BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS

BORG Plantations Pty Ltd

Traffic Impact Study

26 Endeavour Street, Oberon

19 February 2019

ENGINEERING
PLANNING
PROJECT MANAGEMENT
SURVEYING
CERTIFICATION

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Project No.	SY180215
Author	AJ
Checked	GB
Approved	GB

Rev No.	Status	Date	Comments
1	DRAFT	19/11/18	
2	DRAFT	7/02/19	
3	FINAL	7/02/19	
4	FINAL	19/02/19	

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Abbreviations

DCP ..... Development Control Plan
AS/NZS2890.1 ..... Australian Standards, *'AS/NZS 2890.1:2004 Off-Street Car Parking'*
AS2890.2 ..... Australian Standards, *'AS 2890.2:2002 Off-Street Commercial Vehicle Facilities'*
AS/NZS2890.6 ..... Australian Standards, 'AS/NZS 2890.6:2002 Off-Street Parking for People with Disabilities'
RMS ..... Roads and Maritime Services
vph ..... Vehicles per hour

1 Executive Summary

This Traffic Impact Study has been prepared in accordance with the requirements of the SEAR's issued 30 November 2018, the letter from Roads and Maritime Services (RMS) dated 6 July 2018, Oberon Council DCP and the RMS '*Guide to Traffic Generating Developments*' to accompany a Development Application to Oberon Council for the consent of a bark / timber processing plant and landscape supplies production facility at 26 Endeavour Street, Oberon. The plant is expected to produce up to 99,000 tonnes per year of wood material, pine bark residual, sawdust and pallets when full production is reached in 2023.

Council's DCP and the RMS Guide require the development to provide 2 parking spaces and 6 parking spaces, respectively. In response, the development provides nine spaces that are designed in compliance with the Australian Standards. Oberon Council DCP does not require accessible spaces however one has been provided.

Approximately 21 truck movements per day is expected to be generated from the development, however as a worst-case scenario the intersection modelling assumed all 21 trucks movements occur in each peak period. The development will be operated by seven staff who are expected to arrive during the morning and depart in the afternoon peak period.

The overall impact of the proposed development on the efficiency of the local traffic network is anticipated to be negligible with nearby intersections operating at Level of Service A. Based on the results of SIDRA analysis there is significant capacity available in the intersections assessed in this report, and therefore the development traffic can be accommodated within the external road network without significant increase in delay to nearby intersections.

Swept path analysis demonstrates site access and internal circulation for vehicles up to 26m B-doubles. These facilities are also considered practical and safe ensuring that all traffic generated by the development can enter and exit the site in a forward direction.

Swept path assessment of the intersections of the eastern and western haulage routes have been undertaken and show that B-Double vehicles are able to manoeuvre through these intersections without the need to upgrade the existing road pavement.

The Traffic Impact Study 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.

2 Introduction

Barker Ryan Stewart have been engaged by BORG Plantations Pty Ltd to prepare a Traffic Impact Study in accordance with the requirements of SEAR's issued 30 November 2018, RMS's letter dated 6 July 2018, Oberon Council DCP and the Road and Maritime Service's (RMS's) *'Guide to Traffic Generating Developments'* to accompany a Development Application for the proposed Bark/Timber Processing and Landscape Supplies Production Facility at 26 Endeavour Street, Oberon.

The purpose of this report is to assess and address traffic, vehicular access, and parking 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.

This Traffic Impact Study concludes that the subject site is suitable for the proposed development in relation to traffic impact, car parking provision, and vehicle access.

SEAR's and RMS requirements

SEAR items	**Comment**
Details of road transport routes and access to the site.	Details of road transport routes and access to the site are outlined in Section 3.2 and 3.3 and the swept paths attached to Appendix A of this Traffic Impact Study.
Road traffic predictions for the development during construction and operation	As outlined in Section 5.1 the estimated traffic volumes during the construction peak periods is 15 (5 cars and 5 trucks) and during the operation of the site once complete is 21 truck movements.
An assessment of impacts to the safety and function of the road network and the details of any road upgrades required for the development	We have undertaken a swept path analysis and site investigation of the main intersections within the eastern and western haulage routes to/from the site. See section 3.2 and 3.3 and Appendix A.
A traffic impact study prepared in accordance with the methodology set out in Section 2 of the *RTA's Guide to Traffic Generating Development*	A Traffic Impact Study has been prepared.
RMS items	**Comment**
A traffic impact study prepared in accordance with the methodology set out in Section 2 of the *RTA's Guide to Traffic Generating Development*	A Traffic Impact Study has been prepared.
Road transport volumes and types broken down into: • Origin and destination • Travel routes • Peak hours	Details of road transport routes and access to the site are outlined in Section 3.2 and 3.3.
Details of projected transport operations including: • Traffic volumes. Volumes are to include plant input related traffic generation (e.g. daily number of light / heavy vehicles entering and exiting the site, fuel deliveries maintenance, services) and impacts of	Details of the materials transported are provided in section 4.1, and the developments traffic generation and its imoact on the surrounding road network is provided in Section 6. Section 4.2 details the haulage routes expected for the proposed development.

plant related traffic generation on public roads • Materials to be transported and types of vehicles used for transport • Physical constraints on the haulage(s) route • Measures to be employed to ensure a high level of safety for all road users interacting with traffic generated by the development	
An assessment of cumulative impacts during construction and operation of the project and details of how proposed operations will interact with other road users	SIDRA 8 modelling analysis was undertaking for the existing, existing + development, existing + development + 10 year growth and existing + 10 year growth scenarios and showed that the main intersections would continue to operate at a level of service A. See Section 5 and Appendix D.
Any over size and over mass vehicles and loads expected for the construction and operation of the project.	The largest expected vehicle to visit the site during construction and operations would be B-Doubles.
Temporary and permanent staff numbers (including employees and contractors) and staff parking arrangements	It is proposed to provide 9 car parking spaces, including a disabled space which meets the requirements of Oberon's DCP and the RMS Guide.
The impact of generated traffic and measures employed to ensure efficiency and safety on the public road network during construction and operation of the project.	During the construction phase a Construction Traffic Management Plan, including Traffic Control Plans should be designed and implemented where required. This should be placed as a condition on the development consent. The existing intersections in the vicinity of the site and on the eastern and western haulage routes to/from the site will not be adversely impacted by the truck movements of the day to day operations of the development once complete.
Any mitigation measures required to address expected traffic generation.	The design and construction of the entry/exit to/from the site will be in accordance with AS/NZS 2890.1 and AS 2890.2. The existing road network is capable of accommodating the largest vehicles (B-Double) that would be use the eastern and western haulage routes. See Section 3.2 and Appendix A.
Proposed access treatments are to be identified and be in accordance with Austroads Guide to Road Design including safe intersection sight distance	Entry/exit to and from the site has been designed in accordance with Austroads and AS/NZS 2890.1- and AS 2890.2-2002 suitable for vehicles up to 26m B-doubles. See section 3.3 and Appendix A. The entry/exit satisfies the safe intersection sight distance requirements, see attachment at Appendix B.

3 Existing Conditions

3.1 Site Location

The site is located at 26 Endeavour Street and comprises Lot 18 DP1249431 and parts of Lot 33 and 34 DP1228591. The site is bound by industrial development and Endeavour street to the west, industrial development to the south, and vacant land to the north and east. Further to the south is Albion Street and residential development.

Figure 2.1: Aerial Photo of Site

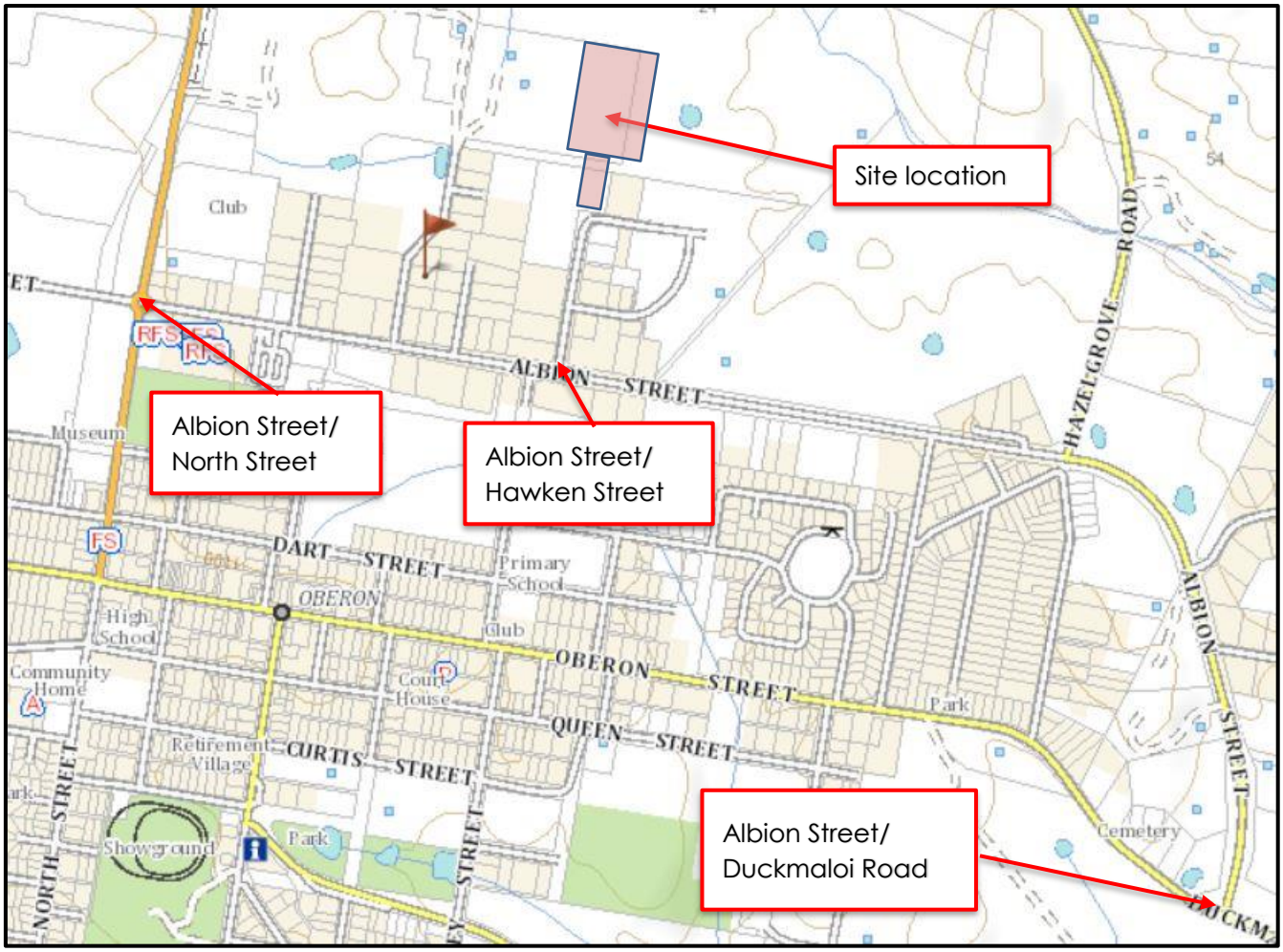


Figure 3.2: Site Location (NSW Land & Property Information SIX Maps 2013)

3.2 Existing Development

The site was previously used for agriculture but is currently vacant and not in use.

3.3 Existing Road Conditions

As stated above the site is bound by industrial development and Endeavour street to the west, industrial development to the south, and primary production development to the north and east. Further to the South is Albion Street and residential development.

Endeavour Street

Endeavour Street is a local road with a 12m wide carriageway with kerb and gutter on both sides. It is undivided but operates as a two-lane road, one lane northbound and one lane southbound. It has unrestricted on-street parking on both sides of the road. The speed limit on this road is 50km/h.

Albion Street

Albion Street is a local road with a 16m carriageway width with kerb and gutter on both sides. It has two lanes, one eastbound and one westbound and is divided by a single divided line. The speed limit on this road is 60km/h.

Duckmaloi Road

Duckmaloi road is an arterial road with a 12m wide carriageway with no kerb and gutter on either side of the road. It has two lanes, one eastbound and one westbound and is separated by double parallel continuous lines. Both sides of the road are subject to no parking. The speed limit on this road is 60km/h in the general vicinity of the site.

Hawken Street

Hawken Street has a 17m wide carriageway with kerb and gutter on both sides. It is undivided but operates as a two-lane road. The speed limit on this road is 50km/h.

3.4 Traffic Counts

Traffic counts were undertaken on Thursday 18th October 2018 between 7am-9am and 4pm-6pm at the following signalised intersections:

- Albion Street / Duckmaloi Road
- Albion Street / Hawken Street
- Albion Street / North Street

The results of the traffic counts are provided in the Figures below. Full counts are attached at Appendix C.

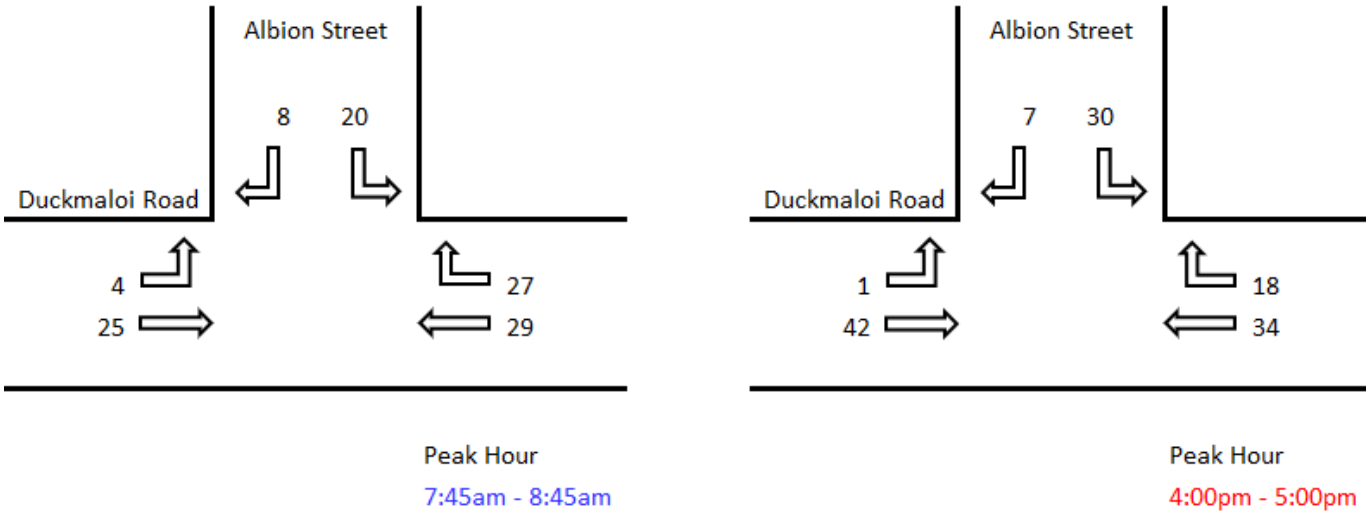


Figure 2.3: Albion Street / Duckmaloi Road Intersection Count

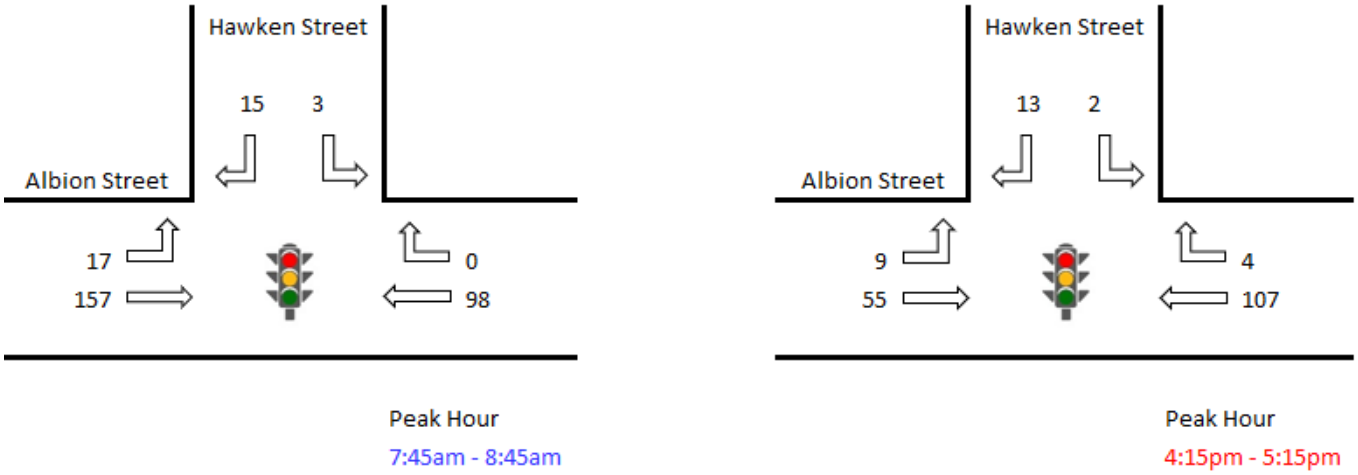


Figure 2.4: Albion Street / Hawken Street Intersection Count

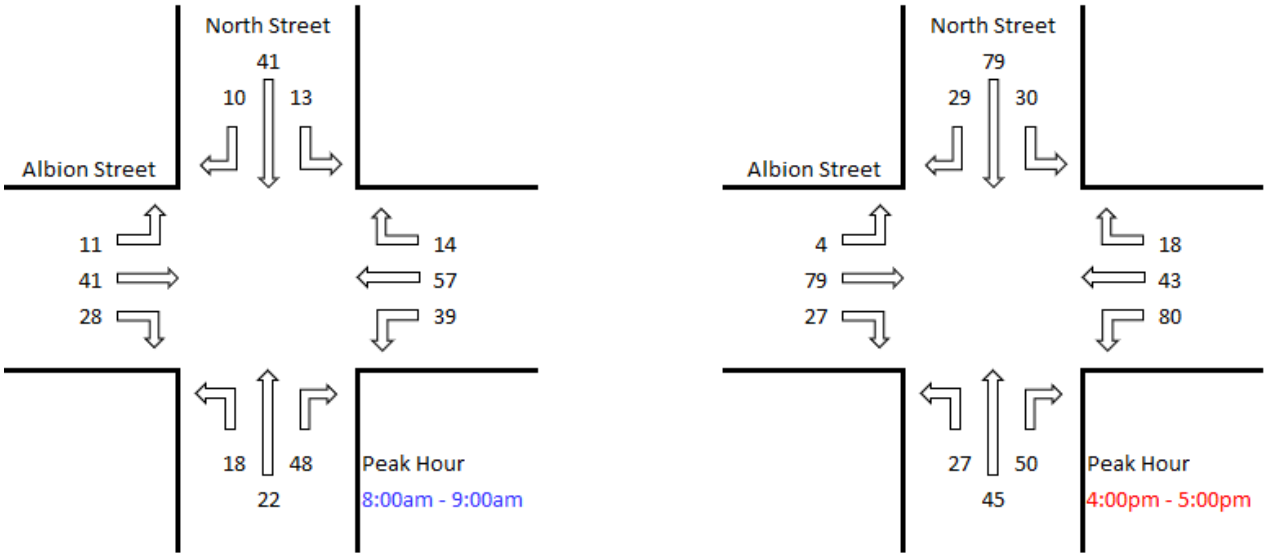


Figure 2.5: Albion Street / Lowes Mount Road / North Street Intersection Count

4 Proposed Development

4.1 Development Description

The proposed development will be constructed on the eastern side of the site while the western side will remain vacant. The proposal includes the construction and operation of a bark / timber processing plant and landscape supplies production facility, processing up to 99,000 tonnes per year of wood material, pine bark residual, sawdust and pallets. The processed wood material will be sold and transported to landscape suppliers.

The development will contain a site office / maintenance shed building area of 347m^2 and up to seven staff are expected to operate the development. The materials processing at the site is anticipated to operate during the following hours:

- Monday – Friday 7am – 6pm
- Saturday 8am – 1pm
- Sunday No processing

However, it is proposed that the delivery of materials from the site will be conducted on a 24 hour, 7 days per week basis.

The development production will gradually increase over several phases with the ultimate development producing 99,000 tonnes in 2023.

4.2 Haulage Routes

Approximately 30% of deliveries will arrive from Borg's facilities in Somersby and Charmhaven, and the remaining 70% of deliveries arriving from the Borg facility located directly adjacent (to the west) of the subject site. The haulage routes from the east and west are attached as Appendix E, with the associated swept path analysis attached as Appendix A.

Swept path assessment of the intersections of the Great Western Highway and O'Connell Road, O'Connell Road and Albion Road on the western haulage route have been undertaken and show that B-Double vehicles are able to manoeuvre through these intersections without the need to upgrade the road pavement.

Similarly, swept path assessment of the intersections of the Great Western Highway and Jenolan Caves Road, Jenolan Caves Road and Duckmaloi Road and Duckmaloi Road and Albion Street on the eastern haulage route have been undertaken and show that B-Double vehicles are able to manoeuvre through these intersections without the need to upgrade the existing road pavement.

4.3 Access, Parking and Circulation

Access to the proposed development will be provided by a 10m wide shared driveway connecting to Maher Drive. The proposed development will also provide nine parking spaces (including one accessible space) located near the site frontage. The delivery and export of materials will be undertaken by Heavy Rigid Vehicles, Truck and Dogs and 26m B-doubles.

The access, parking and circulation area generally complies with *AS/NZS 2890.1-2004 Parking Facilities – Off Street Car Parking* and *AS 2890.2-2002 Parking Facilities – Off Street Commercial Vehicle Facilities* suitable for vehicles up to 26m B-doubles.

Swept path analysis at Appendix A demonstrates access for 26m B-doubles, and the sightline assessment at Appendix B shows the site access provides visibility in compliance with the Australian Standards.

5 Car Parking Assessment

5.1 Parking requirement and provision

The parking requirement has been assessed against the Oberon Council DCP and the RMS Guide for factory and warehouse developments, respectively. As such, the applicable parking rates are outlined below:

- RMS Guide 1 space per 300m^2 GFA
- Oberon DCP Greater of:
  1 space per 100m^2 GFA or
  0.75 spaces per employee

Application of the above parking rates requires the development to provide the following parking provision:

- RMS Guide 2 (1.2) spaces
- Oberon DCP 6 (5.3) spaces

In response, the development provides nine parking spaces near the site frontage (including one accessible parking space). Oberon DCP does not require accessible parking spaces, however one has been provided.

Accordingly, the proposed development complies with Oberon Council's parking controls and is supportable under traffic planning grounds.

During the construction phase there is sufficient space to provide on site parking for all construction workers.

6 Traffic Assessment

6.1 Development Traffic Generation

During the construction of the facility it is estimated that there would be approximately 5 vehicle trips in the morning and evening peak periods for the five construction staff and 5 construction vehicle movements during the morning and evening peak periods. Note it is anticipated that there would be a total of approximately 220 truck movements bring in crushed concrete/soil into the site during construction.

As most traffic movements will occur during the day to day operations once the proposed development is complete, a full assessment was undertaken using SIDRA 8 modelling software for the three main intersections in the vicinity of the site.

As such, the 2023 projection for vehicle movements once the proposal is complete is anticipated to be 21 truck movements per day. The operational analysis for the site is included at Appendix F. However, as a worst-case scenario it is assumed that all 21 truck movements would occur in each morning and afternoon peak external road network periods. Furthermore, the ultimate development requires seven staff to operate the site who would arrive during the morning peak hour and depart during the afternoon peak hour.

6.2 Impact of Generated Traffic

From anticipated traffic generation rates calculated in Sections 5.1 above, it can be seen that there will be only a small estimated increase of traffic in the morning and evening peak, which corresponds to an additional vehicle on the external road network every 2-3 minutes during the morning and afternoon peak hour.

With reference to the haulage routes discussed in Section 4.2, the intersections most likely to be impacted by the development include:

- Albion Street / Lowes Mount Road / North Street
- Albion Street / Hawken Street
- Albion Street / Duckmaloi Road

Intersection performance has been assessed using the SIDRA 8 modeling software which uses the level of service (delay) model adopted by the Roads and Maritime Services (RMS) in NSW to assess intersection performance. Average delay is used to determine the level of service (LOS) based on the following table sourced from the RMS' *'Guide to Traffic Generating Developments'*.

Table 4.2
Level of service criteria for intersections

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	< 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode

Figure 5.1: RMS level of service criteria for intersections

For assessment purposes a LOS D or higher is considered satisfactory intersection operation. As outlined in Section 3.4 traffic counts were undertaken at the intersection of:

- Albion Street / Lowes Mount Road / North Street
- Albion Street / Hawken Street
- Albion Street / Duckmaloi Road

Each of these intersections were modelled using SIDRA for the AM and PM peaks. The growth scenario assumes a 2% growth rate per annum. The results of this analysis are available in Appendix D of this report and are summarized below:

Table 5.1: Albion Street / Lowes Mount Road / North Street SIDRA Intersection Analysis Summary

Albion Street / Lowes Mount Road / North Street		Base Case Scenario		10-Year Growth Scenario	
		Existing	Existing + Proposed Development	Existing	Existing + Proposed Development
AM	Average Delay (sec)	9.7	9.7	9.9	10.0
	LOS	A	A	A	A
PM	Average Delay (sec)	9.5	9.9	9.7	10.1
	LOS	A	A	A	A

Table 5.2: Albion Street / Hawken Street SIDRA Intersection Analysis Summary

Albion Street / Hawken Street		Base Case Scenario		10-Year Growth Scenario	
		Existing	Existing + Proposed Development	Existing	Existing + Proposed Development
AM	Average Delay (sec)	6.7	7.2	6.7	7.2
	LOS	A	A	A	A
PM	Average Delay (sec)	7.5	8.5	7.7	8.7
	LOS	A	A	A	A

Table 5.3: Albion Street / Duckmaloi Road SIDRA Intersection Analysis Summary

Albion Street / Duckmaloi Road		Base Case Scenario		10-Year Growth Scenario	
		Existing	Existing + Proposed Development	Existing	Existing + Proposed Development
AM	Average Delay (sec)	7.0	7.0	7.2	7.3
	LOS	A	A	A	A
PM	Average Delay (sec)	6.5	6.6	6.7	6.8
	LOS	A	A	A	A

As shown in the table above, the nearby intersections operate at LOS A. This shows that there is spare capacity within these intersections and the development traffic can be accommodated within the external road network.

In summary, no significant decrease in the performance of the local traffic network is anticipated as a result of the proposed development. There should be no warrant for any intersection upgrades, as a result of traffic generated, should this development be approved.

6.3 Internal Traffic Management

All heavy vehicles will be required to enter and exit the site via the weighbridge which will be located adjacent to the site office. The weighbridge will only be able to accommodate one vehicle at a time in either direction, therefore, in order to safely manage heavy vehicle movements, it is proposed to provide a boom gate and traffic signals on each approach to the weighbridge. A waiting area large enough to store a 26 metre B-Double will also be provided on each approach to ensure that a vehicle crossing over the weighbridge will have sufficient clearance to pass stationary vehicle waiting to access the weighbridge from the opposite direction.

Heavy vehicle movements within the site will be one-way clockwise to minimize conflicts and to ensure the safe and efficient operation of the site.

Parking for staff and visitors will be provided in marked parking bays south of the weighbridge between the site office and the access driveway off Maher Drive.

7 Conclusion/Recommendations

This Traffic Impact Study has been prepared in accordance with the requirements of the SEAR's issued 30 November 2018, RMS's letter dated 6 July 2018, Oberon Council DCP, the Road and Maritime Services (RMS) *'Guide to Traffic Generating Developments'* to accompany a Development Application to Oberon Council for the consent of a bark / timber processing plant and landscape supplies production facility, producing up to 99,000 tonnes per year of wood material, pine bark residual, sawdust and pallets at full development in 2023. The development is located on the eastern side of 26 Endeavour Street, Oberon, however, access to the site is via Hawken Street and Maher Drive.

Council's DCP and the RMS Guide requires the development to provide 2 parking spaces and 6 parking spaces, respectively. In response, the development provides nine spaces that are designed in compliance with the Australian Standards. Oberon Council DCP does not require accessible spaces however one has been provided.

Approximately 21 truck movements per day is expected to be generated from the development, however as a worst-case scenario the intersection modelling assumed all 21 trucks movements occur in each peak period. The development will be operated by seven staff who are expected to arrive during the morning and depart in the afternoon peak period.

The overall impact of the proposed development on the efficiency of the local traffic network is anticipated to be negligible with nearby intersections operating at Level of Service A. Based on the results of SIDRA analysis there is significant capacity available in the intersections assessed in this report, and therefore the development traffic can be accommodated within the external road network without significant increase in delay to nearby intersections. The intersections assessed are as follows:

- Albion Street / Lowes Mount Road / North Street
- Albion Street / Hawken Street
- Albion Street / Duckmaloi Road

Swept path analysis demonstrates site access and internal circulation for vehicles up to 26m B-doubles. These facilities are also considered practical and safe ensuring that all traffic generated by the development can enter and exit the site in a forward direction.

Swept path assessment of the intersections of the eastern and western haulage routes have been undertaken and show that B-Double vehicles are able to manoeuvre through these intersections without the need to upgrade the existing road pavement.

The Traffic Impact Study 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.

8 References

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

Australian Standards, *'AS 2890.2:2002 Off-Street Commercial Vehicle Facilities'*.

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

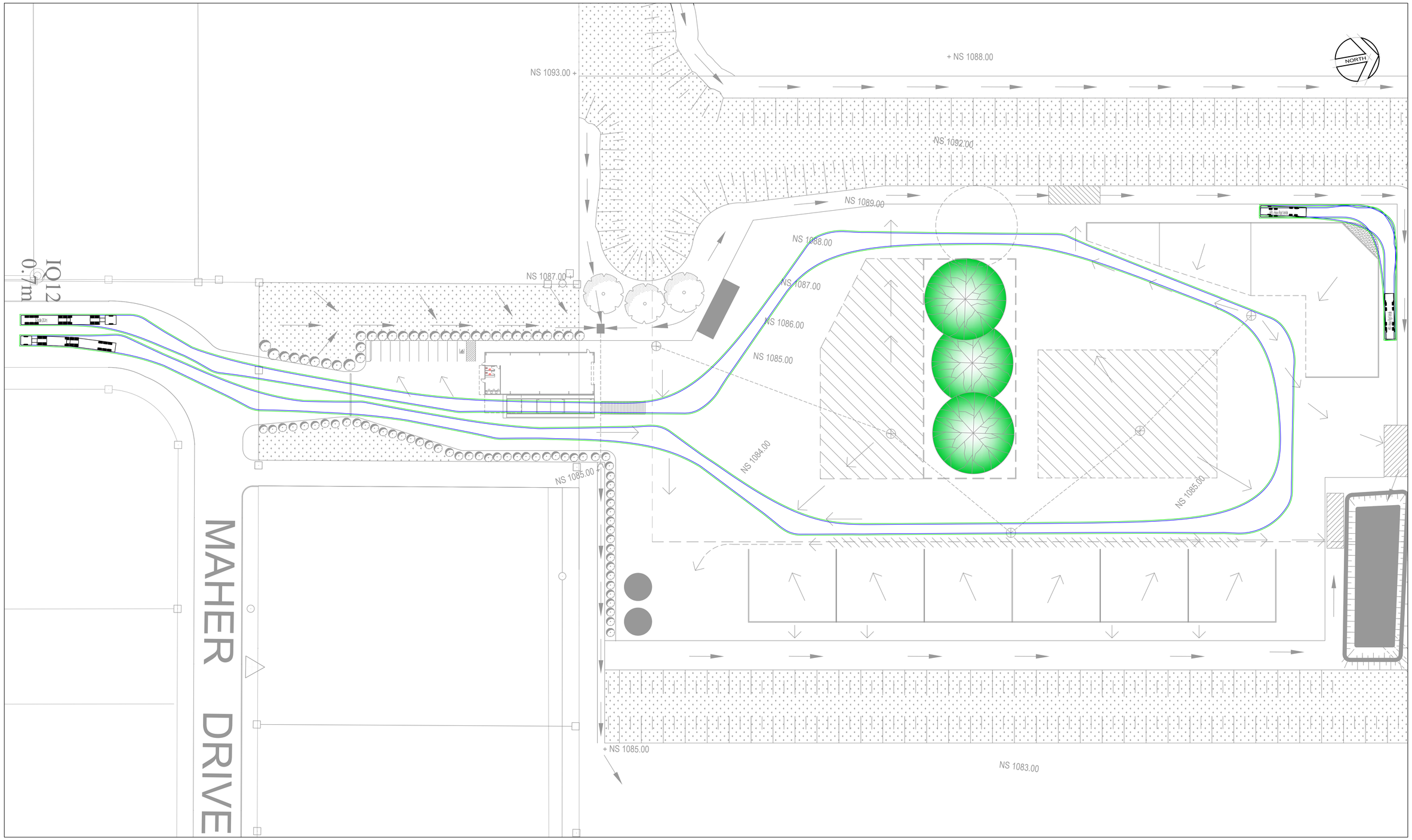
Roads and Maritime Services, *'Guide to Traffic Generating Developments'* Version 2.2 dated October 2002.

Oberon Council's DCP

Appendix A

Swept Path Analysis

A1



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B-DOUBLE SITE ACCESS AND HRV / FIRE TRUCK CIRCULATION

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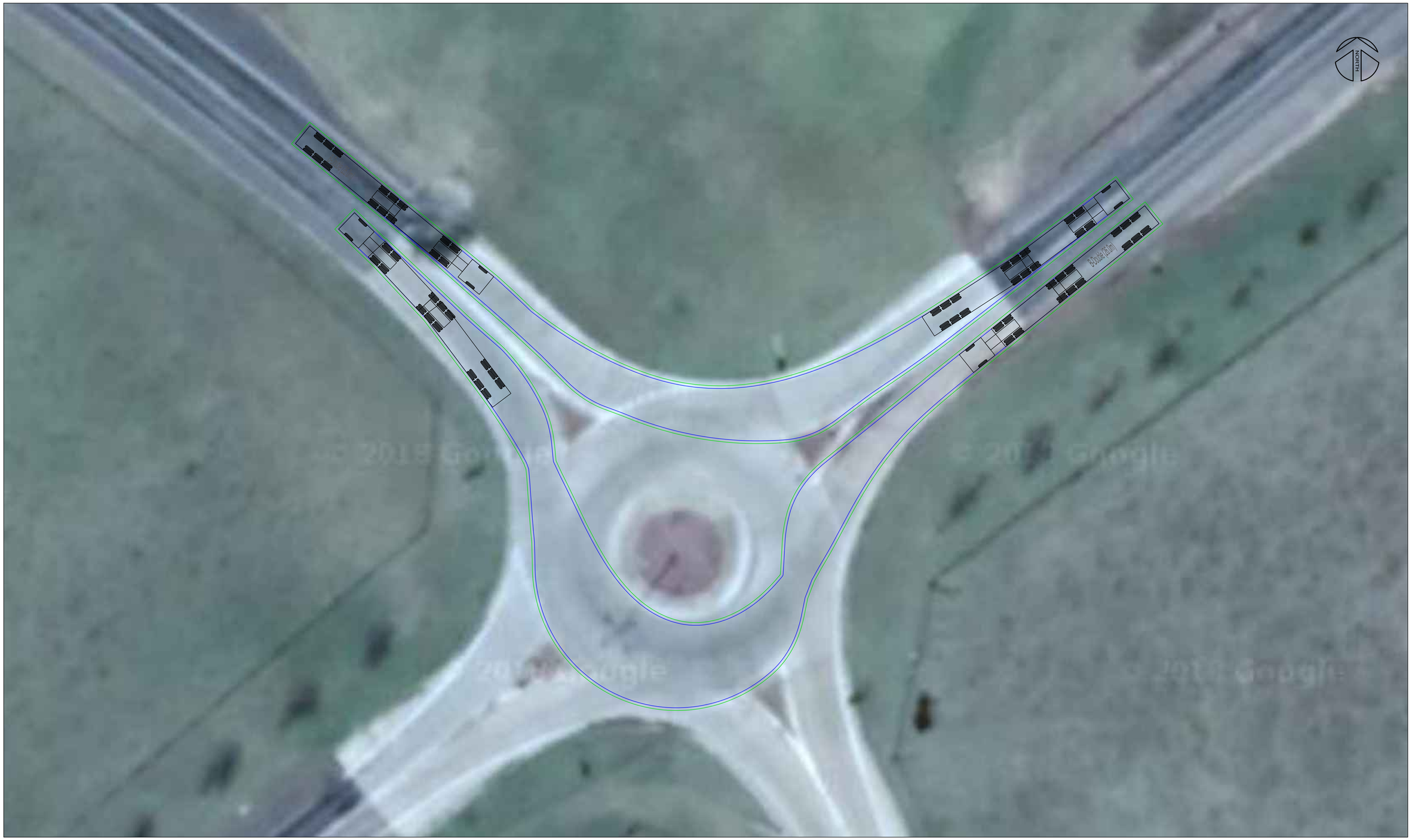

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ALBION STREET / O'CONNELL ROAD / ABERCROMBIE ROAD - B-DOUBLE

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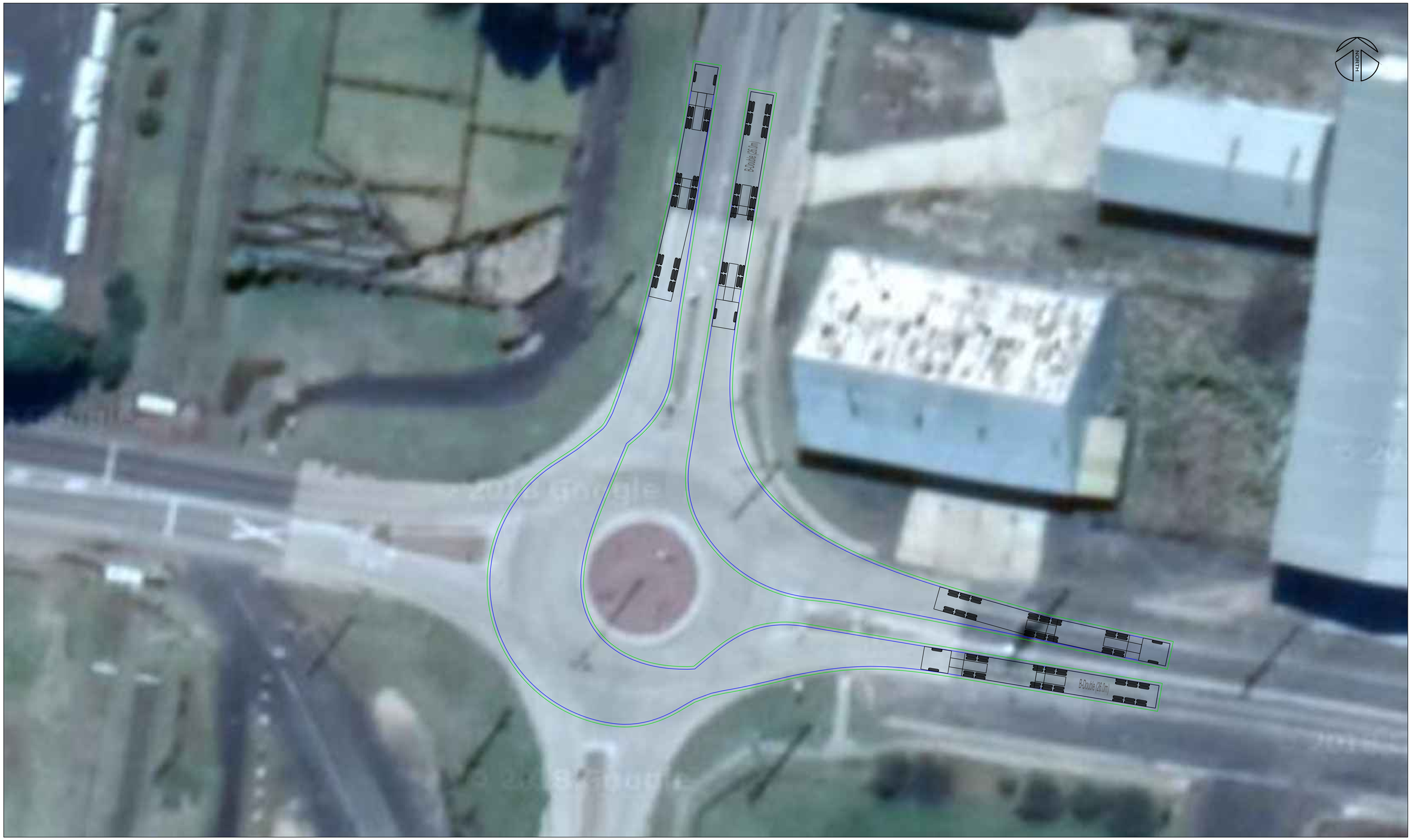

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PROPOSED BARK / TIMBER PROCESSING AND LANDSCAPE SUPPLIES FACILITY
26 ENDEAVOUR STREET, OBERON

ALBION STREET / LOWES MOUNT ROAD / NORTH STREET - B-DOUBLE

Designed: AAJ
Drawn: AAJ
Checked: AAJ

Scales: Plan
Horiz.
Vert.
X-Sect.

Datum: A.H.D.

Plan No.
SY180215TR05
File Ref.
SY180215
REV.
B
SHEET 5 OF 9 SHEETS

A1

DIAL BEFORE YOU DIG
www.1100.com.au

4 0 4 8 12 16 20
METRES
1:200

No	DATE	AMENDMENT
A	21/11/2018	FIRST ISSUE
B	05/02/2019	SECOND ISSUE

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

Client:
BORG MANUFACTURING

PROPOSED BARK / TIMBER PROCESSING AND LANDSCAPE SUPPLIES FACILITY
26 ENDEAVOUR STREET, OBERON

ALBION STREET / DUCKMALOI ROAD - B-DOUBLE

Designed: AAJ
Drawn: AAJ
Checked: AAJ

Scales: Plan
Horiz.
Vert.
X-Sect.

Datum: A.H.D.

Plan No.
SY180215TR06
File Ref.
SY180215
REV.
B
SHEET 6 OF 9 SHEETS

A1

DIAL BEFORE YOU DIG www.1100.com.au

4 0 4 8 12 16 20 METRES 1:200

No	DATE	AMENDMENT
A	21/11/2018	FIRST ISSUE
B	05/02/2019	SECOND ISSUE

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

Client:

BORG MANUFACTURING

PROPOSED BARK / TIMBER PROCESSING AND LANDSCAPE SUPPLIES FACILITY
26 ENDEAVOUR STREET, OBERON

DUCKMALOI ROAD / JENOLAN CAVES ROAD - B-DOUBLE

Designed: AAJ
Drawn: AAJ
Checked: AAJ

Scales: Plan
Horiz.
Vert.
X-Sect.

Datum: A.H.D.

Plan No.
SY180215TR07
File Ref.
SY180215
REV.
B
SHEET 7 OF 9 SHEETS

A1

DIAL BEFORE YOU DIG
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5 0 5 10 15 20 25
METRES
1:250

No	DATE	AMENDMENT
A	21/11/2018	FIRST ISSUE
B	05/02/2019	SECOND ISSUE

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
ABN: 26 134 067 842
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Client:
BORG MANUFACTURING

PROPOSED BARK / TIMBER PROCESSING AND LANDSCAPE SUPPLIES FACILITY
26 ENDEAVOUR STREET, OBERON
JENOLAN CAVES ROAD / GREAT WESTERN HIGHWAY - B-DOUBLE

Designed: AAJ
Drawn: AAJ
Checked: AAJ

Scales: Plan
Horiz.
Vert.
X-Sect.

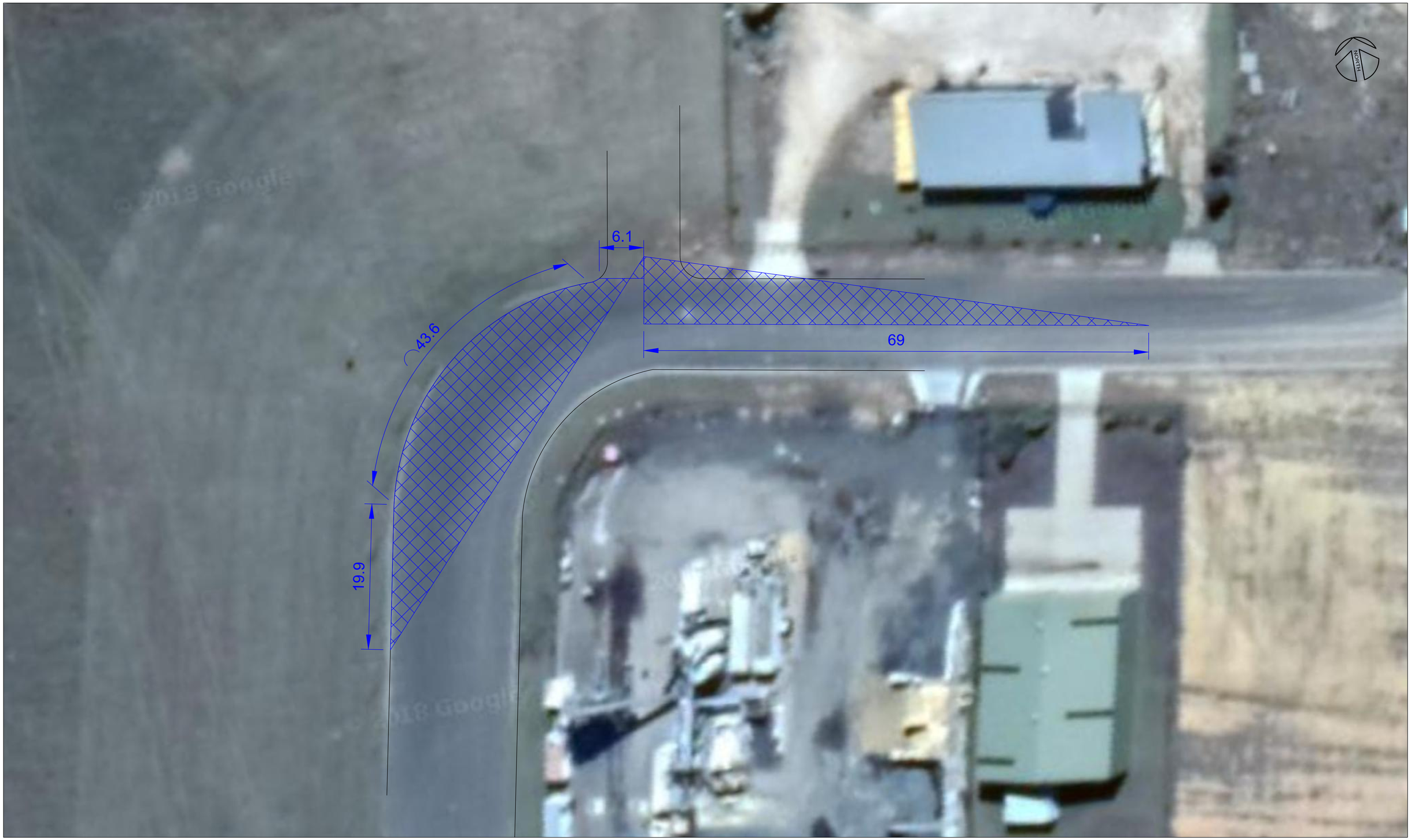
Datum: A.H.D.

Plan No.
SY180215TR08
File Ref.
SY180215
REV.
B
SHEET 8 OF 9 SHEETS

Appendix B

Sightline Assessment

A1



DIAL BEFORE YOU DIG
www.1100.com.au

5 0 5 10 15 20 25
METRES
1:250

No	DATE	AMENDMENT
A	16/11/2018	FIRST ISSUE

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

Client:

BORG MANUFACTURING

PROPOSED BARK / TIMBER PROCESSING AND LANDSCAPE SUPPLIES FACILITY
26 ENDEAVOUR STREET, OBERON

SIGHTLINE ASSESMENT

Designed: AAJ
Drawn: AAJ
Checked: AAJ

Scales: Plan
Horiz.
Vert.
X-Sect.

Datum: A.H.D.

Plan No.
SY180215TR02
File Ref.
SY180215
REV.
A
SHEET 2 OF 2 SHEETS

Appendix C

Traffic counts

, ,

Turn Count Summary

Location: **Albion Street at Duckmaloi Road,**
GPS Coordinates:
Date: **2018-10-18**
Day of week: **Thursday**
Weather:
Analyst:

Total vehicle traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00	0	0	0	0	15	0	1	0	0	0	6	7	29
07:15	0	0	0	0	2	0	5	0	0	0	6	5	18
07:30	0	0	0	1	8	0	5	0	1	0	7	5	27
07:45	0	0	0	2	5	0	11	0	2	0	8	11	39
08:00	0	0	0	1	5	0	0	0	2	0	6	5	19
08:15	0	0	0	0	5	0	4	0	1	0	9	6	25
08:30	0	0	0	1	10	0	5	0	3	0	6	5	30
08:45	0	0	0	2	6	0	3	0	1	0	12	1	25

Car traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00	0	0	0	0	12	0	0	0	0	0	4	4	20
07:15	0	0	0	0	2	0	3	0	0	0	6	3	14
07:30	0	0	0	0	7	0	1	0	1	0	6	4	19
07:45	0	0	0	2	5	0	4	0	2	0	6	7	26
08:00	0	0	0	1	4	0	0	0	2	0	6	3	16
08:15	0	0	0	0	3	0	1	0	0	0	8	3	15
08:30	0	0	0	0	9	0	2	0	3	0	6	1	21
08:45	0	0	0	2	5	0	1	0	1	0	12	0	21

Truck traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00	0	0	0	0	3	0	1	0	0	0	2	3	9
07:15	0	0	0	0	0	0	2	0	0	0	0	2	4
07:30	0	0	0	1	1	0	4	0	0	0	1	1	8
07:45	0	0	0	0	0	0	7	0	0	0	2	4	13
08:00	0	0	0	0	1	0	0	0	0	0	0	2	3
08:15	0	0	0	0	2	0	3	0	1	0	1	3	10
08:30	0	0	0	1	1	0	3	0	0	0	0	4	9
08:45	0	0	0	0	1	0	2	0	0	0	0	1	4

Pedestrian volumes

Interval starts	NE			NW			SW			SE			Total
	Left	Right	Total	Left	Right	Total	Left	Right	Total	Left	Right	Total	
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Peak Hour

07:45 - 08:45

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	0	0	0	4	25	0	20	0	8	0	29	27	113
Factor	0.00	0.00	0.00	0.50	0.62	0.00	0.45	0.00	0.67	0.00	0.81	0.61	0.72
Approach Factor	0.00			0.66			0.54			0.74			

Peak Hour Vehicle Summary

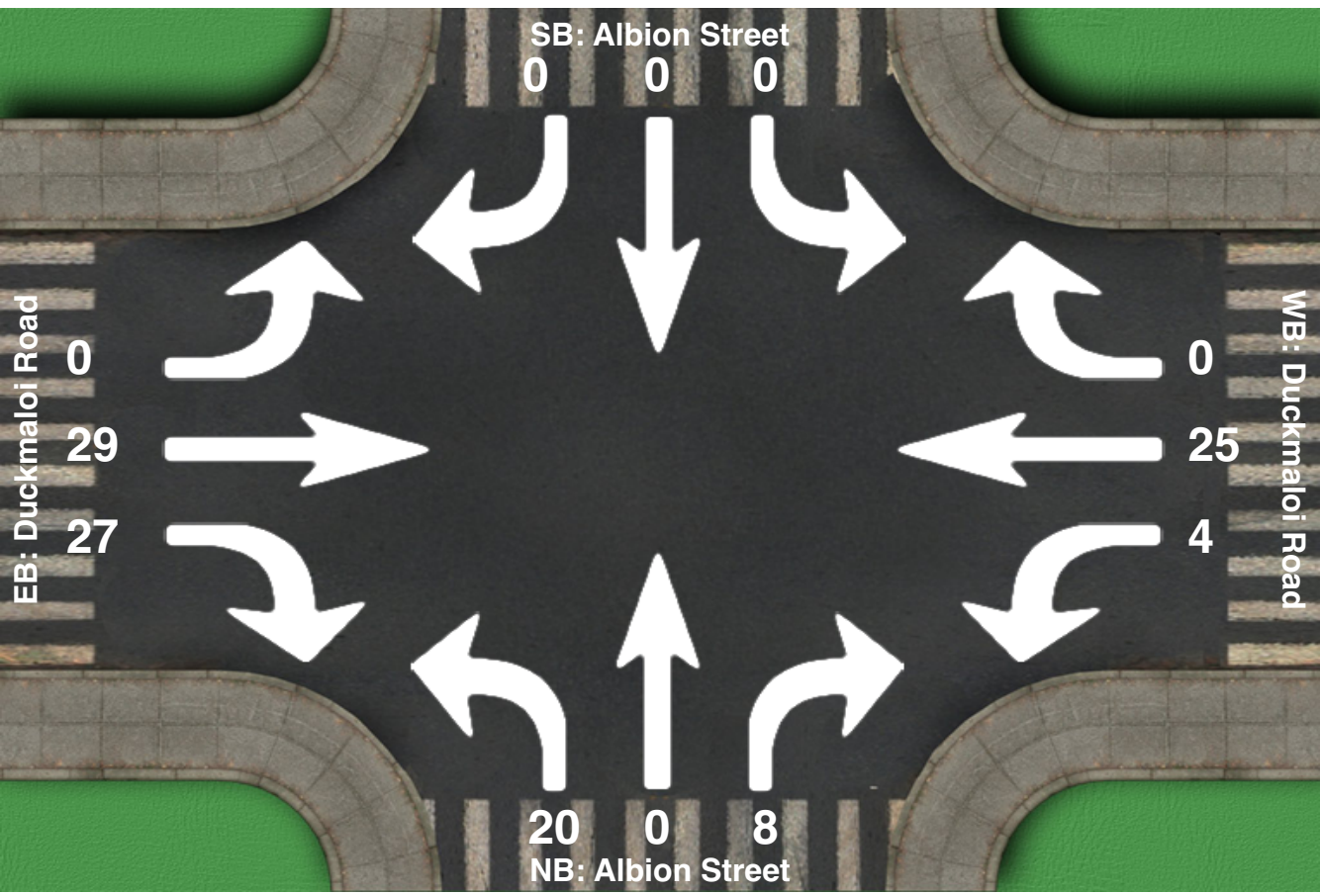
Vehicle	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Car	0	0	0	3	21	0	7	0	7	0	26	14	78
Truck	0	0	0	1	4	0	13	0	1	0	3	13	35

Peak Hour Pedestrians

	NE			NW			SW			SE			Total
	Left	Right	Total	Left	Right	Total	Left	Right	Total	Left	Right	Total	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Peak Hour

Location: Albion Street at Duckmaloi Road,
GPS Coordinates:
Date: 2018-10-18
Day of week: Thursday
Weather:
Analyst:



Intersection Peak Hour

07:45 - 08:45

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	0	0	0	4	25	0	20	0	8	0	29	27	113
Factor	0.00	0.00	0.00	0.50	0.62	0.00	0.45	0.00	0.67	0.00	0.81	0.61	0.72
Approach Factor	0.00			0.66			0.54			0.74			

, ,

Turn Count Summary

Location: **Albion Street at Duckmaloi Road,**
GPS Coordinates:
Date: **2018-10-18**
Day of week: **Thursday**
Weather:
Analyst:

Total vehicle traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	0	0	0	1	8	0	6	0	2	0	8	3	28
16:15	0	0	0	0	16	0	8	0	2	0	13	5	44
16:30	0	0	0	0	10	0	8	0	2	0	9	4	33
16:45	0	0	0	0	8	0	8	0	1	0	4	6	27
17:00	0	0	0	2	7	0	3	0	2	0	6	2	22
17:15	0	0	0	3	7	0	7	0	0	0	7	2	26
17:30	0	0	0	0	5	0	10	0	0	0	8	5	28
17:45	0	0	0	0	2	0	7	0	2	0	5	2	18

Car traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	0	0	0	1	8	0	5	0	2	0	8	2	26
16:15	0	0	0	0	16	0	7	0	2	0	11	2	38
16:30	0	0	0	0	10	0	4	0	2	0	9	1	26
16:45	0	0	0	0	7	0	8	0	1	0	3	2	21
17:00	0	0	0	2	7	0	3	0	2	0	6	1	21
17:15	0	0	0	2	7	0	6	0	0	0	7	2	24
17:30	0	0	0	0	5	0	7	0	0	0	8	4	24
17:45	0	0	0	0	1	0	4	0	2	0	5	1	13

Truck traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	0	0	0	0	0	0	1	0	0	0	0	1	2
16:15	0	0	0	0	0	0	1	0	0	0	2	3	6
16:30	0	0	0	0	0	0	4	0	0	0	0	3	7
16:45	0	0	0	0	1	0	0	0	0	0	1	4	6
17:00	0	0	0	0	0	0	0	0	0	0	0	1	1
17:15	0	0	0	1	0	0	1	0	0	0	0	0	2
17:30	0	0	0	0	0	0	3	0	0	0	0	1	4
17:45	0	0	0	0	1	0	3	0	0	0	0	1	5

Pedestrian volumes

Interval starts	NE			NW			SW			SE			Total
	Left	Right	Total	Left	Right	Total	Left	Right	Total	Left	Right	Total	
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Peak Hour

16:00 - 17:00

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	0	0	0	1	42	0	30	0	7	0	34	18	132
Factor	0.00	0.00	0.00	0.25	0.66	0.00	0.94	0.00	0.88	0.00	0.65	0.75	0.75
Approach Factor	0.00			0.67			0.93			0.72			

Peak Hour Vehicle Summary

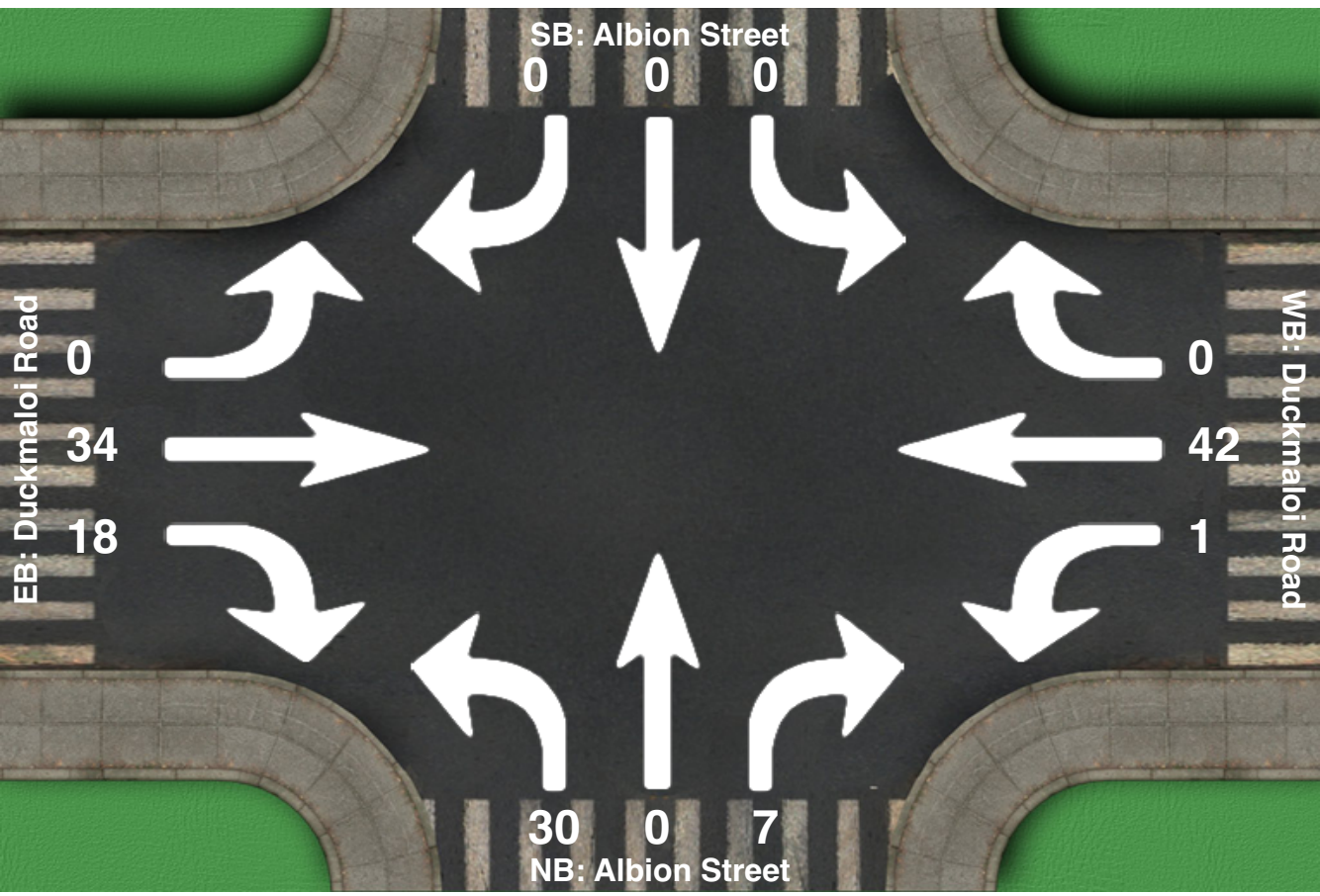
Vehicle	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Car	0	0	0	1	41	0	24	0	7	0	31	7	111
Truck	0	0	0	0	1	0	6	0	0	0	3	11	21

Peak Hour Pedestrians

	NE			NW			SW			SE			Total
	Left	Right	Total	Left	Right	Total	Left	Right	Total	Left	Right	Total	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Peak Hour

Location: Albion Street at Duckmaloi Road,
GPS Coordinates:
Date: 2018-10-18
Day of week: Thursday
Weather:
Analyst:



Intersection Peak Hour

16:00 - 17:00

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	0	0	0	1	42	0	30	0	7	0	34	18	132
Factor	0.00	0.00	0.00	0.25	0.66	0.00	0.94	0.00	0.88	0.00	0.65	0.75	0.75
Approach Factor	0.00			0.67			0.93			0.72			

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Turn Count Summary

Location: Hawken St at Albion St,
GPS Coordinates: Lat=-33.603133, Lon=150.673874
Date: 2018-10-21
Day of week: Sunday
Weather:
Analyst: Matthew R

Total vehicle traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:04	0	0	0	0	1	0	0	0	0	1	3	0	5
11:05	0	0	4	0	13	0	0	0	0	4	27	0	48
11:10	0	0	2	0	17	0	0	0	0	2	26	0	47
11:15	0	0	3	0	13	0	0	0	0	3	27	0	46
11:20	0	0	2	0	22	0	0	0	0	1	14	0	39
11:25	0	0	1	0	4	0	0	0	0	5	20	0	30
11:30	0	0	2	0	10	0	0	0	0	1	16	0	29
11:35	2	0	1	0	14	0	0	0	0	0	18	0	35
11:40	1	0	0	0	4	0	0	0	0	0	6	0	11

Car traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:04	0	0	0	0	1	0	0	0	0	0	3	0	4
11:05	0	0	4	0	11	0	0	0	0	2	26	0	43
11:10	0	0	2	0	14	0	0	0	0	1	23	0	40
11:15	0	0	3	0	8	0	0	0	0	2	22	0	35
11:20	0	0	2	0	18	0	0	0	0	0	14	0	34
11:25	0	0	1	0	2	0	0	0	0	4	18	0	25
11:30	0	0	2	0	9	0	0	0	0	1	16	0	28
11:35	2	0	1	0	13	0	0	0	0	0	13	0	29
11:40	1	0	0	0	2	0	0	0	0	0	5	0	8

Truck traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:04	0	0	0	0	0	0	0	0	0	1	0	0	1
11:05	0	0	0	0	2	0	0	0	0	2	1	0	5
11:10	0	0	0	0	3	0	0	0	0	1	3	0	7
11:15	0	0	0	0	5	0	0	0	0	1	5	0	11
11:20	0	0	0	0	4	0	0	0	0	1	0	0	5
11:25	0	0	0	0	2	0	0	0	0	1	2	0	5
11:30	0	0	0	0	1	0	0	0	0	0	0	0	1
11:35	0	0	0	0	1	0	0	0	0	0	5	0	6
11:40	0	0	0	0	2	0	0	0	0	0	1	0	3

Pedestrian volumes

Interval starts	NE			NW			SW			SE			Total
	Left	Right	Total	Left	Right	Total	Left	Right	Total	Left	Right	Total	
11:04	0	0	0	0	0	0	0	0	0	0	0	0	0
11:05	0	0	0	0	0	0	0	0	0	0	0	0	0
11:10	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0
11:20	0	0	0	0	0	0	0	0	0	0	0	0	0
11:25	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0
11:35	0	0	0	0	0	0	0	0	0	0	0	0	0
11:40	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Count Summary

11:04 - 11:41

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	3	0	15	0	98	0	0	0	0	17	157	0	290

Vehicle Summary

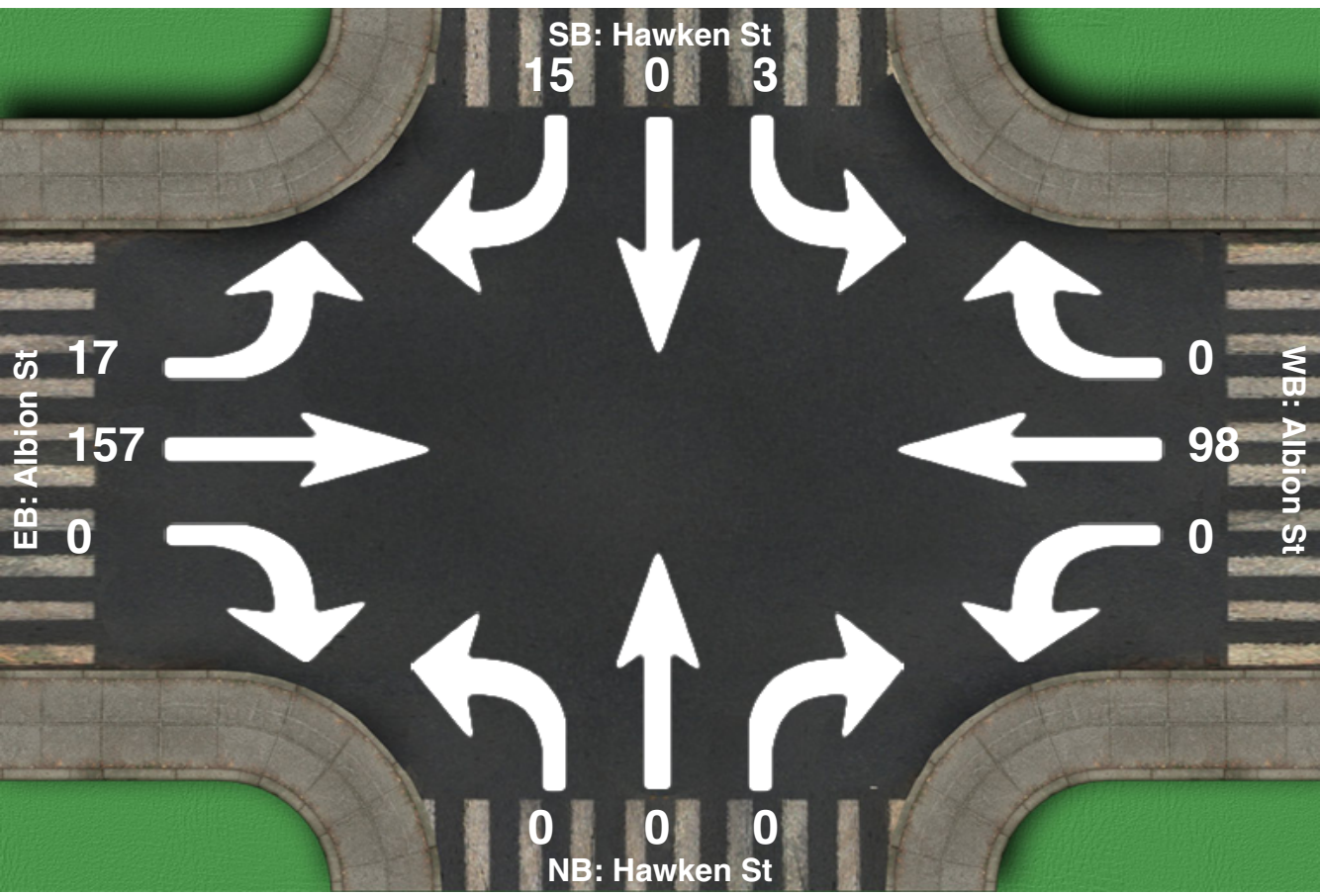
Vehicle	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Car	3	0	15	0	78	0	0	0	0	10	140	0	246
Truck	0	0	0	0	20	0	0	0	0	7	17	0	44

Pedestrians Summary

	NE			NW			SW			SE			Total
	Left	Right	Total	Left	Right	Total	Left	Right	Total	Left	Right	Total	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Count Summary

Location: Hawken St at Albion St,
GPS Coordinates: Lat=-33.603133, Lon=150.673874
Date: 2018-10-21
Day of week: Sunday
Weather:
Analyst: Matthew R



Intersection Count Summary

11:04 - 11:41

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	3	0	15	0	98	0	0	0	0	17	157	0	290

, ,

Turn Count Summary

Location: Hawken St at Albion St,
GPS Coordinates: Lat=-33.603133, Lon=150.673874
Date: 2018-10-21
Day of week: Sunday
Weather:
Analyst: Matthew R

Total vehicle traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
13:59	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	1	0	22	1	0	0	0	2	3	0	29
14:05	0	0	0	0	4	1	0	0	0	0	2	0	7
14:10	0	0	0	0	11	0	0	0	0	0	8	0	19
14:15	0	0	1	0	8	2	0	0	0	2	6	0	19
14:20	0	0	0	0	12	0	0	0	0	0	7	0	19
14:25	0	0	2	0	8	0	0	0	0	2	8	0	20
14:30	0	0	0	0	13	0	0	0	0	1	8	0	22
14:35	2	0	3	0	9	0	0	0	0	0	4	0	18
14:40	0	0	2	0	10	0	0	0	0	0	4	0	16
14:45	0	0	4	0	10	0	0	0	0	2	5	0	21

Car traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
13:59	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	20	1	0	0	0	1	2	0	24
14:05	0	0	0	0	2	1	0	0	0	0	1	0	4
14:10	0	0	0	0	9	0	0	0	0	0	4	0	13
14:15	0	0	0	0	7	1	0	0	0	1	3	0	12
14:20	0	0	0	0	11	0	0	0	0	0	5	0	16
14:25	0	0	1	0	8	0	0	0	0	1	5	0	15
14:30	0	0	0	0	9	0	0	0	0	1	3	0	13
14:35	2	0	1	0	6	0	0	0	0	0	2	0	11
14:40	0	0	0	0	8	0	0	0	0	0	2	0	10
14:45	0	0	2	0	7	0	0	0	0	1	3	0	13

Truck traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
13:59	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	1	0	2	0	0	0	0	1	1	0	5
14:05	0	0	0	0	2	0	0	0	0	0	1	0	3
14:10	0	0	0	0	2	0	0	0	0	0	4	0	6
14:15	0	0	1	0	1	1	0	0	0	1	3	0	7
14:20	0	0	0	0	1	0	0	0	0	0	2	0	3
14:25	0	0	1	0	0	0	0	0	0	1	3	0	5
14:30	0	0	0	0	4	0	0	0	0	0	5	0	9
14:35	0	0	2	0	3	0	0	0	0	0	2	0	7
14:40	0	0	2	0	2	0	0	0	0	0	2	0	6
14:45	0	0	2	0	3	0	0	0	0	1	2	0	8

Pedestrian volumes

Interval starts	NE			NW			SW			SE			Total
	Left	Right	Total	Left	Right	Total	Left	Right	Total	Left	Right	Total	
13:59	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0
14:05	0	0	0	0	0	0	0	0	0	0	0	0	0
14:10	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	0	0	0	0	0
14:20	0	0	0	0	0	0	0	0	0	0	0	0	0
14:25	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0	0
14:35	0	0	0	0	0	0	0	0	0	0	0	0	0
14:40	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Count Summary

13:59 - 14:48

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	2	0	13	0	107	4	0	0	0	9	55	0	190

Vehicle Summary

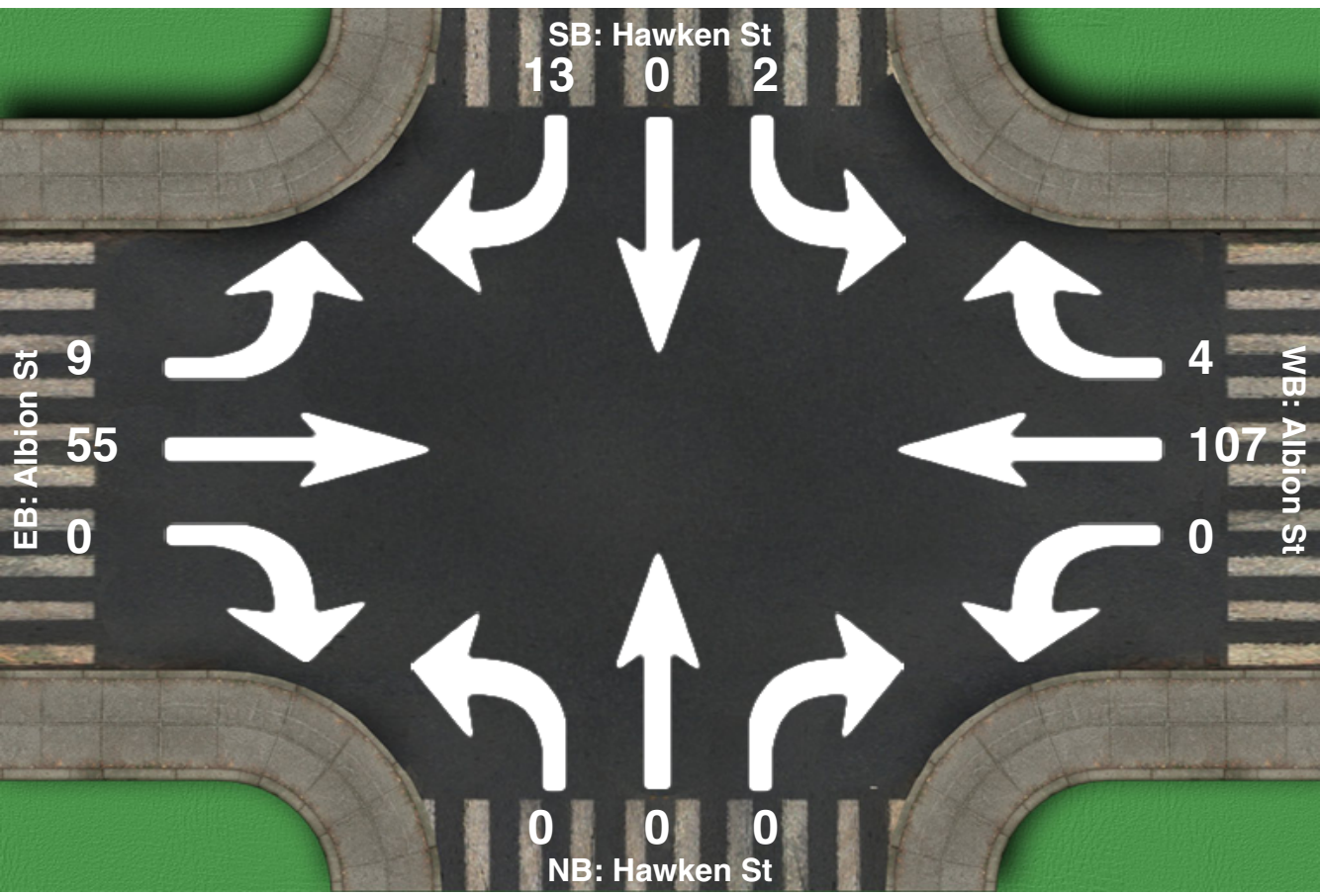
Vehicle	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Car	2	0	4	0	87	3	0	0	0	5	30	0	131
Truck	0	0	9	0	20	1	0	0	0	4	25	0	59

Pedestrians Summary

	NE			NW			SW			SE			Total
	Left	Right	Total	Left	Right	Total	Left	Right	Total	Left	Right	Total	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Count Summary

Location: Hawken St at Albion St,
GPS Coordinates: Lat=-33.603133, Lon=150.673874
Date: 2018-10-21
Day of week: Sunday
Weather:
Analyst: Matthew R



Intersection Count Summary

13:59 - 14:48

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	2	0	13	0	107	4	0	0	0	9	55	0	190

, ,

Turn Count Summary

Location: North St at Albion St,
GPS Coordinates:
Date: 2018-10-18
Day of week: Thursday
Weather:
Analyst: Matthew R

Total vehicle traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00	4	3	2	6	18	8	0	7	3	7	8	1	67
07:15	6	4	2	11	11	3	3	14	10	2	13	4	83
07:30	6	12	3	8	17	1	2	6	7	0	10	0	72
07:45	1	6	1	5	15	2	5	4	9	4	7	2	61
08:00	3	5	3	11	14	2	1	5	7	4	11	3	69
08:15	2	9	0	12	14	9	3	2	10	0	6	14	81
08:30	3	10	6	9	17	1	5	6	10	4	9	5	85
08:45	5	17	1	7	12	2	9	9	21	3	15	6	107

Car traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00	4	2	2	3	9	3	0	6	2	7	4	0	42
07:15	6	4	2	7	5	2	3	12	10	2	7	3	63
07:30	4	8	3	8	9	1	1	6	6	0	4	0	50
07:45	1	6	1	4	9	2	5	3	8	4	2	1	46
08:00	3	5	3	8	9	2	0	5	7	4	2	3	51
08:15	2	9	0	12	6	4	3	1	9	0	3	12	61
08:30	2	8	4	8	9	0	5	6	8	3	3	5	61
08:45	4	17	1	7	4	2	9	9	11	3	5	6	78

Truck traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00	0	1	0	3	9	5	0	1	1	0	4	1	25
07:15	0	0	0	4	6	1	0	2	0	0	6	1	20
07:30	2	4	0	0	8	0	1	0	1	0	6	0	22
07:45	0	0	0	1	6	0	0	1	1	0	5	1	15
08:00	0	0	0	3	5	0	1	0	0	0	9	0	18
08:15	0	0	0	0	8	5	0	1	1	0	3	2	20
08:30	1	2	2	1	8	1	0	0	2	1	6	0	24
08:45	1	0	0	0	8	0	0	0	10	0	10	0	29

Pedestrian volumes

Interval starts	NE			NW			SW			SE			Total
	Left	Right	Total	Left	Right	Total	Left	Right	Total	Left	Right	Total	
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Peak Hour

08:00 - 09:00

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	13	41	10	39	57	14	18	22	48	11	41	28	342
Factor	0.65	0.60	0.42	0.81	0.84	0.39	0.50	0.61	0.57	0.69	0.68	0.50	0.80
Approach Factor	0.70			0.79			0.56			0.83			

Peak Hour Vehicle Summary

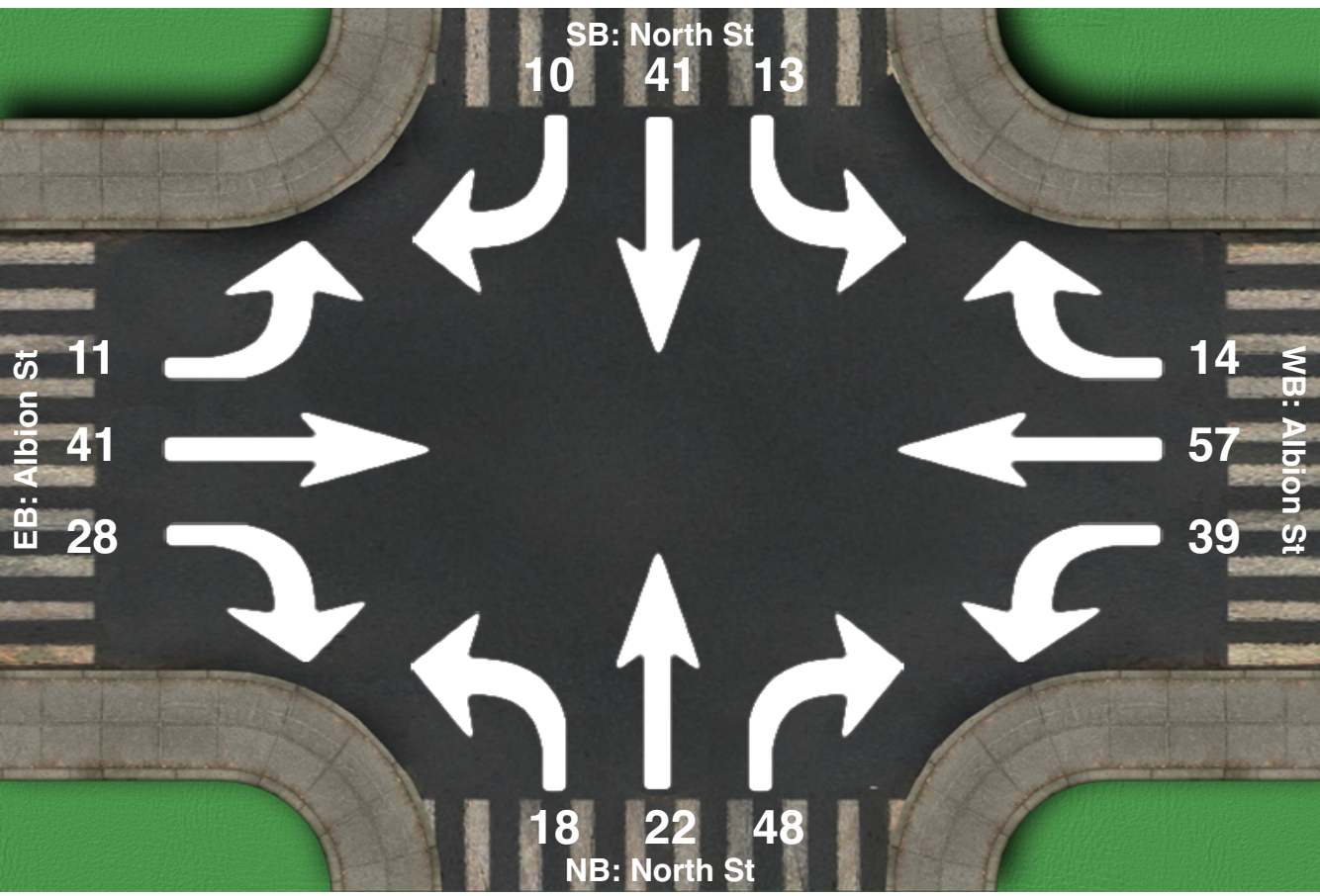
Vehicle	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Car	11	39	8	35	28	8	17	21	35	10	13	26	251
Truck	2	2	2	4	29	6	1	1	13	1	28	2	91

Peak Hour Pedestrians

	NE			NW			SW			SE			Total
	Left	Right	Total	Left	Right	Total	Left	Right	Total	Left	Right	Total	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Peak Hour

Location: North St at Albion St,
GPS Coordinates:
Date: 2018-10-18
Day of week: Thursday
Weather:
Analyst: Matthew R



Intersection Peak Hour

08:00 - 09:00

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	13	41	10	39	57	14	18	22	48	11	41	28	342
Factor	0.65	0.60	0.42	0.81	0.84	0.39	0.50	0.61	0.57	0.69	0.68	0.50	0.80
Approach Factor	0.70			0.79			0.56			0.83			

, ,

Turn Count Summary

Location: North St at Albion St,
GPS Coordinates:
Date: 2018-10-18
Day of week: Thursday
Weather:
Analyst: Matthew R

Total vehicle traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	6	19	8	22	11	5	8	15	18	1	21	5	139
16:15	6	17	8	20	8	6	6	13	11	0	27	6	128
16:30	9	23	11	17	17	3	4	10	13	1	18	11	137
16:45	9	20	2	21	7	4	9	7	8	2	13	5	107
17:00	3	11	4	15	11	7	6	8	17	3	11	7	103
17:15	4	5	3	10	7	8	1	12	3	4	11	2	70
17:30	6	11	4	11	7	4	2	12	11	2	10	0	80
17:45	2	15	5	8	8	5	0	6	4	1	8	2	64

Car traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	6	19	8	22	8	4	8	15	18	1	14	4	127
16:15	6	17	8	20	7	5	6	13	10	0	15	5	112
16:30	7	23	11	17	15	2	4	10	11	1	10	11	122
16:45	8	18	2	20	6	3	9	7	8	2	6	5	94
17:00	1	11	3	15	8	6	5	8	16	2	9	7	91
17:15	4	5	3	9	5	8	1	12	3	3	9	2	64
17:30	6	11	3	11	5	3	1	12	10	2	8	0	72
17:45	2	14	5	8	6	5	0	6	4	1	6	2	59

Truck traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	0	0	0	0	3	1	0	0	0	0	7	1	12
16:15	0	0	0	0	1	1	0	0	1	0	12	1	16
16:30	2	0	0	0	2	1	0	0	2	0	8	0	15
16:45	1	2	0	1	1	1	0	0	0	0	7	0	13
17:00	2	0	1	0	3	1	1	0	1	1	2	0	12
17:15	0	0	0	1	2	0	0	0	0	1	2	0	6
17:30	0	0	1	0	2	1	1	0	1	0	2	0	8
17:45	0	1	0	0	2	0	0	0	0	0	2	0	5

Pedestrian volumes

Interval starts	NE			NW			SW			SE			Total
	Left	Right	Total	Left	Right	Total	Left	Right	Total	Left	Right	Total	
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Peak Hour

16:00 - 17:00

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	30	79	29	80	43	18	27	45	50	4	79	27	511
Factor	0.83	0.86	0.66	0.91	0.63	0.75	0.75	0.75	0.69	0.50	0.73	0.61	0.92
Approach Factor	0.80			0.93			0.74			0.83			

Peak Hour Vehicle Summary

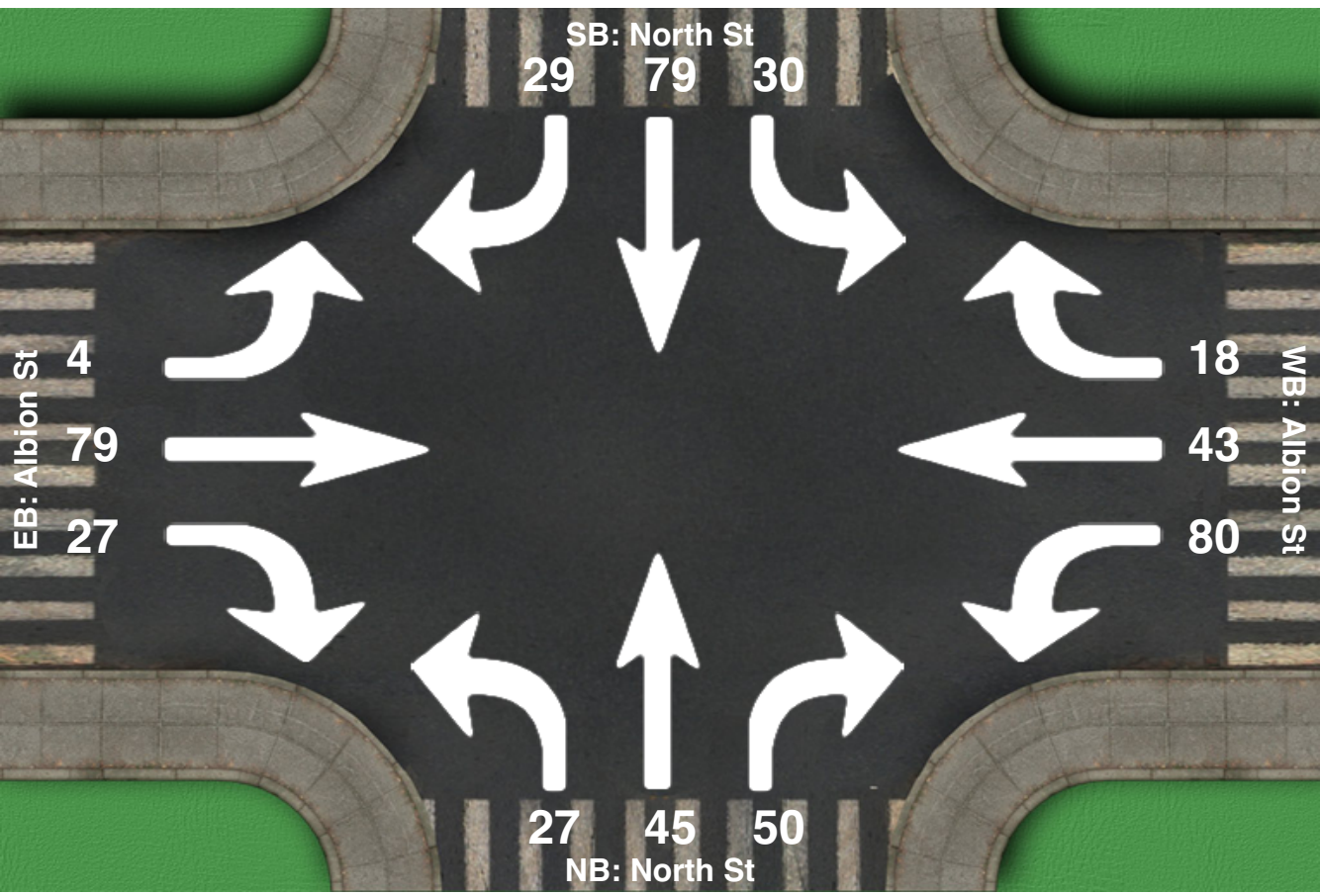
Vehicle	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Car	27	77	29	79	36	14	27	45	47	4	45	25	455
Truck	3	2	0	1	7	4	0	0	3	0	34	2	56

Peak Hour Pedestrians

	NE			NW			SW			SE			Total
	Left	Right	Total	Left	Right	Total	Left	Right	Total	Left	Right	Total	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Peak Hour

Location: North St at Albion St,
GPS Coordinates:
Date: 2018-10-18
Day of week: Thursday
Weather:
Analyst: Matthew R



Intersection Peak Hour

16:00 - 17:00

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	30	79	29	80	43	18	27	45	50	4	79	27	511
Factor	0.83	0.86	0.66	0.91	0.63	0.75	0.75	0.75	0.69	0.50	0.73	0.61	0.92
Approach Factor	0.80			0.93			0.74			0.83			

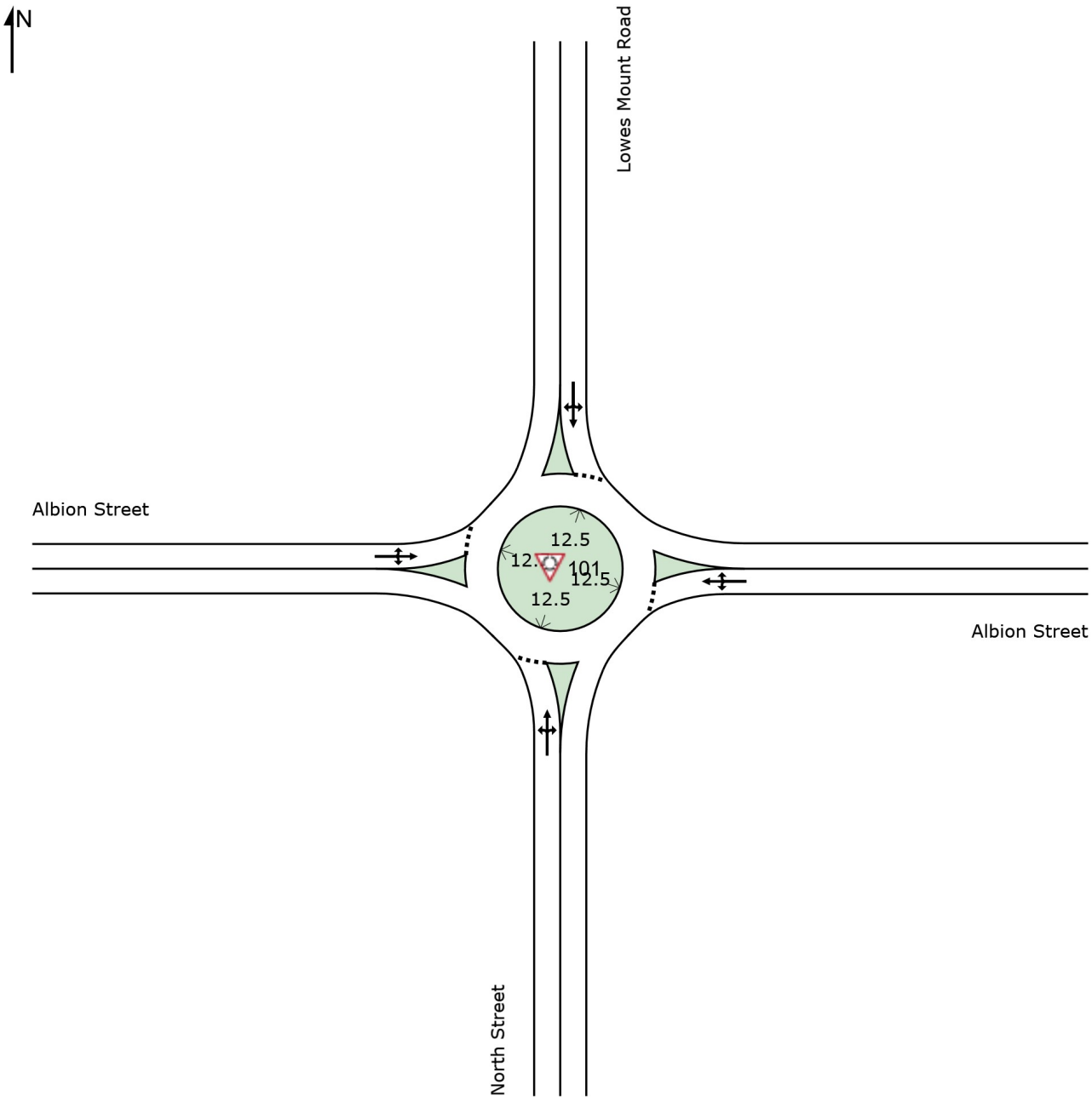
Appendix D

SIDRA Movement Summary

SITE LAYOUT

Site: 101 [Albion Street / North Street / Lowes Mount Road - AM]

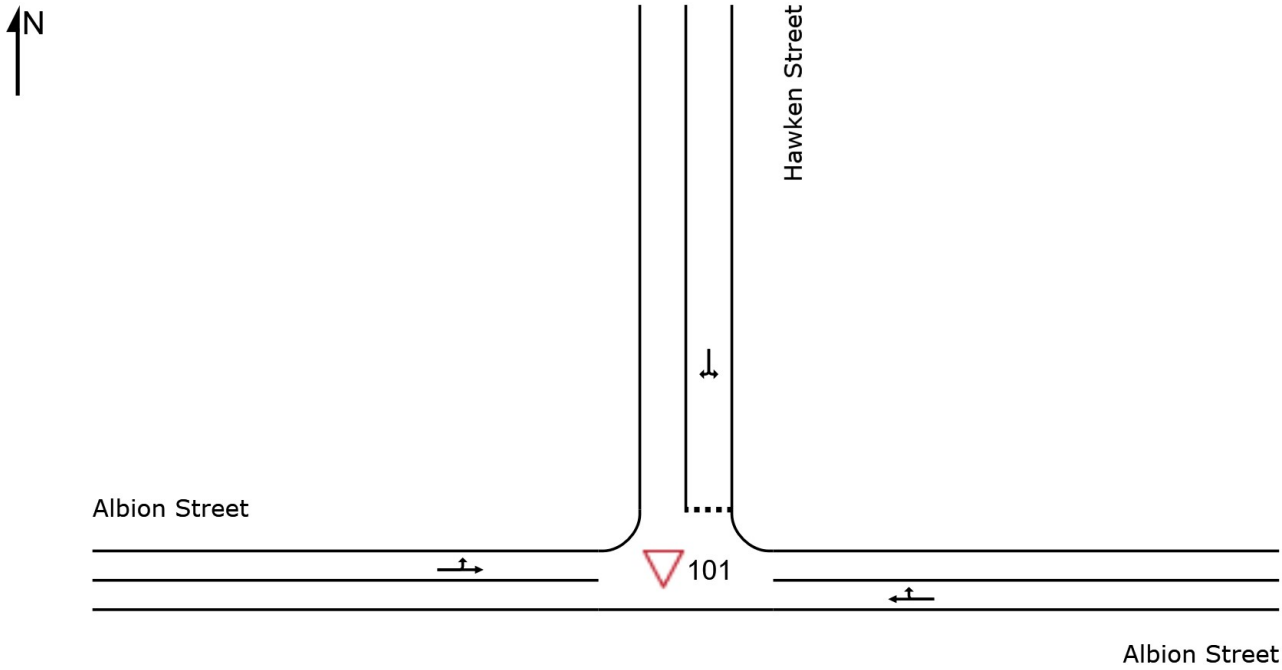
New Site
Site Category: (None)
Roundabout



SITE LAYOUT

Site: 101 [Albion Street / Hawken Street - AM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

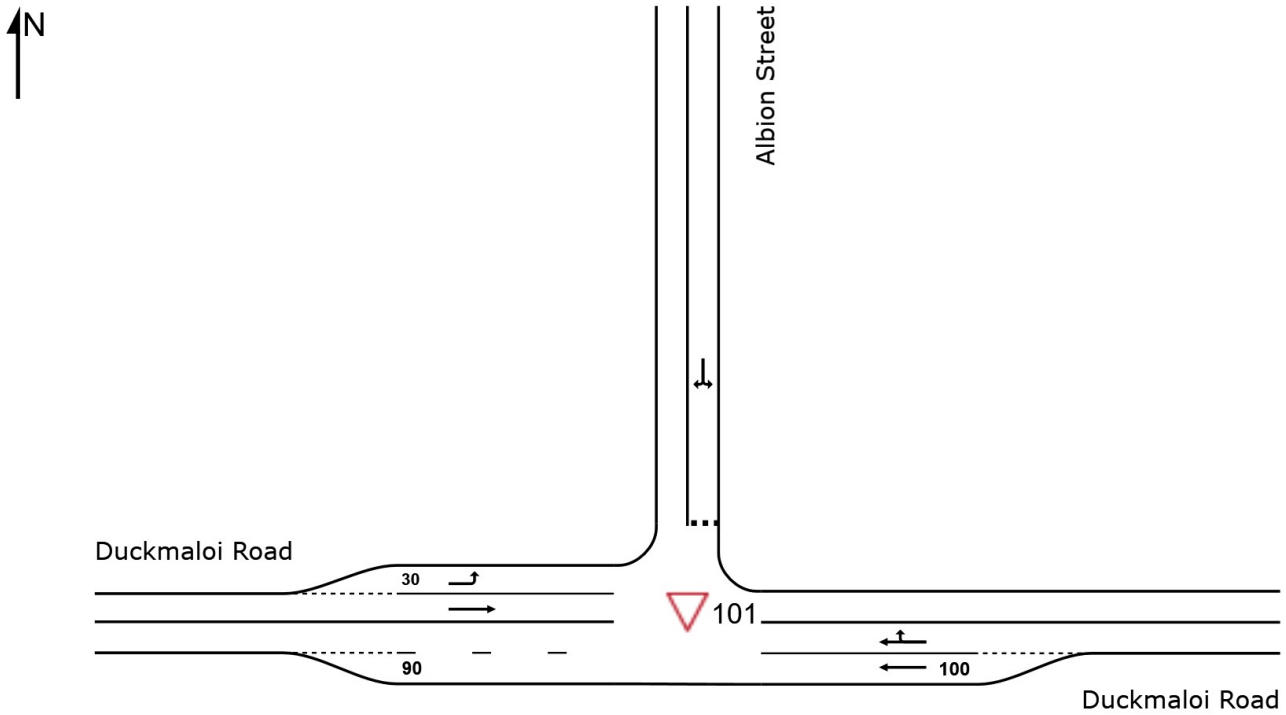


Organisation: BARKER RYAN STEWART | Created: Friday, 16 November 2018 10:34:58 AM
Project: \\brs.local\Data\Business\Norwest\Synergy\Projects\SY18\SY180215\Planning & Engineering & Surveying\BRS Documentation \Reports\SIDRA\[SY180215] Existing.sip8

SITE LAYOUT

Site: 101 [Albion Street / Duckmaloi Road - AM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)



Appendix D

Existing

MOVEMENT SUMMARY

Site: 101 [Albion Street / North Street / Lowes Mount Road - AM]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: North Street												
1	L2	19	35.0	0.091	5.4	LOS A	0.5	4.3	0.29	0.56	0.29	51.0
2	T1	23	35.0	0.091	5.6	LOS A	0.5	4.3	0.29	0.56	0.29	52.3
3	R2	51	35.0	0.091	9.4	LOS A	0.5	4.3	0.29	0.56	0.29	51.6
Approach		93	35.0	0.091	7.6	LOS A	0.5	4.3	0.29	0.56	0.29	51.6
East: Albion Street												
4	L2	41	35.0	0.112	5.4	LOS A	0.6	5.5	0.30	0.51	0.30	52.0
5	T1	60	35.0	0.112	5.7	LOS A	0.6	5.5	0.30	0.51	0.30	53.3
6	R2	15	35.0	0.112	9.4	LOS A	0.6	5.5	0.30	0.51	0.30	52.6
Approach		116	35.0	0.112	6.0	LOS A	0.6	5.5	0.30	0.51	0.30	52.7
North: Lowes Mount Road												
7	L2	14	35.0	0.069	5.7	LOS A	0.3	3.2	0.34	0.52	0.34	51.7
8	T1	43	35.0	0.069	5.9	LOS A	0.3	3.2	0.34	0.52	0.34	53.0
9	R2	11	35.0	0.069	9.7	LOS A	0.3	3.2	0.34	0.52	0.34	52.3
Approach		67	35.0	0.069	6.5	LOS A	0.3	3.2	0.34	0.52	0.34	52.6
West: Albion Street												
10	L2	12	35.0	0.083	5.4	LOS A	0.4	4.1	0.31	0.53	0.31	51.4
11	T1	43	35.0	0.083	5.7	LOS A	0.4	4.1	0.31	0.53	0.31	52.7
12	R2	29	35.0	0.083	9.5	LOS A	0.4	4.1	0.31	0.53	0.31	51.9
Approach		84	35.0	0.083	7.0	LOS A	0.4	4.1	0.31	0.53	0.31	52.2
All Vehicles		360	35.0	0.112	6.8	LOS A	0.6	5.5	0.31	0.53	0.31	52.3

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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 [Albion Street / North Street / Lowes Mount Road - PM]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: North Street												
1	L2	28	12.0	0.111	5.0	LOS A	0.6	4.6	0.28	0.55	0.28	52.2
2	T1	47	12.0	0.111	5.3	LOS A	0.6	4.6	0.28	0.55	0.28	53.3
3	R2	53	12.0	0.111	9.0	LOS A	0.6	4.6	0.28	0.55	0.28	52.9
Approach		128	12.0	0.111	6.8	LOS A	0.6	4.6	0.28	0.55	0.28	52.9
East: Albion Street												
4	L2	84	12.0	0.137	5.4	LOS A	0.8	5.9	0.37	0.54	0.37	52.7
5	T1	45	12.0	0.137	5.7	LOS A	0.8	5.9	0.37	0.54	0.37	53.9
6	R2	19	12.0	0.137	9.4	LOS A	0.8	5.9	0.37	0.54	0.37	53.4
Approach		148	12.0	0.137	6.0	LOS A	0.8	5.9	0.37	0.54	0.37	53.1
North: Lowes Mount Road												
7	L2	32	12.0	0.136	5.5	LOS A	0.7	5.7	0.38	0.55	0.38	52.3
8	T1	83	12.0	0.136	5.8	LOS A	0.7	5.7	0.38	0.55	0.38	53.4
9	R2	31	12.0	0.136	9.5	LOS A	0.7	5.7	0.38	0.55	0.38	53.0
Approach		145	12.0	0.136	6.5	LOS A	0.7	5.7	0.38	0.55	0.38	53.1
West: Albion Street												
10	L2	4	12.0	0.105	5.2	LOS A	0.6	4.4	0.33	0.52	0.33	52.3
11	T1	83	12.0	0.105	5.5	LOS A	0.6	4.4	0.33	0.52	0.33	53.4
12	R2	28	12.0	0.105	9.2	LOS A	0.6	4.4	0.33	0.52	0.33	53.0
Approach		116	12.0	0.105	6.4	LOS A	0.6	4.4	0.33	0.52	0.33	53.3
All Vehicles		538	12.0	0.137	6.4	LOS A	0.8	5.9	0.34	0.54	0.34	53.1

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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 [Albion Street / Hawken Street - AM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
East: Albion Street												
5	T1	43	20.0	0.027	1.1	LOS A	0.0	0.1	0.01	0.20	0.01	63.2
6	R2	2	20.0	0.027	6.7	LOS A	0.0	0.1	0.01	0.20	0.01	55.8
Approach		45	20.0	0.027	1.4	NA	0.0	0.1	0.01	0.20	0.01	62.8
North: Hawken Street												
7	L2	1	20.0	0.004	4.8	LOS A	0.0	0.1	0.13	0.51	0.13	47.7
9	R2	3	20.0	0.004	5.1	LOS A	0.0	0.1	0.13	0.51	0.13	48.5
Approach		4	20.0	0.004	5.0	LOS A	0.0	0.1	0.13	0.51	0.13	48.3
West: Albion Street												
10	L2	5	20.0	0.021	5.8	LOS A	0.0	0.0	0.00	0.09	0.00	56.6
11	T1	31	20.0	0.021	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	59.2
Approach		36	20.0	0.021	0.9	NA	0.0	0.0	0.00	0.09	0.00	58.8
All Vehicles		85	20.0	0.027	1.3	NA	0.0	0.1	0.01	0.17	0.01	60.2

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.

MOVEMENT SUMMARY

Site: 101 [Albion Street / Hawken Street - PM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
East: Albion Street												
5	T1	68	45.0	0.046	1.2	LOS A	0.0	0.1	0.01	0.18	0.01	63.4
6	R2	1	45.0	0.046	7.5	LOS A	0.0	0.1	0.01	0.18	0.01	55.4
Approach		69	45.0	0.046	1.3	NA	0.0	0.1	0.01	0.18	0.01	63.2
North: Hawken Street												
7	L2	1	45.0	0.015	5.5	LOS A	0.0	0.5	0.29	0.54	0.29	43.0
9	R2	12	45.0	0.015	6.1	LOS A	0.0	0.5	0.29	0.54	0.29	47.3
Approach		13	45.0	0.015	6.0	LOS A	0.0	0.5	0.29	0.54	0.29	46.9
West: Albion Street												
10	L2	11	45.0	0.073	6.1	LOS A	0.0	0.0	0.00	0.06	0.00	55.7
11	T1	99	45.0	0.073	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	59.5
Approach		109	45.0	0.073	0.6	NA	0.0	0.0	0.00	0.06	0.00	59.1
All Vehicles		192	45.0	0.073	1.2	NA	0.0	0.5	0.02	0.13	0.02	59.5

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.

MOVEMENT SUMMARY

Site: 101 [Albion Street / Duckmaloi Road - AM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
East: Duckmaloi Road												
5	T1	31	45.0	0.031	0.1	LOS A	0.1	1.2	0.03	0.12	0.03	58.8
6	R2	28	45.0	0.031	6.2	LOS A	0.1	1.2	0.12	0.44	0.12	51.7
Approach		59	45.0	0.031	3.0	NA	0.1	1.2	0.08	0.27	0.08	55.1
North: Albion Street												
7	L2	21	45.0	0.031	6.2	LOS A	0.1	1.1	0.12	0.55	0.12	51.4
9	R2	8	45.0	0.031	7.0	LOS A	0.1	1.1	0.12	0.55	0.12	51.1
Approach		29	45.0	0.031	6.4	LOS A	0.1	1.1	0.12	0.55	0.12	51.3
West: Duckmaloi Road												
10	L2	4	45.0	0.003	6.1	LOS A	0.0	0.0	0.00	0.57	0.00	51.8
11	T1	26	45.0	0.018	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		31	45.0	0.018	0.8	NA	0.0	0.0	0.00	0.08	0.00	58.7
All Vehicles		119	45.0	0.031	3.3	NA	0.1	1.2	0.07	0.29	0.07	55.0

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 [Albion Street / Duckmaloi Road - PM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
East: Duckmaloi Road												
5	T1	36	20.0	0.024	0.1	LOS A	0.1	0.8	0.06	0.14	0.06	58.5
6	R2	19	20.0	0.024	5.9	LOS A	0.1	0.8	0.13	0.31	0.13	53.8
Approach		55	20.0	0.024	2.1	NA	0.1	0.8	0.08	0.20	0.08	56.8
North: Albion Street												
7	L2	32	20.0	0.036	6.0	LOS A	0.1	1.1	0.14	0.54	0.14	52.4
9	R2	7	20.0	0.036	6.5	LOS A	0.1	1.1	0.14	0.54	0.14	52.0
Approach		39	20.0	0.036	6.1	LOS A	0.1	1.1	0.14	0.54	0.14	52.3
West: Duckmaloi Road												
10	L2	1	20.0	0.001	5.8	LOS A	0.0	0.0	0.00	0.57	0.00	52.8
11	T1	44	20.0	0.026	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		45	20.0	0.026	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
All Vehicles		139	20.0	0.036	2.6	NA	0.1	1.1	0.07	0.24	0.07	56.3

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.
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.

Appendix D

Existing + Development

MOVEMENT SUMMARY

Site: 101 [Albion Street / North Street / Lowes Mount Road - AM]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: North Street												
1	L2	19	35.0	0.096	5.5	LOS A	0.5	4.5	0.31	0.57	0.31	50.9
2	T1	23	35.0	0.096	5.7	LOS A	0.5	4.5	0.31	0.57	0.31	52.1
3	R2	56	31.7	0.096	9.4	LOS A	0.5	4.5	0.31	0.57	0.31	51.6
Approach		98	33.1	0.096	7.8	LOS A	0.5	4.5	0.31	0.57	0.31	51.6
East: Albion Street												
4	L2	41	35.0	0.121	5.4	LOS A	0.7	6.1	0.30	0.52	0.30	52.0
5	T1	60	35.0	0.121	5.7	LOS A	0.7	6.1	0.30	0.52	0.30	53.3
6	R2	22	56.7	0.121	9.8	LOS A	0.7	6.1	0.30	0.52	0.30	51.6
Approach		123	38.9	0.121	6.3	LOS A	0.7	6.1	0.30	0.52	0.30	52.5
North: Lowes Mount Road												
7	L2	21	57.8	0.080	6.2	LOS A	0.4	3.8	0.35	0.53	0.35	50.9
8	T1	43	35.0	0.080	6.0	LOS A	0.4	3.8	0.35	0.53	0.35	52.9
9	R2	11	35.0	0.080	9.7	LOS A	0.4	3.8	0.35	0.53	0.35	52.2
Approach		75	41.4	0.080	6.6	LOS A	0.4	3.8	0.35	0.53	0.35	52.2
West: Albion Street												
10	L2	12	35.0	0.085	5.6	LOS A	0.5	4.1	0.33	0.54	0.33	51.3
11	T1	43	35.0	0.085	5.8	LOS A	0.5	4.1	0.33	0.54	0.33	52.6
12	R2	29	35.0	0.085	9.6	LOS A	0.5	4.1	0.33	0.54	0.33	51.9
Approach		84	35.0	0.085	7.1	LOS A	0.5	4.1	0.33	0.54	0.33	52.2
All Vehicles		380	37.0	0.121	6.9	LOS A	0.7	6.1	0.32	0.54	0.32	52.1

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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 [Albion Street / North Street / Lowes Mount Road - PM]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: North Street												
1	L2	28	12.0	0.113	5.1	LOS A	0.6	4.7	0.30	0.55	0.30	52.1
2	T1	47	12.0	0.113	5.4	LOS A	0.6	4.7	0.30	0.55	0.30	53.2
3	R2	53	12.0	0.113	9.1	LOS A	0.6	4.7	0.30	0.55	0.30	52.8
Approach		128	12.0	0.113	6.8	LOS A	0.6	4.7	0.30	0.55	0.30	52.8
East: Albion Street												
4	L2	89	11.3	0.151	5.4	LOS A	0.9	6.8	0.37	0.55	0.37	52.7
5	T1	45	12.0	0.151	5.7	LOS A	0.9	6.8	0.37	0.55	0.37	53.8
6	R2	26	36.6	0.151	9.9	LOS A	0.9	6.8	0.37	0.55	0.37	52.4
Approach		161	15.6	0.151	6.2	LOS A	0.9	6.8	0.37	0.55	0.37	53.0
North: Lowes Mount Road												
7	L2	39	28.6	0.147	5.9	LOS A	0.8	6.4	0.39	0.56	0.39	51.7
8	T1	83	12.0	0.147	5.8	LOS A	0.8	6.4	0.39	0.56	0.39	53.4
9	R2	31	12.0	0.147	9.5	LOS A	0.8	6.4	0.39	0.56	0.39	53.0
Approach		153	16.2	0.147	6.6	LOS A	0.8	6.4	0.39	0.56	0.39	52.9
West: Albion Street												
10	L2	4	12.0	0.106	5.3	LOS A	0.6	4.5	0.34	0.53	0.34	52.3
11	T1	83	12.0	0.106	5.6	LOS A	0.6	4.5	0.34	0.53	0.34	53.4
12	R2	28	12.0	0.106	9.3	LOS A	0.6	4.5	0.34	0.53	0.34	52.9
Approach		116	12.0	0.106	6.5	LOS A	0.6	4.5	0.34	0.53	0.34	53.2
All Vehicles		558	14.2	0.151	6.5	LOS A	0.9	6.8	0.35	0.55	0.35	53.0

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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 [Albion Street / Hawken Street - AM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
East: Albion Street												
5	T1	43	20.0	0.031	1.2	LOS A	0.1	0.5	0.05	0.23	0.05	62.7
6	R2	7	48.6	0.031	7.2	LOS A	0.1	0.5	0.05	0.23	0.05	54.8
Approach		51	24.2	0.031	2.0	NA	0.1	0.5	0.05	0.23	0.05	61.4
North: Hawken Street												
7	L2	4	80.0	0.016	5.4	LOS A	0.1	0.6	0.15	0.51	0.15	38.3
9	R2	11	76.0	0.016	5.9	LOS A	0.1	0.6	0.15	0.51	0.15	46.5
Approach		15	77.1	0.016	5.8	LOS A	0.1	0.6	0.15	0.51	0.15	43.8
West: Albion Street												
10	L2	18	47.1	0.031	6.1	LOS A	0.0	0.0	0.00	0.21	0.00	54.7
11	T1	31	20.0	0.031	0.0	LOS A	0.0	0.0	0.00	0.21	0.00	58.5
Approach		48	30.0	0.031	2.3	NA	0.0	0.0	0.00	0.21	0.00	57.1
All Vehicles		114	33.5	0.031	2.6	NA	0.1	0.6	0.04	0.26	0.04	56.6

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.

MOVEMENT SUMMARY

Site: 101 [Albion Street / Hawken Street - PM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
East: Albion Street												
5	T1	68	45.0	0.050	1.3	LOS A	0.0	0.4	0.04	0.19	0.04	63.2
6	R2	4	86.3	0.050	8.5	LOS A	0.0	0.4	0.04	0.19	0.04	54.4
Approach		73	47.4	0.050	1.7	NA	0.0	0.4	0.04	0.19	0.04	62.6
North: Hawken Street												
7	L2	6	57.5	0.036	5.7	LOS A	0.1	1.2	0.29	0.55	0.29	41.1
9	R2	24	52.0	0.036	6.3	LOS A	0.1	1.2	0.29	0.55	0.29	47.0
Approach		31	53.1	0.036	6.2	LOS A	0.1	1.2	0.29	0.55	0.29	45.6
West: Albion Street												
10	L2	18	67.6	0.080	6.3	LOS A	0.0	0.0	0.00	0.09	0.00	54.6
11	T1	99	45.0	0.080	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	59.5
Approach		117	48.5	0.080	1.0	NA	0.0	0.0	0.00	0.09	0.00	58.7
All Vehicles		220	48.8	0.080	1.9	NA	0.1	1.2	0.05	0.19	0.05	57.6

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.

MOVEMENT SUMMARY

Site: 101 [Albion Street / Duckmaloi Road - AM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
East: Duckmaloi Road												
5	T1	31	45.0	0.033	0.0	LOS A	0.1	1.4	0.03	0.10	0.03	59.0
6	R2	32	50.5	0.033	6.3	LOS A	0.1	1.4	0.13	0.47	0.13	51.3
Approach		62	47.8	0.033	3.2	NA	0.1	1.4	0.08	0.29	0.08	54.8
North: Albion Street												
7	L2	24	52.2	0.035	6.3	LOS A	0.1	1.3	0.12	0.55	0.12	51.1
9	R2	8	45.0	0.035	7.0	LOS A	0.1	1.3	0.12	0.55	0.12	51.1
Approach		33	50.3	0.035	6.5	LOS A	0.1	1.3	0.12	0.55	0.12	51.1
West: Duckmaloi Road												
10	L2	4	45.0	0.003	6.1	LOS A	0.0	0.0	0.00	0.57	0.00	51.8
11	T1	26	45.0	0.018	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		31	45.0	0.018	0.8	NA	0.0	0.0	0.00	0.08	0.00	58.7
All Vehicles		125	47.8	0.035	3.5	NA	0.1	1.4	0.07	0.30	0.07	54.7

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 [Albion Street / Duckmaloi Road - PM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
East: Duckmaloi Road												
5	T1	36	20.0	0.027	0.1	LOS A	0.1	1.0	0.05	0.13	0.05	58.6
6	R2	22	31.4	0.027	6.1	LOS A	0.1	1.0	0.14	0.35	0.14	53.0
Approach		58	24.4	0.027	2.4	NA	0.1	1.0	0.08	0.22	0.08	56.4
North: Albion Street												
7	L2	35	27.3	0.040	6.1	LOS A	0.1	1.2	0.14	0.54	0.14	52.1
9	R2	7	20.0	0.040	6.6	LOS A	0.1	1.2	0.14	0.54	0.14	52.0
Approach		42	26.0	0.040	6.2	LOS A	0.1	1.2	0.14	0.54	0.14	52.0
West: Duckmaloi Road												
10	L2	1	20.0	0.001	5.8	LOS A	0.0	0.0	0.00	0.57	0.00	52.8
11	T1	44	20.0	0.026	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		45	20.0	0.026	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
All Vehicles		145	23.5	0.040	2.8	NA	0.1	1.2	0.07	0.25	0.07	56.0

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.

Appendix D

Existing + Growth

MOVEMENT SUMMARY

Site: 101 [Albion Street / North Street / Lowes Mount Road - AM]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: North Street												
1	L2	23	35.0	0.112	5.6	LOS A	0.6	5.4	0.33	0.57	0.33	50.9
2	T1	27	35.0	0.112	5.8	LOS A	0.6	5.4	0.33	0.57	0.33	52.2
3	R2	61	35.0	0.112	9.6	LOS A	0.6	5.4	0.33	0.57	0.33	51.5
Approach		112	35.0	0.112	7.8	LOS A	0.6	5.4	0.33	0.57	0.33	51.5
East: Albion Street												
4	L2	49	35.0	0.138	5.6	LOS A	0.8	6.9	0.33	0.52	0.33	51.9
5	T1	72	35.0	0.138	5.8	LOS A	0.8	6.9	0.33	0.52	0.33	53.2
6	R2	18	35.0	0.138	9.6	LOS A	0.8	6.9	0.33	0.52	0.33	52.4
Approach		139	35.0	0.138	6.2	LOS A	0.8	6.9	0.33	0.52	0.33	52.6
North: Lowes Mount Road												
7	L2	17	35.0	0.086	5.9	LOS A	0.4	4.0	0.38	0.54	0.38	51.6
8	T1	52	35.0	0.086	6.2	LOS A	0.4	4.0	0.38	0.54	0.38	52.8
9	R2	13	35.0	0.086	9.9	LOS A	0.4	4.0	0.38	0.54	0.38	52.1
Approach		81	35.0	0.086	6.7	LOS A	0.4	4.0	0.38	0.54	0.38	52.5
West: Albion Street												
10	L2	14	35.0	0.103	5.6	LOS A	0.6	5.1	0.34	0.55	0.34	51.3
11	T1	52	35.0	0.103	5.9	LOS A	0.6	5.1	0.34	0.55	0.34	52.5
12	R2	36	35.0	0.103	9.6	LOS A	0.6	5.1	0.34	0.55	0.34	51.8
Approach		101	35.0	0.103	7.2	LOS A	0.6	5.1	0.34	0.55	0.34	52.1
All Vehicles		433	35.0	0.138	6.9	LOS A	0.8	6.9	0.34	0.55	0.34	52.2

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.
Roundabout Capacity Model: SIDRA Standard.
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 [Albion Street / North Street / Lowes Mount Road - PM]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: North Street												
1	L2	34	12.0	0.136	5.2	LOS A	0.7	5.8	0.32	0.56	0.32	52.1
2	T1	57	12.0	0.136	5.5	LOS A	0.7	5.8	0.32	0.56	0.32	53.2
3	R2	63	12.0	0.136	9.1	LOS A	0.7	5.8	0.32	0.56	0.32	52.7
Approach		154	12.0	0.136	6.9	LOS A	0.7	5.8	0.32	0.56	0.32	52.7
East: Albion Street												
4	L2	101	12.0	0.170	5.6	LOS A	1.0	7.6	0.41	0.56	0.41	52.5
5	T1	55	12.0	0.170	5.9	LOS A	1.0	7.6	0.41	0.56	0.41	53.7
6	R2	23	12.0	0.170	9.6	LOS A	1.0	7.6	0.41	0.56	0.41	53.2
Approach		179	12.0	0.170	6.2	LOS A	1.0	7.6	0.41	0.56	0.41	53.0
North: Lowes Mount Road												
7	L2	38	12.0	0.169	5.8	LOS A	0.9	7.3	0.43	0.58	0.43	52.1
8	T1	100	12.0	0.169	6.1	LOS A	0.9	7.3	0.43	0.58	0.43	53.2
9	R2	37	12.0	0.169	9.7	LOS A	0.9	7.3	0.43	0.58	0.43	52.8
Approach		175	12.0	0.169	6.8	LOS A	0.9	7.3	0.43	0.58	0.43	52.9
West: Albion Street												
10	L2	5	12.0	0.129	5.4	LOS A	0.7	5.6	0.37	0.54	0.37	52.2
11	T1	100	12.0	0.129	5.7	LOS A	0.7	5.6	0.37	0.54	0.37	53.3
12	R2	34	12.0	0.129	9.4	LOS A	0.7	5.6	0.37	0.54	0.37	52.9
Approach		139	12.0	0.129	6.6	LOS A	0.7	5.6	0.37	0.54	0.37	53.1
All Vehicles		646	12.0	0.170	6.6	LOS A	1.0	7.6	0.38	0.56	0.38	52.9

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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 [Albion Street / Hawken Street - AM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
East: Albion Street												
5	T1	52	20.0	0.031	1.1	LOS A	0.0	0.1	0.01	0.19	0.01	63.2
6	R2	2	20.0	0.031	6.7	LOS A	0.0	0.1	0.01	0.19	0.01	55.9
Approach		54	20.0	0.031	1.3	NA	0.0	0.1	0.01	0.19	0.01	62.9
North: Hawken Street												
7	L2	1	20.0	0.005	4.9	LOS A	0.0	0.1	0.15	0.51	0.15	47.6
9	R2	4	20.0	0.005	5.1	LOS A	0.0	0.1	0.15	0.51	0.15	48.5
Approach		5	20.0	0.005	5.1	LOS A	0.0	0.1	0.15	0.51	0.15	48.3
West: Albion Street												
10	L2	6	20.0	0.025	5.8	LOS A	0.0	0.0	0.00	0.09	0.00	56.6
11	T1	37	20.0	0.025	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	59.2
Approach		43	20.0	0.025	0.8	NA	0.0	0.0	0.00	0.09	0.00	58.8
All Vehicles		102	20.0	0.031	1.3	NA	0.0	0.1	0.01	0.16	0.01	60.2

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.

MOVEMENT SUMMARY

Site: 101 [Albion Street / Hawken Street - PM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
East: Albion Street												
5	T1	82	45.0	0.056	1.2	LOS A	0.0	0.1	0.01	0.17	0.01	63.4
6	R2	1	45.0	0.056	7.7	LOS A	0.0	0.1	0.01	0.17	0.01	55.4
Approach		83	45.0	0.056	1.3	NA	0.0	0.1	0.01	0.17	0.01	63.3
North: Hawken Street												
7	L2	1	45.0	0.018	5.6	LOS A	0.1	0.6	0.32	0.56	0.32	42.9
9	R2	14	45.0	0.018	6.3	LOS A	0.1	0.6	0.32	0.56	0.32	47.1
Approach		15	45.0	0.018	6.3	LOS A	0.1	0.6	0.32	0.56	0.32	46.8
West: Albion Street												
10	L2	13	45.0	0.088	6.1	LOS A	0.0	0.0	0.00	0.06	0.00	55.7
11	T1	119	45.0	0.088	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	59.5
Approach		132	45.0	0.088	0.6	NA	0.0	0.0	0.00	0.06	0.00	59.1
All Vehicles		229	45.0	0.088	1.2	NA	0.1	0.6	0.02	0.13	0.02	59.5

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.

MOVEMENT SUMMARY

Site: 101 [Albion Street / Duckmaloi Road - AM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
East: Duckmaloi Road												
5	T1	37	45.0	0.037	0.1	LOS A	0.2	1.5	0.04	0.12	0.04	58.7
6	R2	34	45.0	0.037	6.2	LOS A	0.2	1.5	0.14	0.44	0.14	51.7
Approach		71	45.0	0.037	3.0	NA	0.2	1.5	0.09	0.27	0.09	55.1
North: Albion Street												
7	L2	25	45.0	0.038	6.3	LOS A	0.1	1.4	0.13	0.55	0.13	51.4
9	R2	11	45.0	0.038	7.2	LOS A	0.1	1.4	0.13	0.55	0.13	51.0
Approach		36	45.0	0.038	6.5	LOS A	0.1	1.4	0.13	0.55	0.13	51.3
West: Duckmaloi Road												
10	L2	5	45.0	0.004	6.1	LOS A	0.0	0.0	0.00	0.57	0.00	51.8
11	T1	32	45.0	0.021	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		37	45.0	0.021	0.9	NA	0.0	0.0	0.00	0.08	0.00	58.7
All Vehicles		143	45.0	0.038	3.3	NA	0.2	1.5	0.08	0.29	0.08	54.9

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.

MOVEMENT SUMMARY

Site: 101 [Albion Street / Duckmaloi Road - PM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
East: Duckmaloi Road												
5	T1	43	20.0	0.030	0.1	LOS A	0.1	1.0	0.06	0.14	0.06	58.5
6	R2	23	20.0	0.030	5.9	LOS A	0.1	1.0	0.14	0.32	0.14	53.7
Approach		66	20.0	0.030	2.1	NA	0.1	1.0	0.09	0.20	0.09	56.7
North: Albion Street												
7	L2	38	20.0	0.043	6.0	LOS A	0.2	1.3	0.16	0.55	0.16	52.3
9	R2	8	20.0	0.043	6.7	LOS A	0.2	1.3	0.16	0.55	0.16	52.0
Approach		46	20.0	0.043	6.1	LOS A	0.2	1.3	0.16	0.55	0.16	52.2
West: Duckmaloi Road												
10	L2	1	20.0	0.001	5.8	LOS A	0.0	0.0	0.00	0.57	0.00	52.8
11	T1	53	20.0	0.031	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		54	20.0	0.031	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
All Vehicles		166	20.0	0.043	2.6	NA	0.2	1.3	0.08	0.24	0.08	56.3

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.
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.

Appendix D

Existing + Growth + Development

MOVEMENT SUMMARY

Site: 101 [Albion Street / North Street / Lowes Mount Road - AM]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: North Street												
1	L2	23	35.0	0.118	5.6	LOS A	0.6	5.7	0.34	0.58	0.34	50.8
2	T1	27	35.0	0.118	5.9	LOS A	0.6	5.7	0.34	0.58	0.34	52.0
3	R2	66	32.2	0.118	9.6	LOS A	0.6	5.7	0.34	0.58	0.34	51.5
Approach		117	33.4	0.118	7.9	LOS A	0.6	5.7	0.34	0.58	0.34	51.5
East: Albion Street												
4	L2	49	35.0	0.147	5.6	LOS A	0.8	7.6	0.34	0.53	0.34	51.9
5	T1	72	35.0	0.147	5.8	LOS A	0.8	7.6	0.34	0.53	0.34	53.1
6	R2	25	54.0	0.147	10.0	LOS A	0.8	7.6	0.34	0.53	0.34	51.6
Approach		146	38.3	0.147	6.5	LOS A	0.8	7.6	0.34	0.53	0.34	52.4
North: Lowes Mount Road												
7	L2	24	54.8	0.097	6.4	LOS A	0.5	4.7	0.39	0.55	0.39	50.8
8	T1	52	35.0	0.097	6.2	LOS A	0.5	4.7	0.39	0.55	0.39	52.8
9	R2	13	35.0	0.097	10.0	LOS A	0.5	4.7	0.39	0.55	0.39	52.1
Approach		88	40.4	0.097	6.8	LOS A	0.5	4.7	0.39	0.55	0.39	52.1
West: Albion Street												
10	L2	14	35.0	0.104	5.8	LOS A	0.6	5.2	0.36	0.56	0.36	51.2
11	T1	52	35.0	0.104	6.0	LOS A	0.6	5.2	0.36	0.56	0.36	52.5
12	R2	36	35.0	0.104	9.8	LOS A	0.6	5.2	0.36	0.56	0.36	51.7
Approach		101	35.0	0.104	7.3	LOS A	0.6	5.2	0.36	0.56	0.36	52.0
All Vehicles		453	36.7	0.147	7.1	LOS A	0.8	7.6	0.36	0.55	0.36	52.0

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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 [Albion Street / North Street / Lowes Mount Road - PM]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: North Street												
1	L2	34	12.0	0.138	5.2	LOS A	0.8	5.9	0.34	0.57	0.34	52.0
2	T1	57	12.0	0.138	5.5	LOS A	0.8	5.9	0.34	0.57	0.34	53.1
3	R2	63	12.0	0.138	9.2	LOS A	0.8	5.9	0.34	0.57	0.34	52.7
Approach		154	12.0	0.138	7.0	LOS A	0.8	5.9	0.34	0.57	0.34	52.7
East: Albion Street												
4	L2	106	11.4	0.185	5.6	LOS A	1.1	8.6	0.42	0.57	0.42	52.6
5	T1	55	12.0	0.185	5.9	LOS A	1.1	8.6	0.42	0.57	0.42	53.7
6	R2	31	33.2	0.185	10.1	LOS A	1.1	8.6	0.42	0.57	0.42	52.3
Approach		192	15.1	0.185	6.4	LOS A	1.1	8.6	0.42	0.57	0.42	52.8
North: Lowes Mount Road												
7	L2	45	26.3	0.180	6.1	LOS A	1.0	8.0	0.43	0.58	0.43	51.6
8	T1	100	12.0	0.180	6.1	LOS A	1.0	8.0	0.43	0.58	0.43	53.2
9	R2	37	12.0	0.180	9.8	LOS A	1.0	8.0	0.43	0.58	0.43	52.8
Approach		182	15.6	0.180	6.8	LOS A	1.0	8.0	0.43	0.58	0.43	52.7
West: Albion Street												
10	L2	5	12.0	0.130	5.5	LOS A	0.7	5.6	0.38	0.55	0.38	52.1
11	T1	100	12.0	0.130	5.8	LOS A	0.7	5.6	0.38	0.55	0.38	53.2
12	R2	34	12.0	0.130	9.5	LOS A	0.7	5.6	0.38	0.55	0.38	52.8
Approach		139	12.0	0.130	6.7	LOS A	0.7	5.6	0.38	0.55	0.38	53.1
All Vehicles		666	13.9	0.185	6.7	LOS A	1.1	8.6	0.40	0.57	0.40	52.8

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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 [Albion Street / Hawken Street - AM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
East: Albion Street												
5	T1	52	20.0	0.036	1.2	LOS A	0.1	0.5	0.05	0.22	0.05	62.8
6	R2	7	48.6	0.036	7.2	LOS A	0.1	0.5	0.05	0.22	0.05	54.9
Approach		59	23.6	0.036	1.9	NA	0.1	0.5	0.05	0.22	0.05	61.7
North: Hawken Street												
7	L2	4	80.0	0.018	5.5	LOS A	0.1	0.7	0.17	0.51	0.17	38.3
9	R2	12	70.9	0.018	5.9	LOS A	0.1	0.7	0.17	0.51	0.17	46.6
Approach		16	73.3	0.018	5.8	LOS A	0.1	0.7	0.17	0.51	0.17	44.1
West: Albion Street												
10	L2	19	45.6	0.035	6.1	LOS A	0.0	0.0	0.00	0.20	0.00	54.9
11	T1	37	20.0	0.035	0.0	LOS A	0.0	0.0	0.00	0.20	0.00	58.6
Approach		56	28.7	0.035	2.1	NA	0.0	0.0	0.00	0.20	0.00	57.3
All Vehicles		131	31.8	0.036	2.4	NA	0.1	0.7	0.04	0.25	0.04	57.1

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.

MOVEMENT SUMMARY

Site: 101 [Albion Street / Hawken Street - PM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
East: Albion Street												
5	T1	82	45.0	0.060	1.3	LOS A	0.0	0.5	0.04	0.18	0.04	63.2
6	R2	4	86.3	0.060	8.7	LOS A	0.0	0.5	0.04	0.18	0.04	54.4
Approach		86	47.0	0.060	1.6	NA	0.0	0.5	0.04	0.18	0.04	62.7
North: Hawken Street												
7	L2	6	57.5	0.040	5.8	LOS A	0.1	1.4	0.32	0.57	0.32	41.0
9	R2	26	51.4	0.040	6.6	LOS A	0.1	1.4	0.32	0.57	0.32	46.9
Approach		33	52.6	0.040	6.4	LOS A	0.1	1.4	0.32	0.57	0.32	45.6
West: Albion Street												
10	L2	20	65.3	0.095	6.3	LOS A	0.0	0.0	0.00	0.08	0.00	54.8
11	T1	119	45.0	0.095	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	59.5
Approach		139	47.9	0.095	0.9	NA	0.0	0.0	0.00	0.08	0.00	58.7
All Vehicles		258	48.2	0.095	1.9	NA	0.1	1.4	0.05	0.18	0.05	57.9

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.

MOVEMENT SUMMARY

Site: 101 [Albion Street / Duckmaloi Road - AM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
East: Duckmaloi Road												
5	T1	37	45.0	0.039	0.1	LOS A	0.2	1.6	0.03	0.11	0.03	58.9
6	R2	37	49.7	0.039	6.3	LOS A	0.2	1.6	0.14	0.46	0.14	51.4
Approach		74	47.4	0.039	3.2	NA	0.2	1.6	0.09	0.28	0.09	54.9
North: Albion Street												
7	L2	28	51.1	0.042	6.3	LOS A	0.2	1.6	0.13	0.55	0.13	51.1
9	R2	11	45.0	0.042	7.3	LOS A	0.2	1.6	0.13	0.55	0.13	51.0
Approach		39	49.5	0.042	6.6	LOS A	0.2	1.6	0.13	0.55	0.13	51.1
West: Duckmaloi Road												
10	L2	5	45.0	0.004	6.1	LOS A	0.0	0.0	0.00	0.57	0.00	51.8
11	T1	32	45.0	0.021	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		37	45.0	0.021	0.9	NA	0.0	0.0	0.00	0.08	0.00	58.7
All Vehicles		149	47.3	0.042	3.5	NA	0.2	1.6	0.08	0.30	0.08	54.7

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 [Albion Street / Duckmaloi Road - PM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
East: Duckmaloi Road												
5	T1	43	20.0	0.032	0.1	LOS A	0.1	1.2	0.06	0.13	0.06	58.6
6	R2	26	29.6	0.032	6.1	LOS A	0.1	1.2	0.15	0.35	0.15	53.1
Approach		69	23.6	0.032	2.4	NA	0.1	1.2	0.09	0.21	0.09	56.4
North: Albion Street												
7	L2	41	26.2	0.047	6.1	LOS A	0.2	1.5	0.16	0.55	0.16	52.0
9	R2	8	20.0	0.047	6.8	LOS A	0.2	1.5	0.16	0.55	0.16	52.0
Approach		49	25.1	0.047	6.2	LOS A	0.2	1.5	0.16	0.55	0.16	52.0
West: Duckmaloi Road												
10	L2	1	20.0	0.001	5.8	LOS A	0.0	0.0	0.00	0.57	0.00	52.8
11	T1	53	20.0	0.031	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		54	20.0	0.031	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
All Vehicles		173	22.9	0.047	2.8	NA	0.2	1.5	0.08	0.25	0.08	56.0

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.

Appendix E

Haulage Routes

A1

DIAL BEFORE YOU DIG www.1100.com.au

4 0 4 8 12 16 20 METRES 1:200

No	DATE	AMENDMENT
A	21/11/2018	FIRST ISSUE

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

Client: BORG MANUFACTURING

PROPOSED BARK / TIMBER PROCESSING AND LANDSCAPE SUPPLIES FACILITY
26 ENDEAVOUR STREET, OBERON

HAULAGE ROUTES

Designed: AAJ
Drawn: AAJ
Checked: AAJ

Scales: Plan
Horiz.
Vert.
X-Sect.

Datum: A.H.D.

Plan No. SY180215TR09
File Ref. SY180215
REV. A
SHEET 9 OF 9 SHEETS

Appendix F

Operational Analysis

Borg Plantations Pty Ltd - Bark/Timber Processing Facility - Preliminary Traffic Generation Assessment

Phase of development	2019					2021					2023				
	1					3					5				
Annual waste received (tpa)	10000					40000					99000				
Operation	*Vehicles (staff)*	*Skip bins*	*12 t tipper*	*32 t T&D or semi*	*40 t B-double*	*Vehicles (staff)*	*Skip bins*	*12 t tipper*	*32 t T&D or semi*	*40 t B-double*	*Vehicles (staff)*	*Skip bins*	*12 t tipper*	*32 t T&D or semi*	*40 t B-double*
Staff operational vehicles	576					1,152					2,016				
WASTE RECEIVAL															
Pine bark residuals					163					650					1,609
Used wooden pallets					75					300					743
Sawdust			42					167							
PRODUCT SALES															
Metal		2					6	-				15	-		
Timber mulch			166	248	-			662	994				1,639	2,459	-
DISPOSAL OF RESIDUAL WASTE TO LANDFILL															
Landfill		17					67					165			

Total vehicles per day			
Staff operational vehicles	1.85	3.69	6.46
12 t tipper	0.66	2.66	5.25
32 t T&D or semi	0.80	3.18	7.88
40 t B-double	0.76	3.04	7.54

Assumptions

1. Data is for trucks accessing the facility on a yearly basis
2. Assume pine bark residuals and pallets delivered in b-doubles. Assume sawdust delivered in Tipper.
3. Metals removed in rigid trucks only
4. Staffing - Truck drivers full time (4); plus operation staff of 7 staff total - increasing from 4 by 1 employee every 2 years; assume 48 week per year working duration, 6 days per week)
5. 80% of chipped wood transported out of the site in Truck & Dog loads directly from 'Processing Area'; 20% is transported out of the site from the 'Landscaping Supplies Area' in tipper trucks.

Truck type	**Load (tonnes)**	density (t/m3)
Skip bin - 20 m3 skip for metal scrap	10	0.5
Skip bin - 20 m3 skip for residual (mainly plastic) s	3	0.15
Tipper	12	
Truck & dog or semi	32	
B-double	40	

Construction phase	No. vehicles	weight of soil delivered (t)
Assume B-Doubles used to bring crushed concrete / soil (2000 r	212.23	2600
Employee cars (5 FTE x 5d/wk x 16 wks)	400	