15 20 25 30 35 40 45 50

A1 @ 1:500

PROJECT NORTH TRUE NORTH

PARKING LEGEND

- EXISTING PARKING OUTLINE
- NEW PARKING OUTLINE
- HATCHED ALLOCATED FULL PARKING EXTENT

BUNGAREE STREET

BOUNDARY

42.064M

71.894M

58.64M

27.985M

20.15M

18.447M

19M

81.859M

75.69M

18.834M

28.175M

BOUNDARY

NEW ENGLAND HIGHWAY

PROPOSED SERVICE RECEPTION + WORKSHOP 2
1,024.60 m²

MAZDA SERVICE RECEPTION + WORKSHOP
938.76 m²

CARWASH BAY x2
76.45 m²

PROPOSED KIA SHOWROOM
574.12 m²

EXISTNG LOWER FLOOR
174.24 m²

EXISTING SHOWROOM
510.86 m²

PROPOSED MAZDA SHOWROOM
567.81 m²

6 x SERVICE PARKINGS

8 x SERVICE PARKING

6 x DEMONSTRATOR VEHICLE PARKING

4 x VEHICLE DEMONSTRATORS

2 x VEHICLE DEMONSTRATORS

9 x VEHICLE DEMONSTRATORS

8 x VEHICLE DEMONSTRATORS

1 x UTE DISPLAY

5 x VEHICLE DEMONSTRATORS

DEMONSTRATOR VEHICLE PARKING

USED CAR DISPLAY

WASTE AREA

CUSTOMER PARKING

DROP OFF 1

MAZDA DROP OFF

DELIVERY RAMP

PEDESTRIAN STAFF RAMP

1:16 RAMP

RAMP

PARKING ALLOCATION

LEGEND	AREA	REQUIRED PARKING (DCP)	ACTUAL PARKING	STORAGE / DISPLAY PARKING
ENTIRE SHOWROOM (EXISTING + PROPOSED)	2091.58 m²	**17** (1/130 m²) *(16.09 rounded up to 17 as per DCP)*		
ENTIRE WORKSHOP (EXISTING + PROPOSED)	2,039.81 m² (26 work ways)	**156** (6/work bays)		
TOTAL		**173**	**140** (LINE MARKED)	**42** (SHOWN DASHED)

PROJECT NAME: **NEWCASTLE HERITAGE**

SITE ADDRESS: **BUNGAREE ST, MAITLAND, NSW**

CLIENT: **EAGERS AUTOMOTIVE PTY LTD**

ARCHITECT: **D.D** DRAWN: **K.T**

PROJECT PHASE: **PRE-DA SUBMISSION**

DATE LAST PRINTED: **21/2/2024**

DRAWING TITLE: **PROPOSED PARKING PLAN**

DRAWING NUMBER: **0451 - 2011** ISSUE: **F**

SCALE: 0m 2.5 5 7.5 10 12.5 15 17.5 20 22.5 25
A1 @ 1:250

PROJECT NORTH TRUE NORTH

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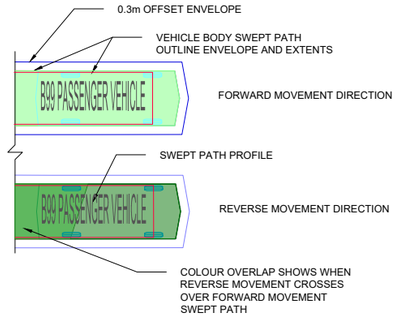
Attachment B – Swept Path Analysis

A3

LEGEND

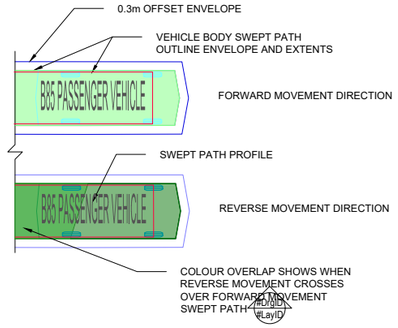
B99 Vehicle (Realistic min radius) (2004)

Overall Length	17.060ft
Overall Width	6.365ft
Overall Body Height	6.161ft
Min Body Ground Clearance	0.892ft
Track Width	6.037ft
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	20.505ft



B85 Vehicle (Realistic min radius) (2004)

Overall Length	16.109ft
Overall Width	6.135ft
Overall Body Height	4.662ft
Min Body Ground Clearance	0.521ft
Track Width	5.807ft
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	18.865ft



PLAN
SCALE 1:300

3 0 3 6 9 12 15 METRES 1:300

REV	AMENDMENT	ISSUED	DATE
A	CONCEPT DESIGN	JH	15/01/24

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS
ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION

SYDNEY P: 02 9659 0005
CENTRAL COAST P: 02 4325 5255
HUNTER P: 02 4966 8388
S.E. QLD P: 07 5582 6555

www.brs.com.au
mail@brs.com.au
ABN: 26 134 067 842

Client:
EAGERS AUTOMOTIVE

MAITLAND HERITAGE MAZDA
SWEPT PATH AND REVIEW

221081-TR1-02

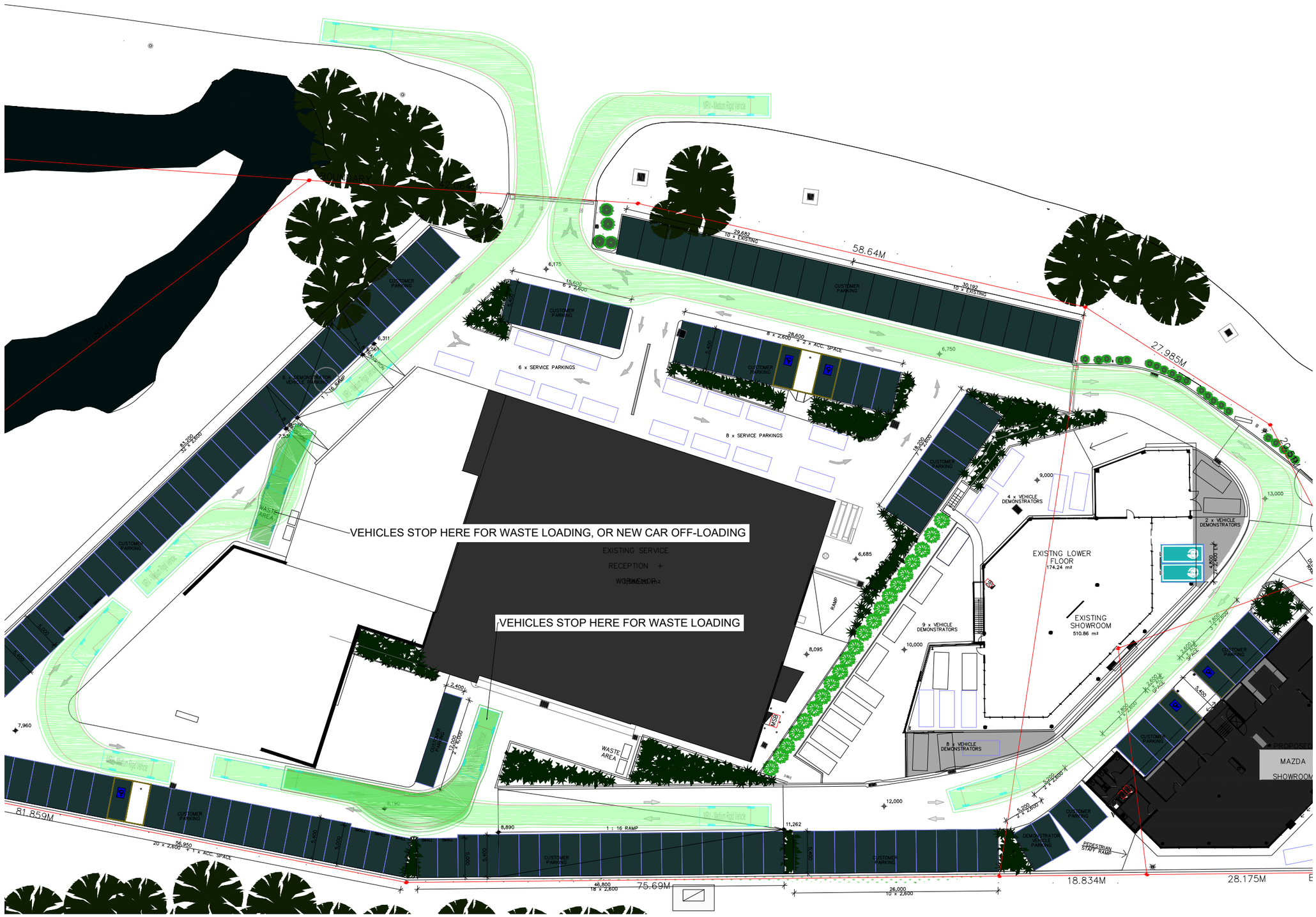
Designed: JH
Drawn: JH
Checked: JH

Scales: Plan -
Horiz. -
Vert. -
X-Sect. -

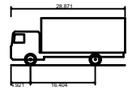
Datum: A.H.D.

Plan No.
221081-TR1-02
File Ref. 221081
REV. A

A3

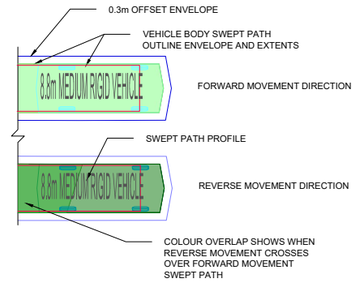


LEGEND



MRV - Medium Rigid Vehicle

Overall Length	28.871ft
Overall Width	8.202ft
Overall Body Height	11.918ft
Min Body Ground Clearance	1.404ft
Track Width	8.202ft
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	32.808ft



PLAN
SCALE 1:500

5 0 5 10 15 20 25
METRES
1:500

REV	AMENDMENT	ISSUED	DATE
A	CONCEPT DESIGN	JH	15/01/24

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS
ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION

SYDNEY P: 02 9659 0005
CENTRAL COAST P: 02 4325 5255
HUNTER P: 02 4966 8388
S.E. QLD P: 07 5582 6555

www.brs.com.au
mail@brs.com.au
ABN: 26 134 067 842

Client:
EAGERS AUTOMOTIVE

MAITLAND HERITAGE MAZDA
SWEPT PATH AND REVIEW
MRV SINGLE-CAR CARRIER/ WASTE VEHICLE MANOEUVRE
221081-TR1-04

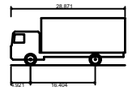
Designed: JH
Drawn: JH
Checked: JH

Scales: Plan -
Horiz. -
Vert. -
X-Sect. -
Datum: A.H.D.

Plan No.
221081-TR1-04
File Ref. 221081
REV. A

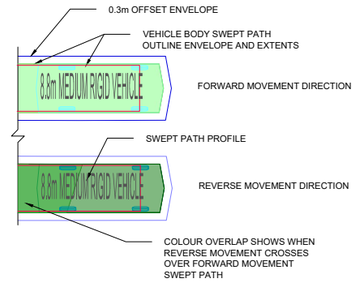
A3

LEGEND



MRV - Medium Rigid Vehicle

Overall Length	28.871ft
Overall Width	8.202ft
Overall Body Height	11.918ft
Min Body Ground Clearance	1.404ft
Track Width	8.202ft
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	32.808ft



PLAN
SCALE 1:500

5 0 5 10 15 20 25 METRES 1:500

REV	AMENDMENT	ISSUED	DATE
A	CONCEPT DESIGN	JH	15/01/24

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS
ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION

SYDNEY P: 02 9659 0005
CENTRAL COAST P: 02 4325 5255
HUNTER P: 02 4966 8388
S.E. QLD P: 07 5582 6555

www.brs.com.au
mail@brs.com.au
ABN: 26 134 067 842

Client: EAGERS AUTOMOTIVE

MAITLAND HERITAGE MAZDA
SWEPT PATH AND REVIEW
HRV WASTE VEHICLE MANOEUVRE

221081-TR1-06

Designed: JH
Drawn: JH
Checked: JH

Scales: Plan -
Horiz. -
Vert. -
X-Sect. -

Datum: A.H.D.

Plan No.
221081-TR1-06
File Ref. 221081
REV. A

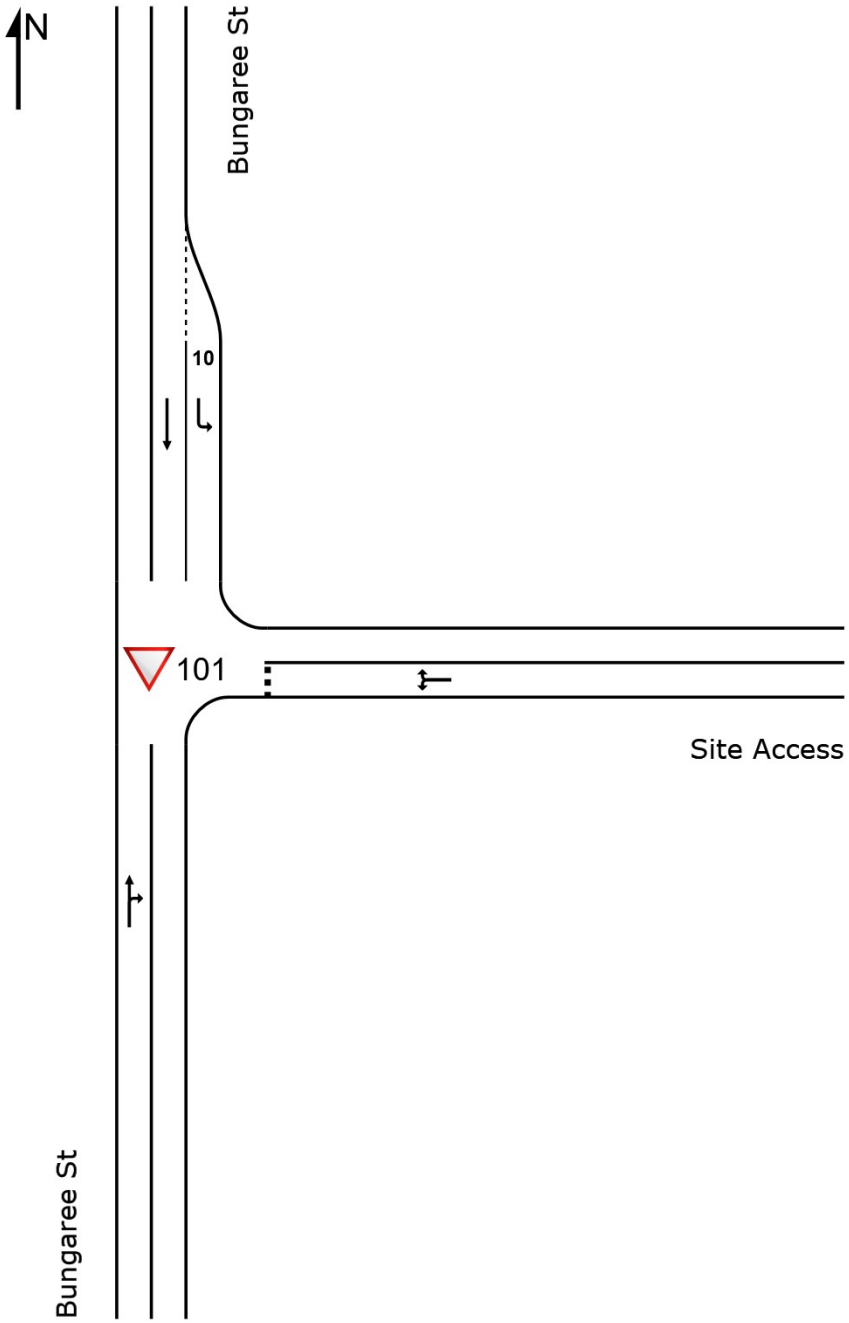
Appendix C – SIDRA Layout and Output

SITE LAYOUT

Site: 101 [1. Bungaree St/ Site Access EX 2024 AM (Site Folder: EX 2024)]

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

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



USER REPORT FOR SITE

All Movement Classes

Project: 221081-Maitland Mazda SIDRA **Template: Summary**

Site: 101 [1. Bungaree St/ Site Access EX 2024 AM (Site Folder: EX 2024)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Bungaree St														
2	T1	277	11	292	4.0	0.155	0.0	LOS A	0.0	0.2	0.01	0.00	0.01	59.9
3	R2	2	0	2	0.0	0.155	6.9	LOS A	0.0	0.2	0.01	0.00	0.01	55.4
Approach		279	11	294	3.9	0.155	0.1	NA	0.0	0.2	0.01	0.00	0.01	59.9
East: Site Access														
4	L2	4	0	4	0.0	0.011	6.4	LOS A	0.0	0.3	0.44	0.60	0.44	47.6
6	R2	4	0	4	0.0	0.011	9.5	LOS A	0.0	0.3	0.44	0.60	0.44	37.9
Approach		8	0	8	0.0	0.011	7.9	LOS A	0.0	0.3	0.44	0.60	0.44	44.0
North: Bungaree St														
7	L2	11	1	12	9.1	0.007	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	40.1
8	T1	262	14	276	5.3	0.146	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		273	15	287	5.5	0.146	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.4
All Vehicles		560	26	589	4.6	0.155	0.3	NA	0.0	0.3	0.01	0.02	0.01	59.4

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [1. Bungaree St/ Site Access EX 2024 PM (Site Folder: EX 2024)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Bungaree St														
2	T1	214	3	225	1.4	0.118	0.0	LOS A	0.0	0.1	0.01	0.00	0.01	59.9
3	R2	1	0	1	0.0	0.118	7.6	LOS A	0.0	0.1	0.01	0.00	0.01	55.4
Approach		215	3	226	1.4	0.118	0.1	NA	0.0	0.1	0.01	0.00	0.01	59.9
East: Site Access														
4	L2	5	0	5	0.0	0.032	6.9	LOS A	0.1	0.8	0.54	0.71	0.54	46.1
6	R2	14	0	15	0.0	0.032	10.3	LOS A	0.1	0.8	0.54	0.71	0.54	35.9
Approach		19	0	20	0.0	0.032	9.4	LOS A	0.1	0.8	0.54	0.71	0.54	39.7
North: Bungaree St														
7	L2	3	0	3	0.0	0.002	5.5	LOS A	0.0	0.0	0.00	0.58	0.00	40.6
8	T1	384	6	404	1.6	0.209	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		387	6	407	1.6	0.209	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.8
All Vehicles		621	9	654	1.4	0.209	0.3	NA	0.1	0.8	0.02	0.03	0.02	59.3

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [1. Bungaree St/ Site Access DEV 2024 AM (Site Folder: DEV 2024)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Bungaree St														
2	T1	277	11	292	4.0	0.157	0.0	LOS A	0.0	0.3	0.02	0.01	0.02	59.8
3	R2	4	0	4	0.0	0.157	7.0	LOS A	0.0	0.3	0.02	0.01	0.02	55.3
Approach		281	11	296	3.9	0.157	0.1	NA	0.0	0.3	0.02	0.01	0.02	59.7
East: Site Access														
4	L2	5	0	5	0.0	0.019	6.4	LOS A	0.1	0.5	0.47	0.64	0.47	47.1
6	R2	8	0	8	0.0	0.019	9.6	LOS A	0.1	0.5	0.47	0.64	0.47	37.3
Approach		13	0	14	0.0	0.019	8.4	LOS A	0.1	0.5	0.47	0.64	0.47	42.4
North: Bungaree St														
7	L2	16	1	17	6.3	0.009	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	40.3
8	T1	262	14	276	5.3	0.146	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		278	15	293	5.4	0.146	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.2
All Vehicles		572	26	602	4.5	0.157	0.4	NA	0.1	0.5	0.02	0.03	0.02	59.1

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [1. Bungaree St/ Site Access DEV 2024 PM (Site Folder: DEV 2024)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Bungaree St														
2	T1	214	3	225	1.4	0.119	0.0	LOS A	0.0	0.2	0.01	0.01	0.01	59.8
3	R2	2	0	2	0.0	0.119	7.6	LOS A	0.0	0.2	0.01	0.01	0.01	55.3
Approach		216	3	227	1.4	0.119	0.1	NA	0.0	0.2	0.01	0.01	0.01	59.8
East: Site Access														
4	L2	8	0	8	0.0	0.059	7.0	LOS A	0.2	1.5	0.55	0.74	0.55	45.9
6	R2	26	0	27	0.0	0.059	10.5	LOS A	0.2	1.5	0.55	0.74	0.55	35.6
Approach		34	0	36	0.0	0.059	9.6	LOS A	0.2	1.5	0.55	0.74	0.55	39.1
North: Bungaree St														
7	L2	6	0	6	0.0	0.003	5.5	LOS A	0.0	0.0	0.00	0.58	0.00	40.6
8	T1	384	6	404	1.6	0.209	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		390	6	411	1.5	0.209	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.7
All Vehicles		640	9	674	1.4	0.209	0.6	NA	0.2	1.5	0.03	0.05	0.03	58.8

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [1. Bungaree St/ Site Access EX 2034 AM (Site Folder: EX 2034)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Bungaree St														
2	T1	337	13	355	3.9	0.189	0.0	LOS A	0.0	0.2	0.01	0.00	0.01	59.9
3	R2	2	0	2	0.0	0.189	7.4	LOS A	0.0	0.2	0.01	0.00	0.01	55.4
Approach		339	13	357	3.8	0.189	0.1	NA	0.0	0.2	0.01	0.00	0.01	59.9
East: Site Access														
4	L2	5	0	5	0.0	0.015	6.6	LOS A	0.1	0.4	0.50	0.64	0.50	46.7
6	R2	5	0	5	0.0	0.015	11.0	LOS A	0.1	0.4	0.50	0.64	0.50	36.7
Approach		10	0	11	0.0	0.015	8.8	LOS A	0.1	0.4	0.50	0.64	0.50	43.0
North: Bungaree St														
7	L2	13	1	14	7.7	0.008	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	40.2
8	T1	319	17	336	5.3	0.178	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		332	18	349	5.4	0.178	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.4
All Vehicles		681	31	717	4.6	0.189	0.3	NA	0.1	0.4	0.01	0.02	0.01	59.4

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [1. Bungaree St/ Site Access EX 2034 PM (Site Folder: EX 2034)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Bungaree St														
2	T1	261	4	275	1.5	0.144	0.0	LOS A	0.0	0.1	0.01	0.00	0.01	59.9
3	R2	1	0	1	0.0	0.144	8.4	LOS A	0.0	0.1	0.01	0.00	0.01	55.4
Approach		262	4	276	1.5	0.144	0.1	NA	0.0	0.1	0.01	0.00	0.01	59.9
East: Site Access														
4	L2	6	0	6	0.0	0.048	7.4	LOS A	0.2	1.2	0.60	0.78	0.60	44.6
6	R2	17	0	18	0.0	0.048	12.3	LOS A	0.2	1.2	0.60	0.78	0.60	34.0
Approach		23	0	24	0.0	0.048	11.0	LOS A	0.2	1.2	0.60	0.78	0.60	37.9
North: Bungaree St														
7	L2	4	0	4	0.0	0.002	5.5	LOS A	0.0	0.0	0.00	0.58	0.00	40.6
8	T1	468	7	493	1.5	0.255	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		472	7	497	1.5	0.255	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.8
All Vehicles		757	11	797	1.5	0.255	0.4	NA	0.2	1.2	0.02	0.03	0.02	59.2

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [1. Bungaree St/ Site Access DEV 2034 AM (Site Folder: DEV 2034)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Bungaree St														
2	T1	337	13	355	3.9	0.191	0.0	LOS A	0.1	0.4	0.02	0.01	0.02	59.8
3	R2	4	0	4	0.0	0.191	7.5	LOS A	0.1	0.4	0.02	0.01	0.02	55.3
Approach		341	13	359	3.8	0.191	0.1	NA	0.1	0.4	0.02	0.01	0.02	59.8
East: Site Access														
4	L2	6	0	6	0.0	0.025	6.7	LOS A	0.1	0.6	0.52	0.68	0.52	46.2
6	R2	9	0	9	0.0	0.025	11.1	LOS A	0.1	0.6	0.52	0.68	0.52	36.0
Approach		15	0	16	0.0	0.025	9.3	LOS A	0.1	0.6	0.52	0.68	0.52	41.4
North: Bungaree St														
7	L2	18	1	19	5.6	0.011	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	40.3
8	T1	319	17	336	5.3	0.178	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		337	18	355	5.3	0.178	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.2
All Vehicles		693	31	729	4.5	0.191	0.4	NA	0.1	0.6	0.02	0.03	0.02	59.2

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [1. Bungaree St/ Site Access DEV 2034 PM (Site Folder: DEV 2034)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Bungaree St														
2	T1	261	4	275	1.5	0.145	0.0	LOS A	0.0	0.2	0.01	0.00	0.01	59.8
3	R2	2	0	2	0.0	0.145	8.5	LOS A	0.0	0.2	0.01	0.00	0.01	55.3
Approach		263	4	277	1.5	0.145	0.1	NA	0.0	0.2	0.01	0.00	0.01	59.8
East: Site Access														
4	L2	9	0	9	0.0	0.081	7.5	LOS A	0.3	2.0	0.61	0.81	0.61	44.3
6	R2	29	0	31	0.0	0.081	12.5	LOS A	0.3	2.0	0.61	0.81	0.61	33.7
Approach		38	0	40	0.0	0.081	11.3	LOS A	0.3	2.0	0.61	0.81	0.61	37.3
North: Bungaree St														
7	L2	7	0	7	0.0	0.004	5.5	LOS A	0.0	0.0	0.00	0.58	0.00	40.6
8	T1	468	7	493	1.5	0.255	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		475	7	500	1.5	0.255	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.7
All Vehicles		776	11	817	1.4	0.255	0.7	NA	0.3	2.0	0.03	0.05	0.03	58.8

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.