Prepared for

BRICKWORKS LAND & DEVELOPMENT

Transport Assessment

State Significant Development Application
Proposed Brickmaking Plant, 431 Berrima Road, New Berrima

Ref: 1094r01
7/04/2020

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-	26/11/2019	Draft	V. Cheng	A. Reisch / R. Butler-Madden
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Appendices

1 Introduction

1.1 Overview

Ason Group has been engaged Brickworks Land & Development (the applicant), to prepare a Transport Assessment (TA) in accordance with the technical requirements of the Secretary's Environmental Assessment Requirements (SEARs), and in support of the State Significant Development, (SSD-10422) for the development of a Brickmaking Plant (the Proposal) at 431 Berrima Road, New Berrima (The Site).

The Proposal seeks approval for:

- A brickmaking factory which includes:
  - Factory Gross Floor Area (GFA) of 26,145m^2
  - Office GFA of 895m^2
  - Raw material storage of 5,550m^2
  - Surge bins area of 705m^2
  - A crusher area of 250m^2
- On-site parking consisting of 59 spaces and service areas.
- Access along the future Quarry Access Road.

The following sections detail the TA's objectives to support this SSDA.

1.2 Transport Assessment Tasks

This TA provides an assessment of the relevant access, traffic and parking characteristics of the Proposal, and the potential impacts of the Proposal on the local road and parking environment. This has included a detailed assessment of:

1. Existing local road network operations and off-site parking conditions;
2. The peak period and daily trip generation and distribution of the Site further to the Proposal, and the potential impact of those trips on the local road network;
3. Parking requirements and provision;
4. The design of access driveways; parking aisles and spaces; and servicing areas; and
5. The preparation of a Preliminary Construction Traffic Management Plan.

This scope of work specifically and necessarily references the SEARs prepared by the Department of Planning, Industry and Environment (DPIE), dated 11th February 2020, relating to the Proposal. In this regard, **Table 1** below provides the general SEARs prepared by the DPIE. A summary response is provided to each SEAR, as well as a reference to the section of this TA which provides a detailed assessment of each SEAR.

Table 1: Secretary's Environmental Assessment Requirements

SEARs	Response	Section Number
Details of all traffic and transport demands likely to be generated during construction and operation, including a description of haul routes;	All operational traffic and transport demands are detailed in Section 7.1. It is likely that all future worker or visitor to the Site would drive. Further details would be required with regard to construction traffic, once a Contractor has been appointed, with the Draft Construction Traffic Management Plan (Section 8) to be developed with the accurate details. It is expected that this would be produced in response to a suitable Condition of Consent. However, for the purpose of this SSDA, it is anticipated that construction activities would generate a conservative peak of 50 vehicles per hour based on the workforce numbers (based on 60 staff and an average car occupancy of 1.2). Furthermore, it is currently anticipated that under a worst-case scenario no more than 10-20 truck movements per day would be required for the delivery of constructions. Few if any of these trips would be generated during the commuter peak periods. The haul routes are described in Section 7.2 for the operational haul route and Section 8.1.1 for the construction haul routes.	7 & 8
Details on access to the site from the road network including intersection location, design and sight distance;	Access to the Site will be provided via the existing access road from Berrima Road to the future New Berrima Shale / Clay Quarry. This access road and the intersection of Berrima Road / Quarry Access would be upgraded to facilitate 25/26m B-double movements and sufficient sightlines. The section of road between the Taylor Road and the Quarry Access would be upgraded to allow for B-Double access. Please refer to the Civil Engineer's intersection and road upgrade designs for further details.	9.2
An assessment of predicted impacts on road safety and the capacity of the road network to accommodate the project;	Section 7.3 details the predicted traffic impacts of the proposed development. It is expected that the key intersections and mid-blocks will operate at a LOS B or better. As such, it is anticipated that the roads would continue to operate satisfactorily and safely. The planned road upgrades for B-Double access will provide safer turning movements for these large heavy vehicles.	3.7 & 7.3
Detailed plans of the proposed layout of the internal road network and parking on site in accordance with the relevant Australian standards.	This has been addressed in Section 9.	9

Transport for NSW (TfNSW, formerly Roads and Maritime Services) has provided further SEARs in regard to the proposed brickworks plant dated 31 January 2020. The following **Table 2** details TfNSW's request to address the following issues as part of the SEARs:

Table 2: TfNSW's Secretary's Environmental Assessment Requirements

SEARs	Response	Section Number
A detailed traffic impact study (TIS) is required to consider the implication of the development. As a guide Table 2.1 of the RTA Guide to Traffic Generating Developments outlines the key issues that may be considered in preparing a TIS. The TIS needs to include, but not be limited to: • Details on the type of vehicles using the site, the likely daily and peak hour movements in/out of the site (including staff movements), the likely distribution of these movements (i.e. which direction they are coming from/going to, which routes they are taking) and the expected duration of the operation (and associated traffic movements). This includes existing movements and proposed additional movements; • The traffic study needs to consider existing traffic volumes (based on survey) and the likely impact of additional traffic associated with the proposed development including the suitability of the existing intersections against Austroads standards, the associated need for road upgrades. Intersection traffic modelling may be required once traffic generation and transport routes are clarified.	Sections 3.4 and 4.3 detail the existing movements within the local road network. Section 7 details the future trip generations and trip distributions from the future development. Intersection modelling has been undertaken in Section 7 and the suitability of the existing access intersection has been assessed in accordance with Austroads in Section 9.2. The Quarry access road and the intersection of Berrima Road / Quarry Access would be upgraded to facilitate 25/26m B-double movements. The section of road between the Taylor Road and the Quarry Access would be upgraded to allow for B-Double access.	3.4, 4.3, 7 & 9.2
A strategic design for any identified road upgrades on the State road network needs to be prepared to clarify the scope of works, demonstrate the works can be constructed within the road reserve and allow the consent authority to consider any environmental impacts of the works as part of their assessment. These impacts include traffic and road safety impacts as well as other impacts such noise, flora and fauna, heritage and impact to community.	No road upgrades are proposed on the State road network. All state road intersections would operate at a LOS B or better with the development and future traffic flows.	7

The Department of Primary Industries has provided additional SEARs in regard to the SSD. **Table 3** details the following relevant traffic and transport SEARS provided in the Department of Primary Industries letter TRIM reference: OUT20/1125:

Table 3: Department of Primary Industries Secretary's Environmental Assessment Requirements

SEARs	Response	Section Number
Consideration of the route for movements needs to be taken into account so that impacts on sensitive receptors are minimised (eg noise, dust, volume of traffic). This should include consideration of Travelling Stock Reserves (TSR) and the movement of livestock or farm vehicles along / across the affected roads	The travel routes of the development's heavy vehicles are shown in Section 7. No livestock or farm vehicles will be associated with the Proposal.	7

1.3 Reference Documents

1.3.1 Planning Controls

The Site is located within the Wingecarribee Shire Council (Council) and is therefore subject to that Council's controls; in preparing this TA, Ason Group has therefore referenced key Council planning documents, including:

- Wingecarribee Industrial Land Development Control Plan 2015 (DCP)
- Wingecarribee Local Environmental Plan LEP 2010 (LEP)
- Wingecarribee Moss Vale Enterprise Corridor Development Control Plan (2008) (MVEC DCP)

1.3.2 Traffic and Transport Guidelines and Standards

This TA also references general access, traffic and parking guidelines, including:

- Roads and Maritime Services, Guide to Traffic Generating Developments (RMS Guide)
- Australian Standard 2890.1: Parking Facilities – Off Street Car Parking (AS 2890.1)
- Australian Standard 2890.2: Parking Facilities – Off Street Commercial Vehicle Facilities (AS 2890.2)

1.3.3 Background Reports

Given the significant construction anticipated within the New Berrima area, a number of background reports have been referenced to provide more detailed information in regard to future traffic flows through the local road network providing access to the Site. These reports include:

- Traffic Solutions Pty Ltd, *New Berrima Clay/Shale Quarry Traffic Assessment*, August 2010 (Quarry Report);
- Ason Group, *Traffic Impact Assessment Report – Proposed Masonry Plant, 416 Berrima Road, New Berrima*, 2nd May 2018 (Masonry Plant Report).

2 Overview of Proposal

2.1 Summary of Proposed Development

A detailed description of the Proposal is provided n the Statement of Environmental Effects, prepared by Willowtree Planning, which this TA accompanies. In summary, the SSDA provides for the construction and operation of a Brickmaking Plant, which will manufacture dry pressed bricks. This plant will form part of the Brickworks industrial area known as Chesley Park. The Proposal includes:

- The Brickmaking Factory, comprising of:
  - Factory Gross Floor Area (GFA) of 26,145m^2
  - Office GFA of 895m^2
  - Raw material storage of 5,550m^2
  - Surge bins area of 705m^2
  - A crusher area of 250m^2
- A total of 36 employees working on-site at any one time including:
  - 10 administration staff and 2 laboratory staff working normal office hours; and
  - 24 factory employees operating split between 2 shifts (5.00am – 1.00pm, and 1.00pm – 9.00pm).
- Provision of 59 car parking spaces including 1 accessible space
- A single combined vehicular access via the future northern Quarry access road which will run along the northern boundary of the Site.

Reference should be made to the plans prepared by SBA Architects, which are submitted separately. A copy of the broader Site Plan is reproduced as **Figure 1** for context.

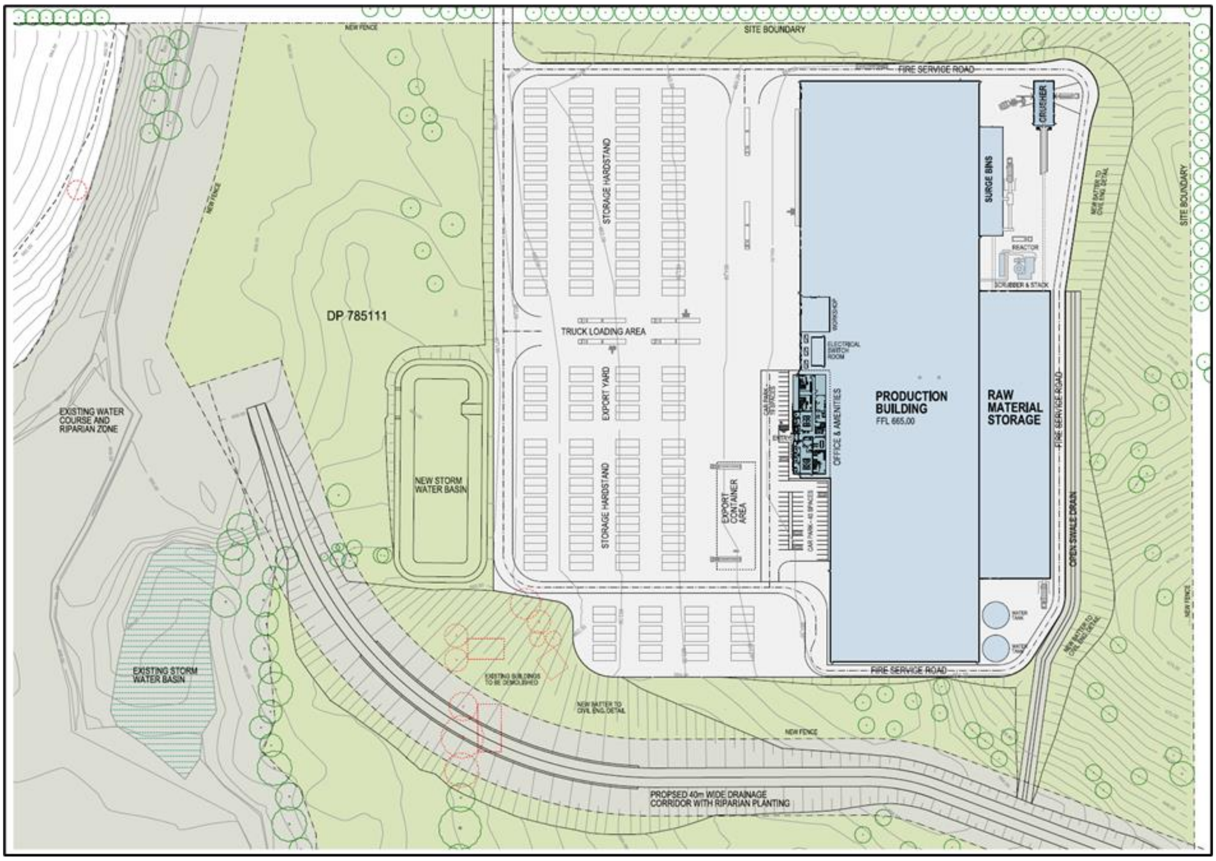

Figure 1: Proposed Site Layout

3 Existing Conditions

3.1 Site & Location

The Site is located within Wingecarribee Council LGA in New Berrima approximately 134 kilometres southwest of Sydney CBD and 6 kilometres northwest of Moss Vale train station. The Site is located within "Chesley Park". It has an area of 14.8ha with Berrima Road to the west and the approved New Berrima Clay/Shale Quarry to the north. A Site Plan is presented in **Figure 2** which provides an appreciation of the site and the existing conditions.

The Site is currently vacant and zoned IN1 General Industrial under Wingecarribee LEP. It forms part of the Moss Vale Enterprise Corridor (MVEC) which seeks to develop an employment area for light and general industrial developments.

3.2 Road Hierarchy

The key roads providing in the vicinity of the site are summarised below:

- **Berrima Road:** A sub-arterial road that generally runs in the north-south direction to the west of the site. It connects to Oldbury Street and carries a single lane of traffic in both directions. Various speed limits apply to this road, though in the vicinity of the Site the posted speed limit is 90km/hr.
- **Taylor Avenue:** A local road that generally runs in the east-west direction to the west of the Site and provides connection between Berrima Road and Old Hume Highway. It carries a single lane of traffic in both directions. A speed limit of 50km/hr applies to the Taylor Avenue.
- **Old Hume Highway:** A regional road, TfNSW unclassified road 7181, that generally runs north-south direction to the west of the site. It connects directly to Hume Highway and carries a single lane of traffic in both directions. A speed limit of 80km/hr applies to the Old Hume Highway.
- **Hume Highway:** A classified TfNSW Highway (HW2) that generally runs in a north-south direction to the west of the Site. It provides runs from Parramatta Road in Ashfield to Mereworth Road Interchange at Medway Rivulet and carries 2 lanes of traffic in both directions, which are separated by a median. A speed limit of 110km/h applies to the Pacific Highway.

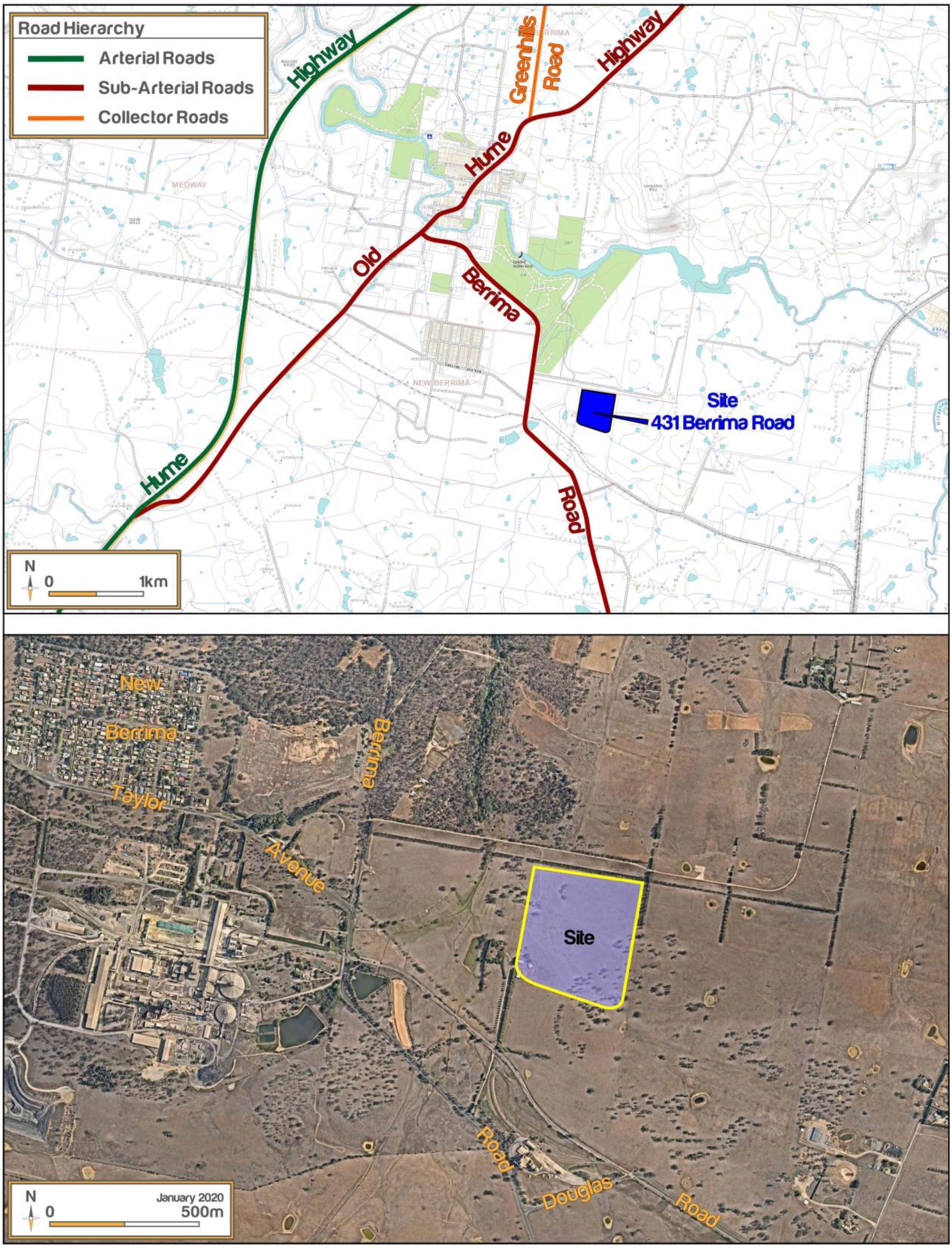

Figure 2: Site and Road Hierarchy

3.3 Restricted Vehicle Access Routes

Further to this, it is important to consider the TfNSW's approved routes for 26m B-double vehicles. The following table and **Figure 3** details the heavy vehicle restrictions for the area surrounding the Site as displayed in the Restricted Access Vehicles (RAV) map:

Table 4: TfNSW Approved Heavy Vehicle Routes

Road	Section	TfNSW Approval
Berrima Road	South of Taylor Avenue	25/26m B-double Routes
Taylor Avenue	Entire length	25/26m B-double Routes
Old Hume Hwy	South of Taylor Avenue	25/26m B-double Routes
Medway Road	East of Hume Motorway on-ramp	25/26m B-double Routes
Hume Motorway	Entire Length	25/26m B-double Routes
Douglas Road	Entire Length	25/26m B-double Routes

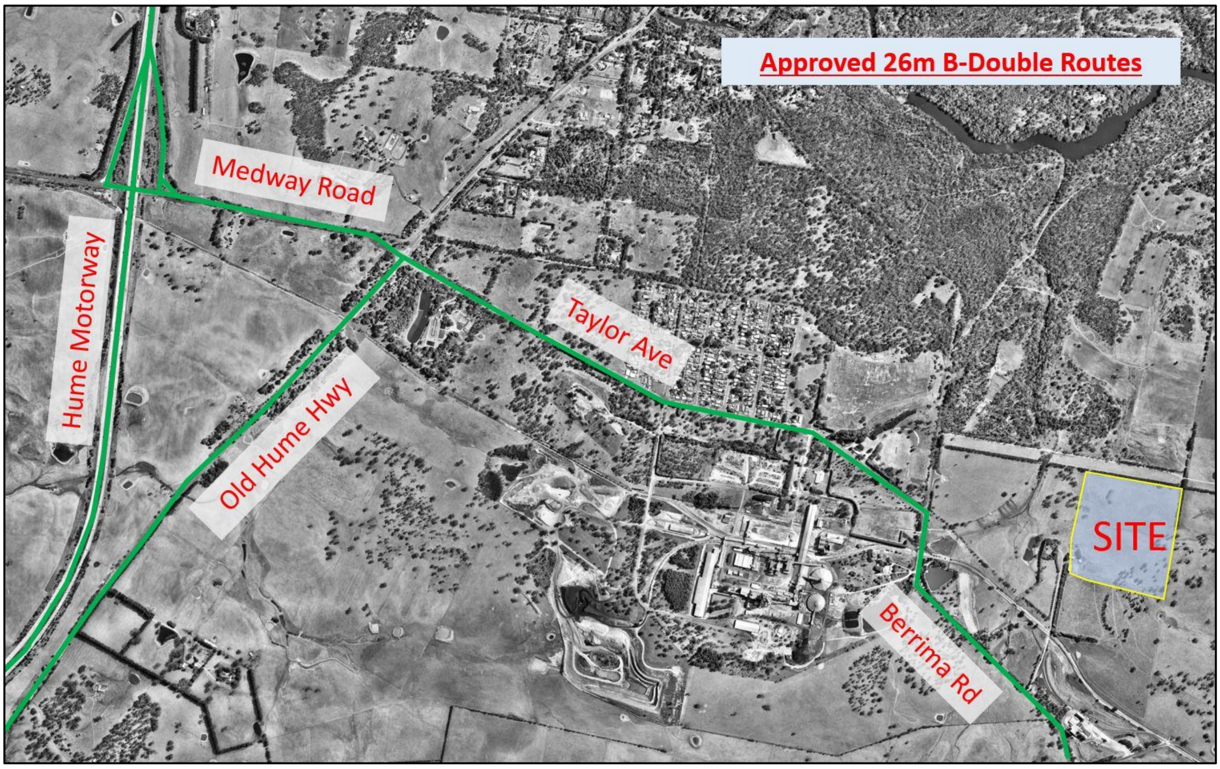

Figure 3: TfNSW Approved B-Double Route Map

Consistent with the New Berrima Clay/Shale Quarry, the largest vehicle to access the Berrima Road Vehicle Access would be a 26m B-double truck. The section of Berrima Road from the Taylor Avenue intersection to the Site access is not currently B-double approved. However, the process is currently underway to ensure that it is suitable to accommodate B-doubles for the purposes of the Proposal.

3.4 Existing Traffic Flows

Automatic Traffic Count Surveys were undertaken between Friday 2nd March 2018 and Thursday 8th March 2018 to determine the volume of traffic along Berrima Road and Taylor Avenue. **Table 3** provides the peak network hour traffic flows recorded along Berrima Road and **Table 4** presents the peak traffic flows along Taylor Avenue.

Table 5: Berrima Road Existing Traffic Flows

Time	Northbound		Southbound		Total
	Lights	Heavies	Lights	Heavies	
AM (8.00 – 9.00)	87	7	55	2	151
PM (5.00 – 6.00)	58	0	63	3	124

Table 6: Taylor Avenue Existing Traffic Flows

Time	Northbound		Southbound		Total
	Lights	Heavies	Lights	Heavies	
AM (8.00 – 9.00)	157	25	138	23	343
PM (5.00 – 6.00)	118	14	117	14	263

In Berrima Road, the heavy vehicle volumes represent 6% and 2% of the total AM and PM peak hours volumes respectively while in Taylor Avenue they represent 14% and 11% of the total AM and PM peak hour volumes respectively.

3.5 Existing Midblock Capacity Assessment

Section 4.2.4 of the RMS Guide refers to new developments near rural roads and their effect on capacity. Table 4.5 of the RMS Guide is reproduced as **Table 5**.

Table 7: Peak Hour Flow on Two-lane Rural Roads (veh/hr), 100km/hr

Terrain	Level of Service	Percent of heavy vehicles			
		0	5	10	15
Level	B	630	590	560	530
	C	1030	970	920	870
	D	1630	1550	1480	1410
	E	2630	250	2390	2290
Rolling	B	500	420	360	310
	C	920	760	650	570
	D	1370	1140	970	700
	E	2420	2000	1720	1510
Mountainous	B	340	230	180	150
	C	600	410	320	260
	D	1050	680	500	400
	E	2160	1400	1040	820

Table 7 assumes the following criteria:

- Terrain level with 20% no overtaking.
- Rolling with 40% no overtaking.
- Mountainous with 60% no overtaking.
- 3.7 m traffic lane width with side clearances of at least 2m.
- 60/40 directional split of traffic.

With reference to Table 7, both Berrima Road and Taylor Avenue currently generate flows well below the initial threshold of Level of Service (LOS) B, and as such could be considered to actually operate at a LOS A.

3.6 Intersection Operations

3.6.1 Key Intersections

The key intersections identified for assessment as part of this study include:

- Old Hume Highway / Medway Road / Taylor Avenue .
- Mereworth Road / Hume Highway On and Off Ramps
- Medway Road / Hume Highway On and Off Ramp
- Taylor Avenue / Berrima Road Intersection.

3.6.2 Berrima Road Deviation Project

The intersection of Berrima Road / Taylor Avenue currently operates as priority controlled (Give-Way) intersection. The Berrima Road Deviation Project (the Deviation Project) will see Berrima Road diverted away from the existing level crossing near Boral Cement Works to a new bridge over the train line further east. The Deviation Project will involve the construction of 600m of new road to remove the sharp bend in Berrima Road, including replacing the intersection of Berrima Road and Taylor Avenue with a B-triple capacity roundabout.

The Deviation Project is the latest stage of the $82 million Moss Vale Enterprise Corridor scheme, which is designed to attract new business to Wingecarribee Shire. While the deviation is designed to provide improved access for heavy transport vehicles, it will also improve safety for residents by removing the level crossing. **Figure** 4 shows the new alignment for Berrima Road.

Currently, the construction of the Deviation Project has been put on hold indefinitely due to delays and budget issues; as such, it is anticipated that the existing Berrima Road / Taylor Avenue intersection layout will remain in place for a period until the Berrima Road / Taylor Avenue roundabout construction re-commences. The timeline of the delivery of the Berrima Road Deviation is currently unknown, and as such, the existing intersection layout has been used for this traffic assessment.

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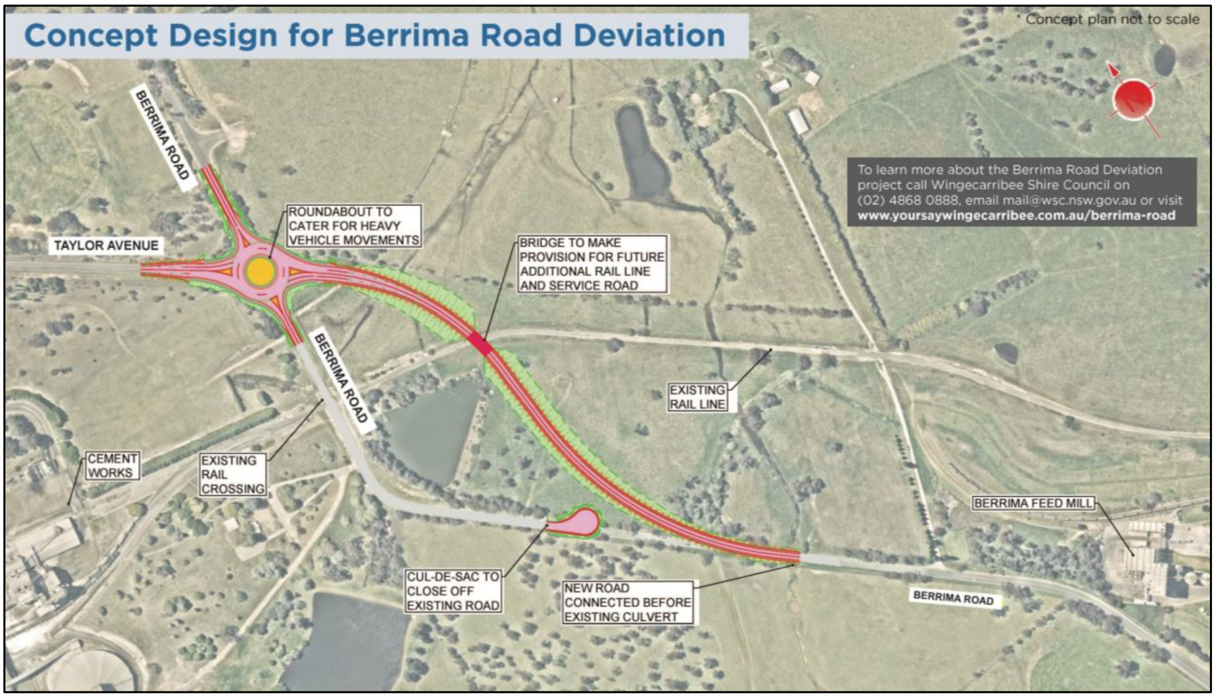

Figure 4: Berrima Road Deviation Project

3.6.3 Traffic Flows

Intersection surveys were undertaken on Thursday, 1st March 2018 with the exception of the intersection of Berrima Road / Taylor Avenue, which was surveyed on Wednesday, 11th September 2019. With reference to the following diagrams, Figure 5 and **Figure** 6 details the existing traffic flows on the surrounding road network near the Site:

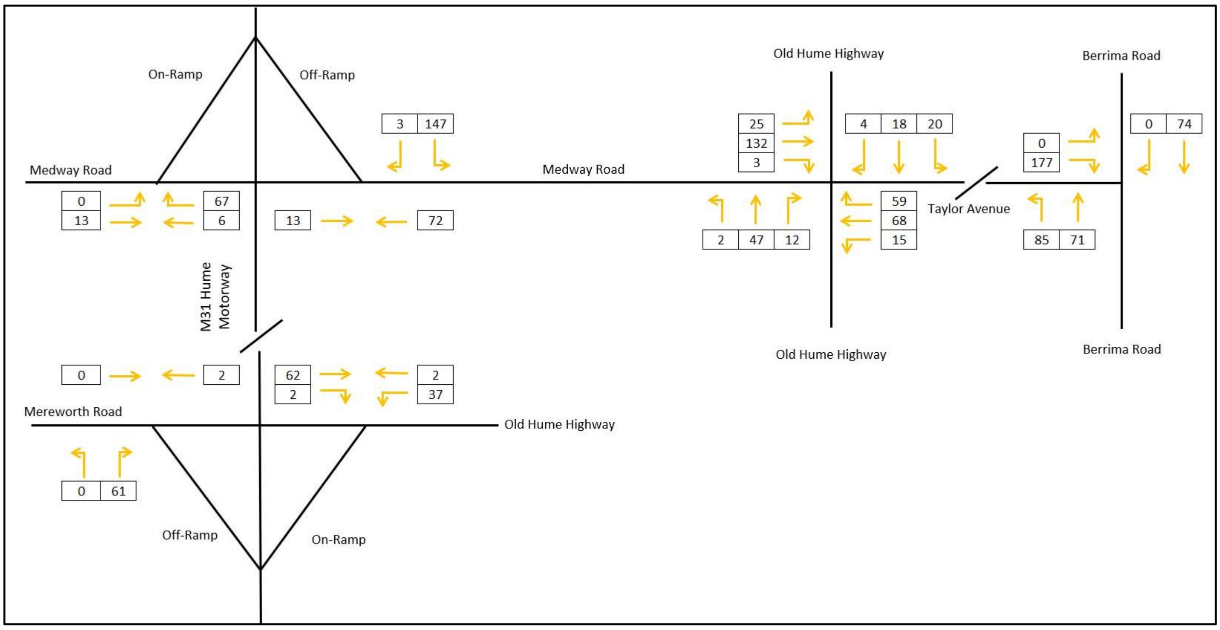

Figure 5: Existing AM Peak (8:00am – 9:00am) Traffic Volumes

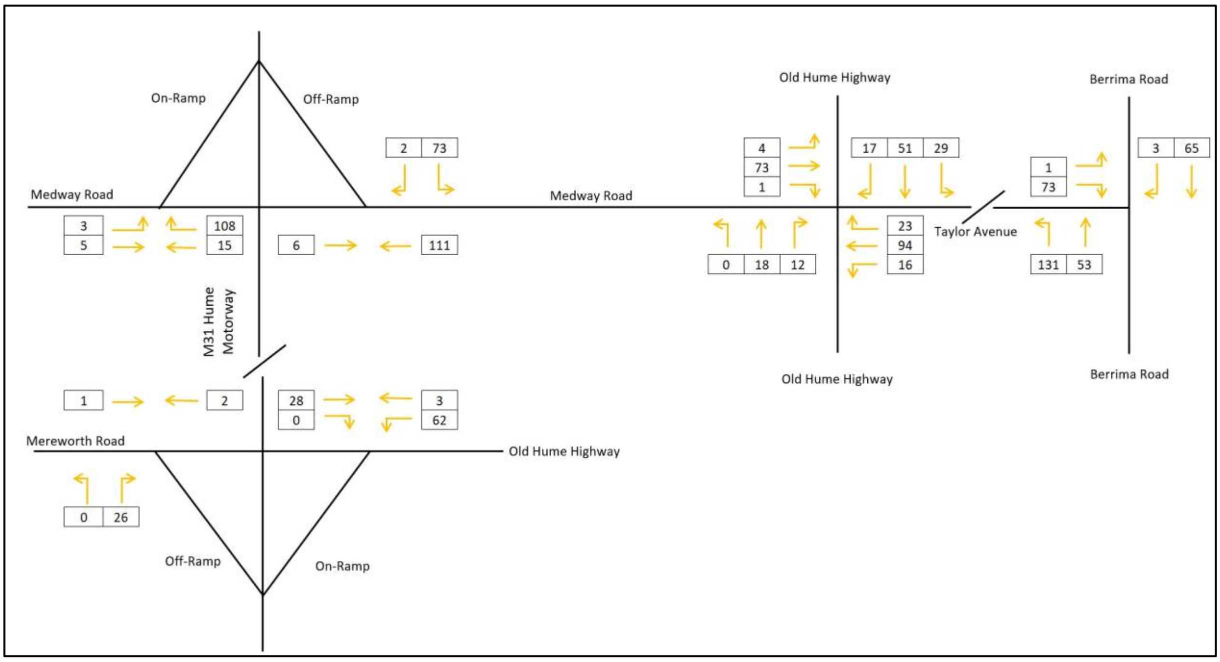

Figure 6: Existing PM Peak (5:00pm – 6:00pm) Traffic Volumes

3.6.4 SIDRA Intersection Model

The key intersections have been analysed using the SIDRA Intersection model. SIDRA modelling outputs a range of performance measures, in particular:

- **Average Vehicle Delay (AVD)**: The AVD (or average delay per vehicle in seconds) for intersections also provides a measure of the operational performance of an intersection and is used to determine an intersection's Level of Service (see below). For signalised intersections, the AVD reported relates to the average of all vehicle movements through the intersection. For priority (Give Way, Stop & Roundabout controlled) intersections, the AVD reported is that for the movement with the highest AVD.
- **Level of Service (LOS)**: This is a comparative measure that provides an indication of the operating performance, based on AVD.

Table 6 provides a recommended baseline for assessment as per the RMS Guide:

Table 8: RMS Level of Service Summary

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	less than 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
F	More than 70	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode or major treatment.

The results of the SIDRA analysis are summarised in **Table 7** , while detailed SIDRA outputs are attached at **Appendix A**.

Table 9: Local Network Performance, Baseline Scenario

Intersection	Control Type	Period	Intersection Delay	Level of Service
Berrima Road / Taylor Avenue	Priority	AM	7	A
		PM	7	A
Old Hume Highway / Medway Road / Taylor Avenue	Roundabout	AM	16	B
		PM	16	B
Mereworth Road / Hume Highway Off Ramp	Priority	AM	7	A
		PM	7	A
Mereworth Road / Hume Highway On Ramp	Priority	AM	14	A
		PM	8	A
Medway Road / Hume Highway Off Ramp	Priority	AM	8	A
		PM	8	A
Medway Road / Hume Highway On Ramp	Priority	AM	8	A
		PM	8	A

With reference to Table 9, the SIDRA analysis indicates that the key intersections providing access for the Site operate satisfactorily under the “baseline” scenario under the traditional road network peak hours of 8:00am – 9:00am and 5:00pm – 6:00pm.

3.7 Accident Data

An analysis of crash statistics from the TfNSW Centre for Road Safety database indicates that there was a total of 10 crashes with the local road network during the 5-year reporting period 2014 – 2018 inclusive. These included crashes ranging from non-casualty to fatal. The fatal crash occurs to the north of the Site along Berrima Road.

Figure 7 shows all crash locations in the vicinity of the School, while **Table 10** summarises the historical crash data for the key intersections bounding the School.

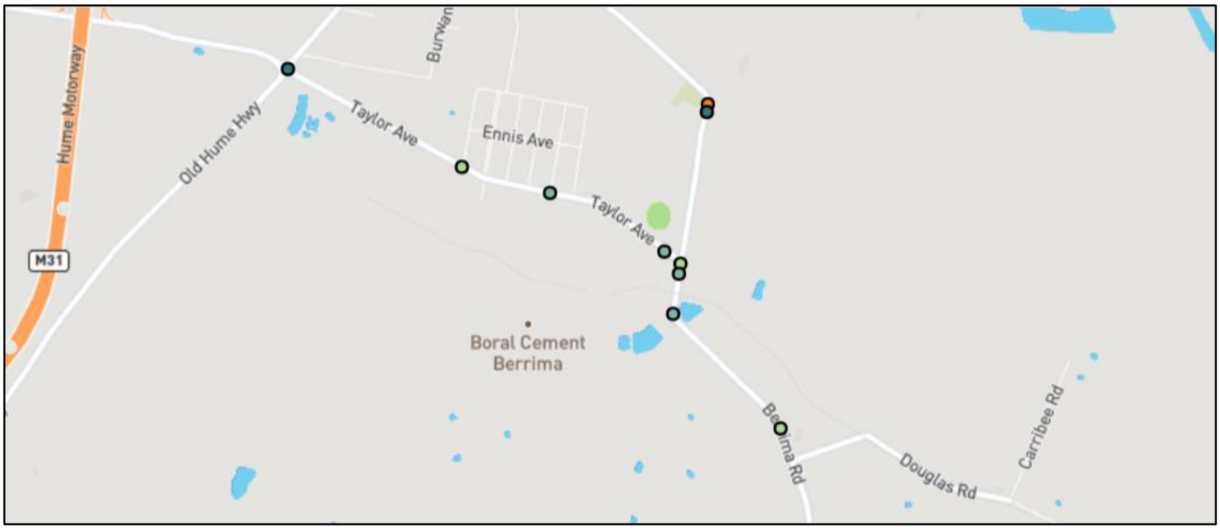

Figure 7: Historical Crash Locations

Table 10: Historical Crash Data

Year	Degree of Crash	RUM Code	RUM Description
Old Hume Highway / Taylor Avenue			
2018	Serious Injury	10	Cross Traffic
Taylor Avenue			
2014	Moderate Injury	21	Right Through
2014	Non-Casualty	16	Left Near
2018	Moderate Injury	67	Struck Animal
Taylor Avenue / Berrima Road			
2018	Non-Casualty	87	Off Carriageway, Left on left, Bend into Object/Parked Vehicle
Berrima Road			
2014	Serious Injury	67	Struck Animal
2016	Fatal	20	Head on
2014	Moderate Injury	81	Off Carriageway, Left on Right, Bend into Object/Parked Vehicle
2014	Non-casualty	81	Off Carriageway, Left on Right, Bend into Object/Parked Vehicle
2018	Moderate Injury	30	Rear end

4 Future Base Conditions

4.1 New Berrima Clay/Shale Quarry

4.1.1 Overview

The land to the north of the Site, known as "Mandurama", was granted an approval as a clay/shale quarry in July 2012 (Ref: PA08_0212). A further two Section 75W modifications were also approved in 2015 and 2017.

The 2010 Traffic Assessment (TA) produced by Traffic Solutions Pty Ltd (2010 Quarry TA) in support of the DA for the quarry stated that approximately 120,000 tonnes per annum (tpa) of shale, weathered shale, brick clay and some friable sandstone, with an upper limit of 150,000tpa, will be extracted from the quarry for a period of 30 years. The operation of the quarry will employ 5 part-time personnel for the duration of the project.

Table 11: Hours of Operation

Activity	Monday to Friday	Saturday	Sunday
Extraction Operations	7:00am – 5:00pm	7:00am – 2:00pm	nil
Product Clay/Shale Despatch	7:00am – 4:00pm	7:00am – 4:00pm if required	8:00am – 4:00pm if required
Repairs & Maintenance	6:00am – 6:00pm	7:00am – 6:00pm	8:00am – 6:00pm

Transportation of the clay/shale from the quarry would be by road-registered trucks (HRV and AV) predominantly Monday to Friday. In certain circumstances, mainly during prolonged periods of wet weather, it may also occur on weekends. **Figure 8** provides the truck transport route used by the quarry to transport materials to the Bowral Brick Works, as provided in the 2010 TA. All heavy vehicles will approach the quarry from Taylor Road / Berrima Road intersection.

The majority of the route is a TfNSW approved B-double route however, vehicles travelling from the quarry will only ever be up to 19 articulated vehicles. Transport will predominanlty be on weekdays on a full-time basis. The 2010 TA for the quarry DA concuded that there would be 34 truck movements per day, for 5 days a week. Following periods of wet weather however, it is predicted that traffic volumes may be as high as 132 truck movements per day.

The 2010 TA assessed the impact of 132 truck movements per day, plus an additional 8 vehicle movements for staff.

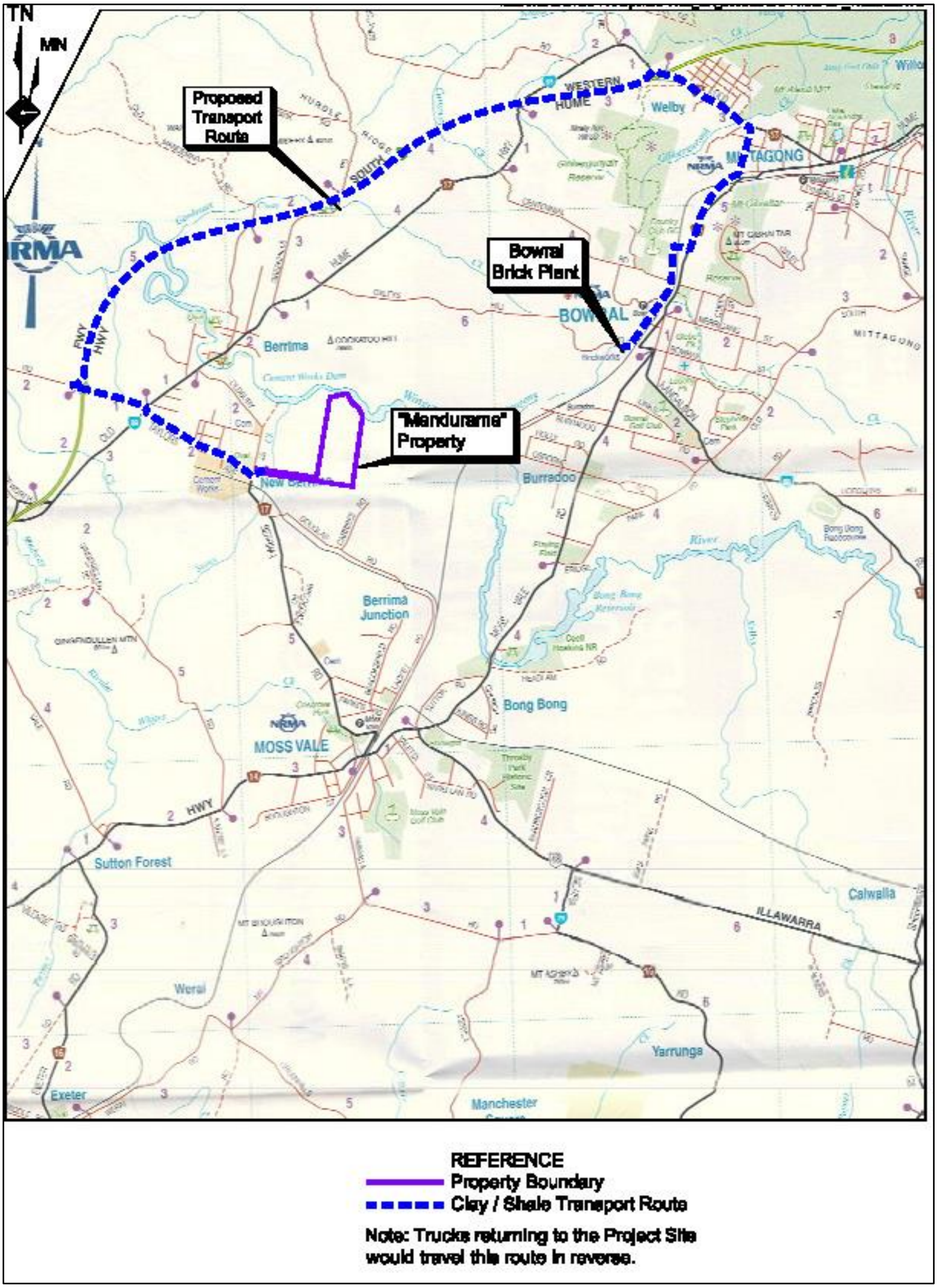

Figure 8: Quarry Truck Transport Route

4.1.2 Baseline Conditions

Traffic surveys conducted for the 2010 TA showed that there was a total of 100 veh/hr in the morning peak (between 8.00am – 9.00am) travelling along Berrima and 129 in the evening peak (3.00pm-4.00pm). The surveys also showed that there were 205 veh/hr in the morning peak travelling along Taylor Avenue and 224 in the evening peak (3.00pm – 4.00pm).

The 2010 TA provided a Midblock Roadway Capacity Assessment which found that the existing operation of Berrima Road and Taylor Avenue operated at a very good LoS ‘A’. SIDRA modelling also found that the Berrima Road and Taylor Avenue intersection operated at a LoS ‘A’.

4.1.3 Vehicle Access and Parking

The following summarises the main points provided within the 2012 TA:

- Vehicle access to the quarry will be via a Basic Rural Intersection (BAR),
- The development is classified as a Class 1A off-street parking facility under Australian Standard AS 2890.1. As the quarry has a site area of 51ha, ample area would be available for parking of cars and compliance with this standard can be achieved,
- Council’s DCP has no requirements for parking for the project. It is estimated that five part-time staff will be employed however, given the size of the site it was concluded that there will be ample area to cater for the parking of staff cars and contractor trucks as required.

4.1.4 Quarry Traffic Impacts

As already mentioned, a conservative assessment was conducted based on 140 vehicle movements per day. This equates to 17 veh/hr during the morning and evening peaks based on a 10-hour day, with 7 trucks and 4 cars arriving and 6 trucks departing in the morning and vice versa in the evening).

It was forecast the Midblock Capacity would continue to operate at LoS A for both Berrima Road and Taylor Avenue.

SIDRA modelling revealed that the intersection between Taylor Avenue and Berrima Road would continue to operate with a LoS A and the new access intersection would also operate at a LoS A.

4.2 Proposed Masonry Plant

Brickworks Land and Development have also submitted a development application for a Masonry Plant at 416 Berrima Road, New Berrima. This will form Site 1 of the Chesley Park factory precinct for Brickworks. The proposed masonry plant is located directly west of the proposed brickmaking factory as depicted in **Figure 9**.

Figure 9: Proposed Brickworks Masonry Plant Site Location

Ason Group undertook a traffic impact assessment for this Site in 2018 and the results of the analysis indicates that the proposed development would generate up to 115 trucks per day or 230 truck movements to and from the masonry plant. During the AM and PM road network periods, there would be 25 vehicle movements to / from the Site during the peak hours. This includes:

- 19 heavy vehicle movements (10 arrival trips and 9 departure trips) and 6 light vehicle movements during the morning peak hour (8.00am – 9.00am),
- 19 truck movements (9 arrival trips and 10 departure trips) and 6 light vehicle movements during the evening peak hour (5.00pm-6.00pm).

Under a cumulative traffic assessment of both the masonry plant and the quarry site, the SIDRA modelling of the key intersections indicates that they would continue to operate at a LoS B or better with the highest intersection delay of 17 seconds at the Old Hume Highway / Medway Road / Taylor Avenue roundabout.

4.3 Future Baseline Traffic Flows

Based on the 2010 Quarry TA, there is a total of 17 veh/hr during the morning and peak hour. The heavy vehicle traffic generated by the quarry (13 veh/hr) will travel via the Old Hume Highway / Medway Road / Taylor Avenue roundabout towards the M31 Hume Highway. The 4 private vehicle trips are split 50:50 along Berrima Road in both north and south direction.

The masonry plant's heavy vehicles (19 heavy vehicle movements) were distributed along the approved TfNSW heavy vehicles routes along Taylor Avenue to M31 Hume Highway. The 6 light vehicles were split 50:50 along Taylor Avenue and Berrima Road.

Therefore, the future traffic generation of the quarry and the proposed masonry plant would be approximately an additional 42 vehicles on the existing road network. Distributing the quarry and masonry plant's traffic generation across the existing local road network AM and PM peaks results in the following future baseline traffic flows as shown in **Figure 10** and **Figure 11**:

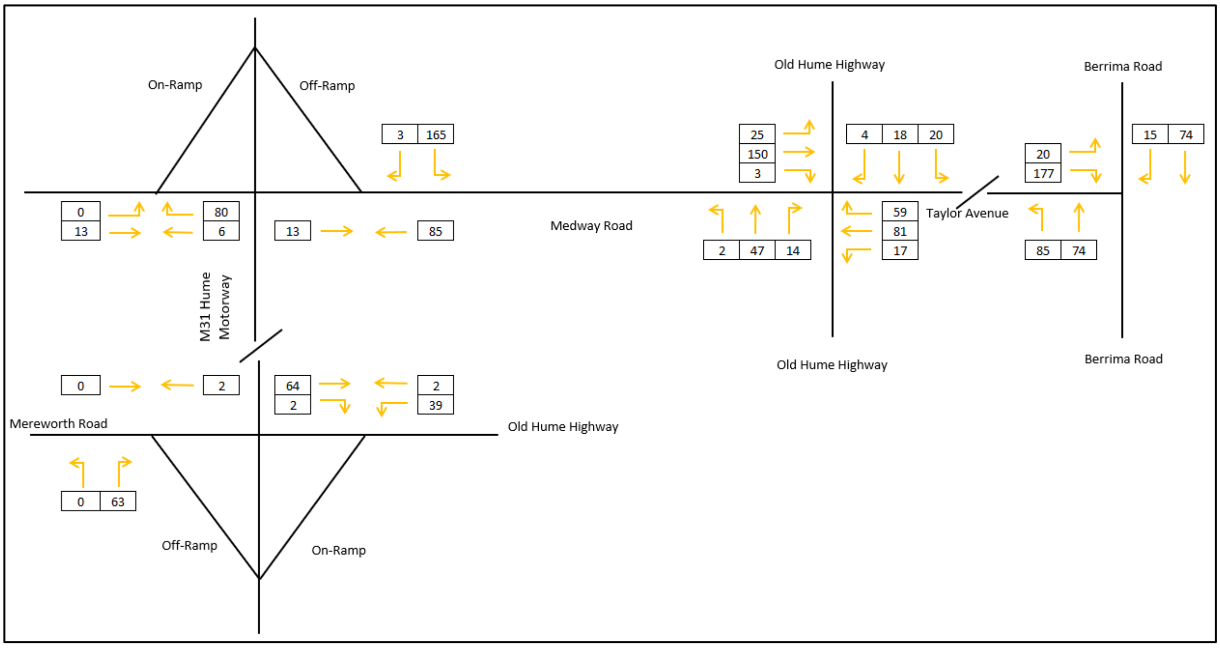

Figure 10: Future AM Peak Baseline Traffic Flows

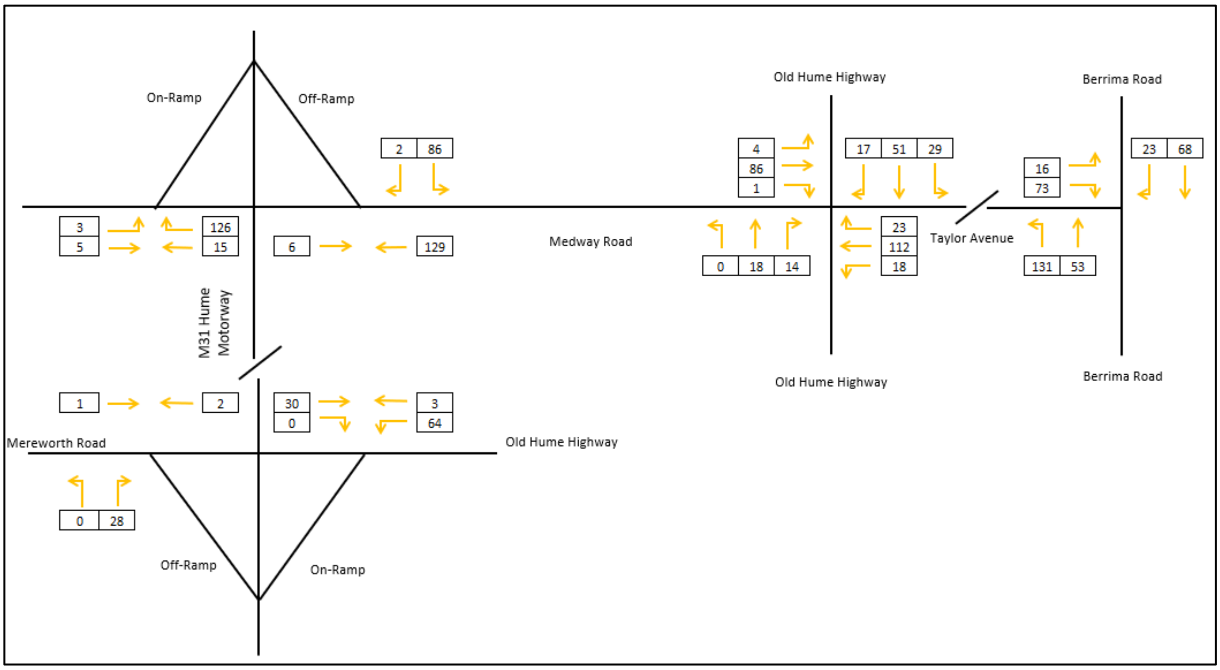

Figure 11: Future PM Peak Baseline Traffic Flows

5 Public Transport

The existing bus and train services that operate in the locality are shown in **Figure 12** and summarised below.

5.1 Railway Services

The site is located approximately 5-6km to the Moss Vale Station. Moss Vale Station is serviced by the Southern Highlands Line and Southern NSW Line, and provides connection to Campbelltown, Canberra and Sydney CBD. The Southern Highlands Line arrives at Moss Vale Station with approximately 1-hour frequencies each way throughout the day.

5.2 Bus Services

The Site is serviced by bus stops within 1km walking distance of the Site as shown in **Figure 12**. The bus services include:

- Bus service 812 – Berrima to Moss Vale via Medway with approximately 2-hour frequencies each way from 7:45am to 4:20pm.

This sole bus service connects the surrounding area to the nearest railway line at Moss Vale Railway Station.

It is acknowledged that as a function of the relatively poor level of public transport available, and moreover the shift structure at the future Site, that the use of public transport will be minimal.

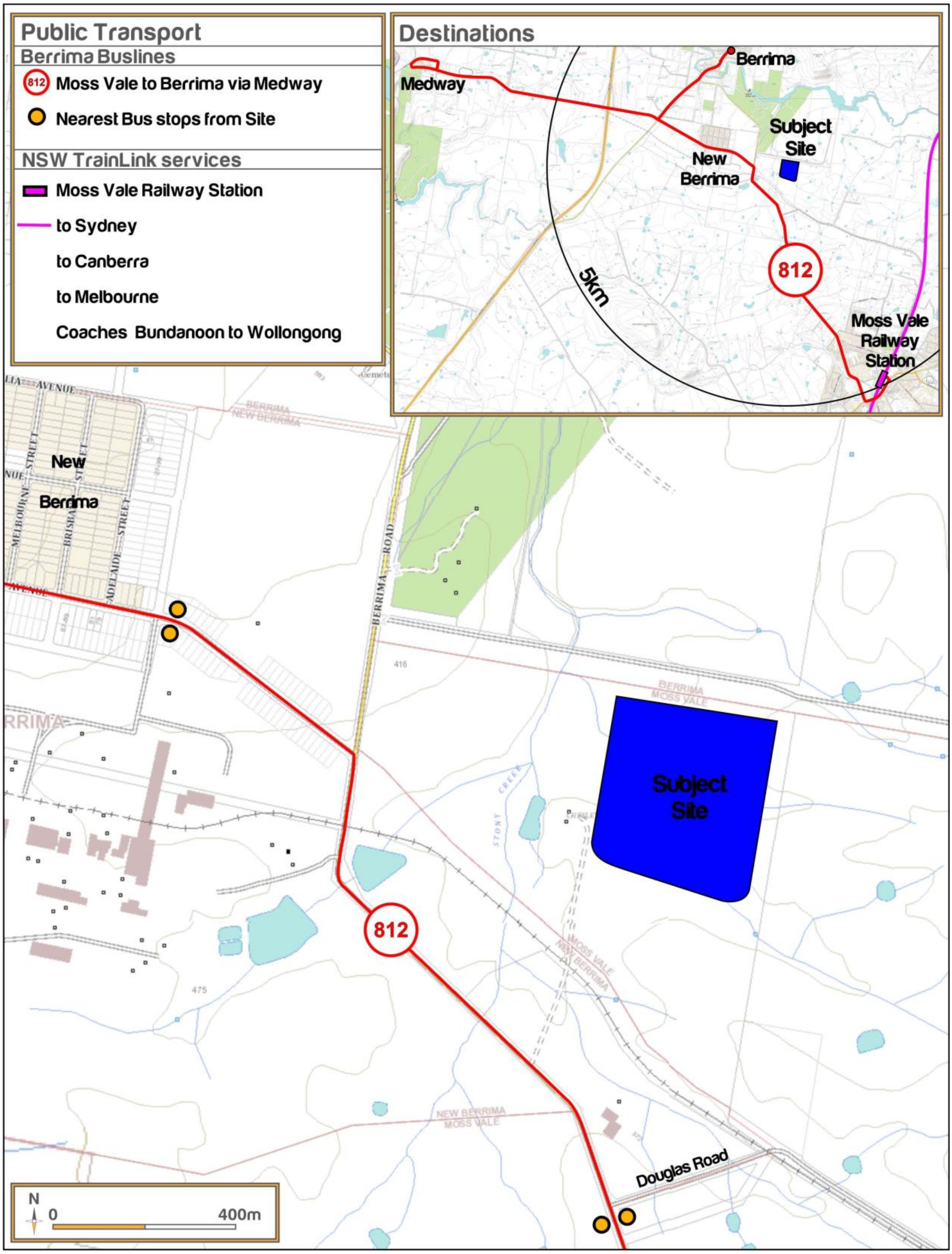

Figure 12: Public Transport Network

6 Parking & Servicing Requirements

6.1 Car Parking Rates

6.1.1 Council Controls

The MVEC DCP, Section 3.6 provides the carparking requirements for new industrial developments within the MVEC. The following parking controls are provided by Council:

- **Factory:** 1 space per 100m^2 of factory GFA, or 1 space per 2 employees, whichever is the greater.
- **Factory office**: 1 space per 40m^2 of office GFA.

Application of Council's parking rates to the proposed factory and office yields provides for the following requirement as shown in **Table 9**.

Table 12: Car Parking Rates

Land Use	Yield	Parking Rate	Parking Required	Provision
Factory	26,145m^2	1 spaces per 100 m^2	261	59
Office	895m^2	1 space per 40 m^2	22	
Total	-	-	**283**	**59**

Application of Council's parking rates to the proposed development yield results in a requirement of 283 car parking spaces. However, it is critical to note that there would be a maximum of 36 staff on-site at any one time when operational. As such, a provision of 283 spaces would be unwarranted and excessive in this instance.

The detailed operational requirements are known and thus, the parking requirement has been based on a first principles assessment to account for the unique characteristics of the development.

6.1.2 First Principle Assessment

Brickworks has provided the following operational staffing numbers that would typically be present at the factory and office during a normal weekday:

- A total of 36 employees including:
  - 10 office staff,
  - 24 factory employees (12 per shift), and
  - 2 laboratory workers.

It is expected that all staff would use their private vehicle to commute to work due to the site's remote location and lack of public transport. This would incur a parking rate of 1 space per employee. Applying this rate, the brickmaking plant would require a maximum of 36 spaces to accommodate the operational parking demands of the factory and offices.

The factory staff would work in two shifts (shift one 5.00am to 1.00pm and shift two 1.00pm to 9.00pm), with the administration staff working normal office hours. Thus, the number of staff on-site would normally be 24. The only time period where all 36 employees are on-site would be during shift change over at 1.00pm.

Therefore, the proposed development has provided 59 parking spaces which would accommodate all operational and visitor parking demands of the proposed development. The Proposal can therefore accommodate the parking demand it generates within the confines of the Site.

6.1.3 Accessible Parking

The DCP, Part D, Appendix 2 – Car Parking Provisions, indicates that Disabled Parking are to be provided for each building use according to the applicable Standard. AS2890.6 refers to the Building Code of Australia (BCA) for the provision of accessible parking. The proposed development has been categorised as Class 8 which recommends the following rate:

- 1 space for every 100 carparking spaces of part thereof

Application of this rate to the proposed carpark results in the requirement to provide 1 accessible parking space. Accordingly, the proposed development provides 1 accessible parking space which applies to the relevant applicable Standard.

6.2 Servicing and Waste Collection

The proposal includes a loading area for B-doubles, product trucks and pickup trucks that access via the site's primary heavy vehicle access driveway at the private access road along Berrima Road.

7 Traffic Assessment

7.1 Traffic Generation

Brickworks estimates the brickmaking factory would generate up to 85 trucks per day, or 170 truck movements travelling to and from the Site made up of:

- 50-60 product trucks
- 10-15 trucks coming to pick up
- 5-10 courier / deliveries

Despite the Site being operational over 24 hours a day, most of these truck movements are likely to occur between the hours of 5:00am – 5:00pm. To provide a conservative assessment it has been assumed that all the trucks would arrive in a 12-hour period and thus on average 14 trucks movements during the peak hours (with an assumed directional split of 50:50 for trucks travelling to the Site and away from it).

With regard to light vehicle trips, consideration of the proposed the shift patterns suggests, a total of 24 factory staff would be on-site for most of the day. It worthy to note that the factory workers and drivers will start on Site at 5.00am, with changeover of shift at 1.00pm and the second shift workers departing at 9.00pm.

Therefore, during the traditional road network peak hour, only the 10 office staff and 2 laboratory workers would be travelling to and from the Site. Thus, there would only be 12 light vehicle movements during the during the traditional network peak hours (8.00am – 9.00am and 5.00pm – 6.00pm). The total daily light vehicle movements for all staff on-site is estimated to be 48 in/out trips.

In total, there would be 26 vehicle movements to / from the Site during the peak hours. This includes:

- 14 heavy vehicle movements (7 arrival trips and 7 departure trips) and 12 inbound light vehicle movements during the morning peak hour (8.00am – 9.00am),
- 14 heavy vehicle movements (7 arrival trips and 7 departure trips) and 12 outbound light vehicle movements during the evening peak hour (5.00pm-6.00pm).

7.2 Traffic Distribution

All trucks will travel to and from the Site via Taylor Avenue, and then via the following routes:

- For trucks travelling to/from the north, the route would take them via the M31 Hume Motorway, onto Medway Road which connects with Taylor Avenue at the Medway Road / Taylor Avenue / Old Hume Highway roundabout.
- For trucks travelling to/from the south, the route would take them via the M31 Hume Motorway, onto the Old Hume Highway which connects to Taylor Avenue at the roundabout.

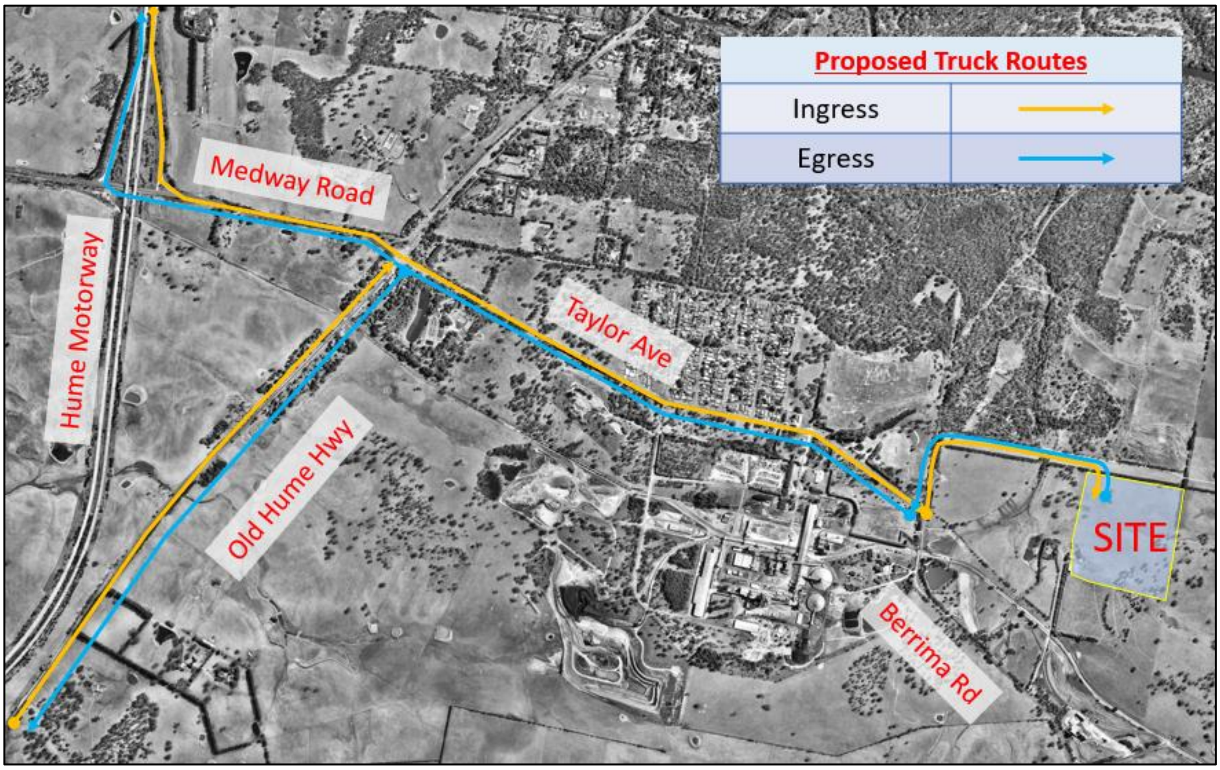

Figure 13: Heavy Vehicle Route Map

Based on information provided by Brickworks, it has been assumed that 80% of this traffic would travel northwards via Medway Road and the M31 Hume Motorway. The remaining trucks would travel south via the Old Hume Highway and the M31 Hume Highway. The same has been assumed for trucks travelling inbound to the Site.

For light vehicles, a 50:50 split has been assumed between cars travelling along Berrima Road and Taylor Avenue.

The resulting trips generated by the development and their movements through the Old Hume Highway / Medway Road / Taylor Avenue roundabout and the on / off ramps for the M31 Hume Motorway are shown by **Figure 14** and **Figure 15.**

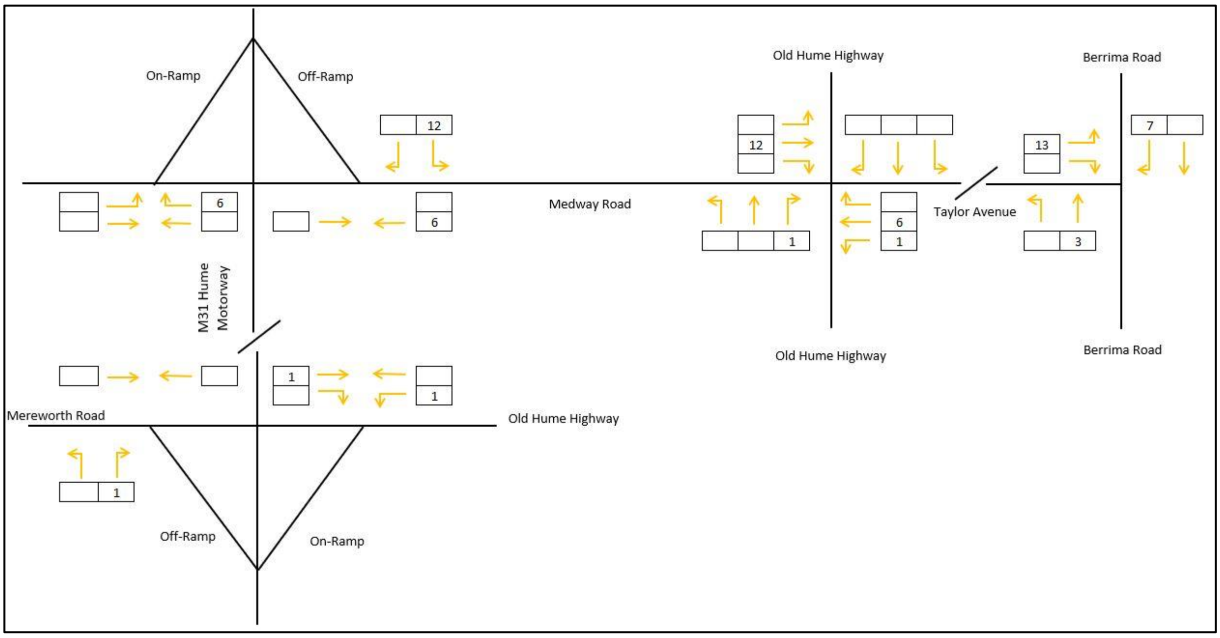

Figure 14: AM Peak Hour Development Trips

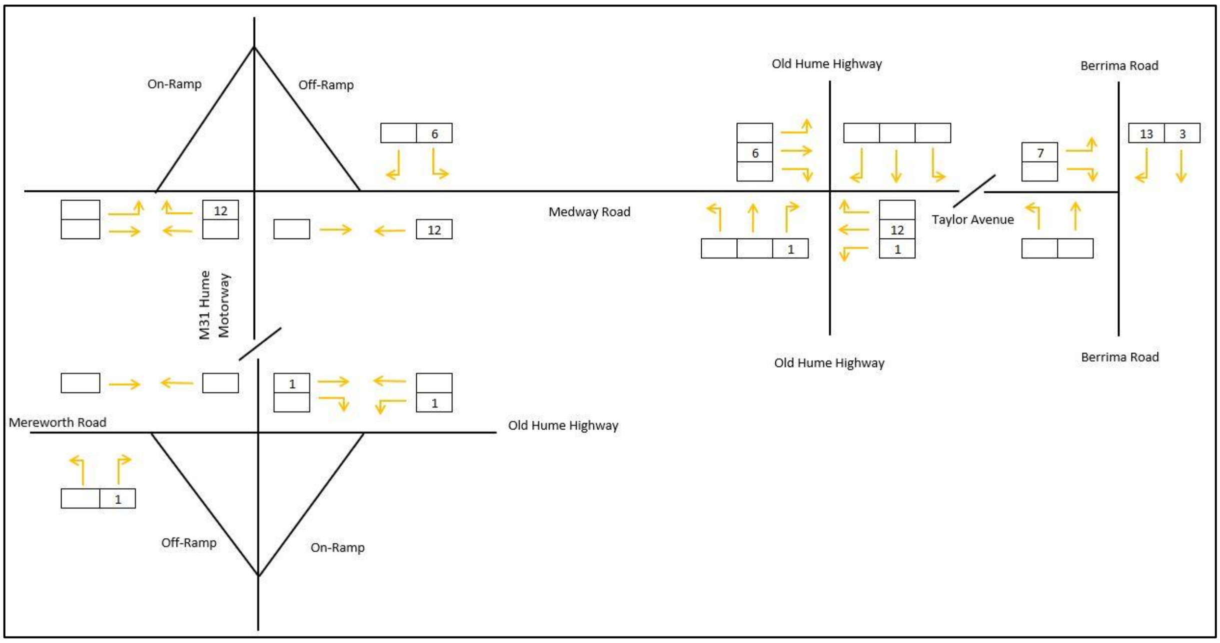

Figure 15: PM Peak Hour Development Trips

7.3 Traffic Impacts

7.3.1 Intersection Performance

The impact of the proposed development alongside the additional traffic generated by the quarry and the masonry plant on the critical intersections in the locality have been assessed as a net increase over and above the existing on-street conditions and the results of this analysis are provide in **Table 11**.

The cumulative traffic generation of the quarry, the proposed masonry plant and the proposed brickmaking factory would be approximately an additional 68 vehicles on the existing road network.

The resulting forecast traffic flows are shown by **Figure 16** and **Figure 17.**

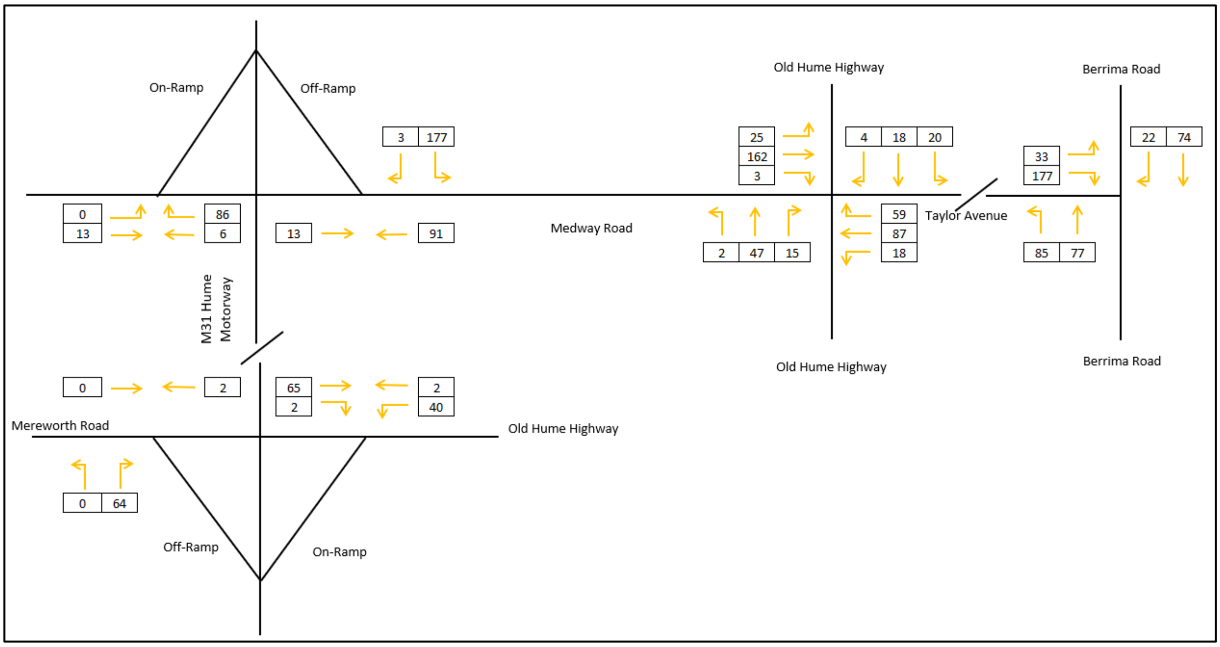

Figure 16: AM Peak Hour (8.00am-9.00am) Forecast Traffic Flows

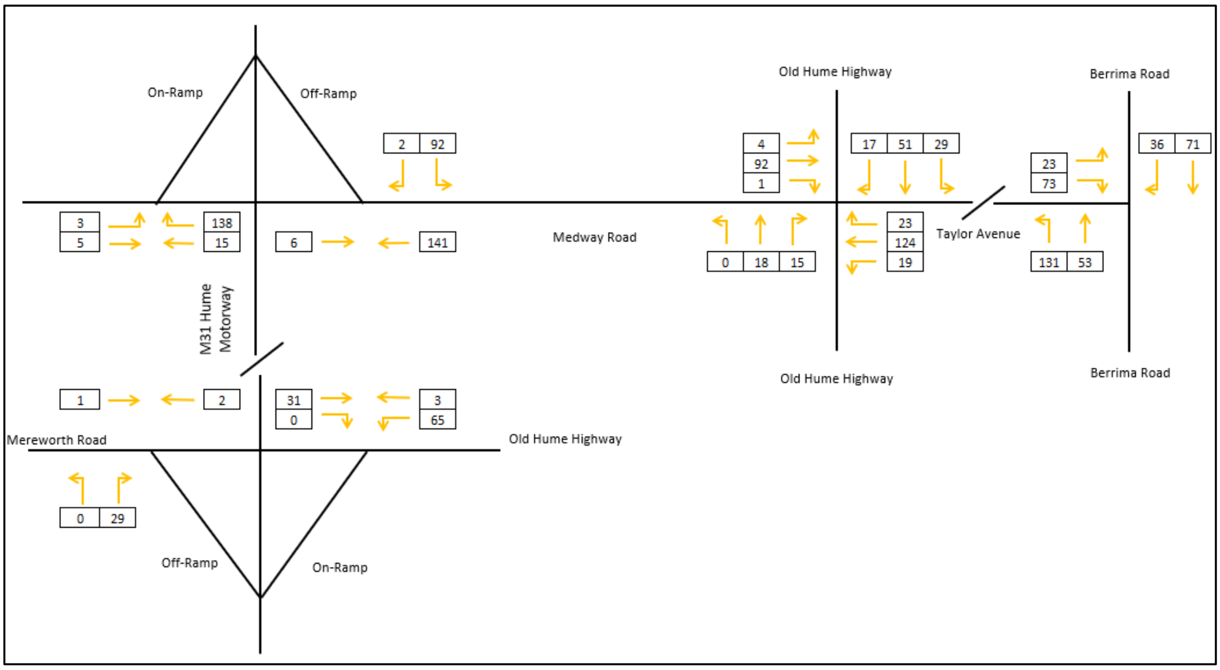

Figure 17: PM Peak Hour (5.00pm-6.00pm) Forecast Traffic Flows

Table 13: Local Network Performance, Cumulative Future Scenario

Intersection	Control Type	Period	Intersection Delay	Level of Service
Berrima Road / Taylor Avenue	Priority	AM	7	A
		PM	7	A
Old Hume Highway / Medway Road / Taylor Avenue	Roundabout	AM	17	B
		PM	16	B
Mereworth Road / Hume Highway Off Ramp	Priority	AM	7	A
		PM	7	A
Mereworth Road / Hume Highway On Ramp	Priority	AM	15	B
		PM	8	A
Medway Road / Hume Highway Off Ramp	Priority	AM	8	A
		PM	8	A
Medway Road / Hume Highway On Ramp	Priority	AM	8	A
		PM	8	A

The SIDRA analysis indicates that the 'net' traffic volumes arising from the development would result in only minor increases in DOS and AVD and – importantly – LOS would remain unchanged. In summary, the traffic impact analysis concludes that the net traffic generation volumes are of a sufficiently low order that once distributed on to the surrounding road network, the impacts of these volumes at the key intersections would be negligible and the intersections would operate as currently occurs.

7.3.2 Midblock Capacity Assessment

As discussed in **Section 3**, both Berrima Road and Taylor Avenue currently operate with a very good LoS 'A'. **Table 12** and **Table 13** provide the existing traffic flow alongside the additional flows as a result of the Proposal, the proposed masonry plant and the approved quarry. There would be an additional 68 vehicles (22 light vehicles and 46 heavy vehicles) on Berrima Road and an additional 59 vehicles (13 light vehicles and 46 heavy vehicles) on Taylor Avenue.

Table 14: Berrima Road Existing vs Development + Quarry + Masonry Plant Traffic Flows

Road	Existing			With Development + Quarry + Masonry Plant		
	Lights	Heavies	Total	Lights	Heavies	Total
AM (8.00 – 9.00)	142	9	151	164	55	219
PM (5.00 – 6.00)	121	3	124	143	49	192

Following completion of the development and quarry, the heavy vehicle volumes will represent 25% and 26% in the morning and evening peak hours respectively along Berrima Road.

Table 15: Taylor Avenue Existing vs Development + Quarry + Masonry Plant Traffic Flows

Road	Existing			With Development + Quarry + Masonry Plant		
	Lights	Heavies	Total	Lights	Heavies	Total
AM (8.00 – 9.00)	295	48	343	308	94	402
PM (5.00 – 6.00)	235	28	263	248	74	322

Following completion of the development and quarry, the heavy vehicle volumes will represent 23% and 23% in the morning and evening peak hours along Taylor Avenue.

Extrapolation of the RMS Guide's Rural Road Midblock LoS Criteria (**Table 7**) indicates that to reach a LoS of B for a level two-way rural road for 25% heavy vehicles, there needs to be a total of 470 vehicles at the midblock. Berrima Road with 219 vehicles in the peak hours and 25% heavy vehicles would continue to operate at a very good level of service 'A'. Taylor Avenue with 402 vehicles per hour and 23% heavy vehicles would also operate at level of service 'A'.

8 Draft Construction Traffic Management Plan

A detailed Construction Traffic Management Plan (**CTMP**) will be provided as part of detailed construction management plan submitted under the conditions of any approval. It is expected that during the most intensive phase of construction, it is estimated that a conservative peak of 60 contractors could be on-site at any one time. It is noted that this estimate requires further consideration, when a Contractor has been appointed.

For the purposes of this TA report, the following general principles for managing construction traffic have been assumed and provide an understanding of the likely traffic impacts during the construction period. It should be noted that the construction programme for the development has not yet been finalised.

On-site parking for key contractors and staff will be provided throughout the construction works. The number and location of this temporary on-site car parking will change throughout the various construction phases, depending on the surplus area available not required for truck loading and turning areas.

The construction work will vary depending on the phase of construction and associated activities. Construction works however will be undertaken during standard construction-working hours, which are likely to be as follows:

- Monday to Friday: 7.00AM to 5:00PM
- Saturday: 8.00AM to 5.00PM
- Sunday and Public holidays: No planned work.

It may (on occasions) be necessary to undertake night works to minimise disruption to traffic however any works undertaken outside of these times will only occur with prior approval from Council.

It is expected that all vehicle entry and exit movements are to be in a forward direction only, with spoil to be loaded within the site and under the careful supervision of an authorised traffic controller.

Construction of the above development would generate a moderate increase in traffic on the surrounding road network. In this regard, the following measures should be undertaken to minimise the impacts of the construction activities of the development:

- Disruption to road users would be kept to a minimum by scheduling intensive delivery activities outside of peak network hours.
- Supervised traffic control will be required where two-way flow is restricted over any length of the roadway, depending on the number of truck movements required and would be managed outside of peak hour vehicle activity.

8.1.1 Potential Haulage Routes

It is proposed that construction vehicles enter and exit the Site via the same routes to be used when the Site is operational, which are shown by Figure 7. A copy of the truck routes shall be provided to all drivers prior to attending the Site. The proposed routes consist of:

Entry Routes

- FROM NORTH: From Hume Motorway, exit left onto the off-ramp to turn left onto Medway Road, straight across the roundabout to Taylor Avenue, left onto Berrima Road and then into the Site.
- FROM SOUTH: From Hume Motorway, exit left onto the off-ramp to turn right onto Old Hume Highway, right at the roundabout to Taylor Avenue, left onto Berrima Road and then into to the Site.

Exit Routes:

- TO NORTH: Left onto Berrima Road, right onto Taylor Avenue, straight across the roundabout to Medway Road, right onto the Hume Motorway on-ramp to head north.
- TO SOUTH: Left onto Berrima Road, right onto Taylor Avenue, left at the roundabout to Old Hume Highway, left onto the Hume Motorway on-ramp to head south.

The above access and egress routes are to be utilised by all construction vehicles associated with the Site and represents the shortest route between the local and regional road network – hence minimising the impacts of the construction process. No trucks are to be queued on local roads. Two-way radios would be used to coordinate truck arrivals.

9 Design Commentary

9.1 Relevant Design Standards

The site access, car park and loading areas have been designed to comply with the following relevant Australian Standards:

- AS2890.1 for car parking areas;
- AS2890.2 for commercial vehicle loading areas;
- AS2890.6 for accessible (disabled) parking.

9.2 Proposed Vehicle Access and Intersection Upgrades

9.2.1 Overview

Figure 18 illustrates the existing quarry access driveway, which would be upgraded in accordance with AS2890.2 to accommodate heavy and light vehicle access for the Proposal.

Figure 18: Existing Quarry Access Driveway

The Austroads Part 4 – Intersections and Crossings was used to assess what intersection treatments were required for the new development. The mid-block ATC survey data indicate the following existing worst-case peak hour average two-way traffic flow along Berrima Road:

- AM Peak: 156 veh/hr
- PM Peak: 189 veh/hr

The total future traffic generation of the quarry, masonry plant and the brickmaking plant would be some 68 veh/hr during the peak hours along Berrima Road. The posted speed limit along Berrima Road is 90km/hr which would typically correspond to a design speed of 100km/hr. However, ATC data indicates that the average speed along Berrima Road is approximately around 70km/hr. As such the following Austroads Figure A10 (Figure 19) has been used.

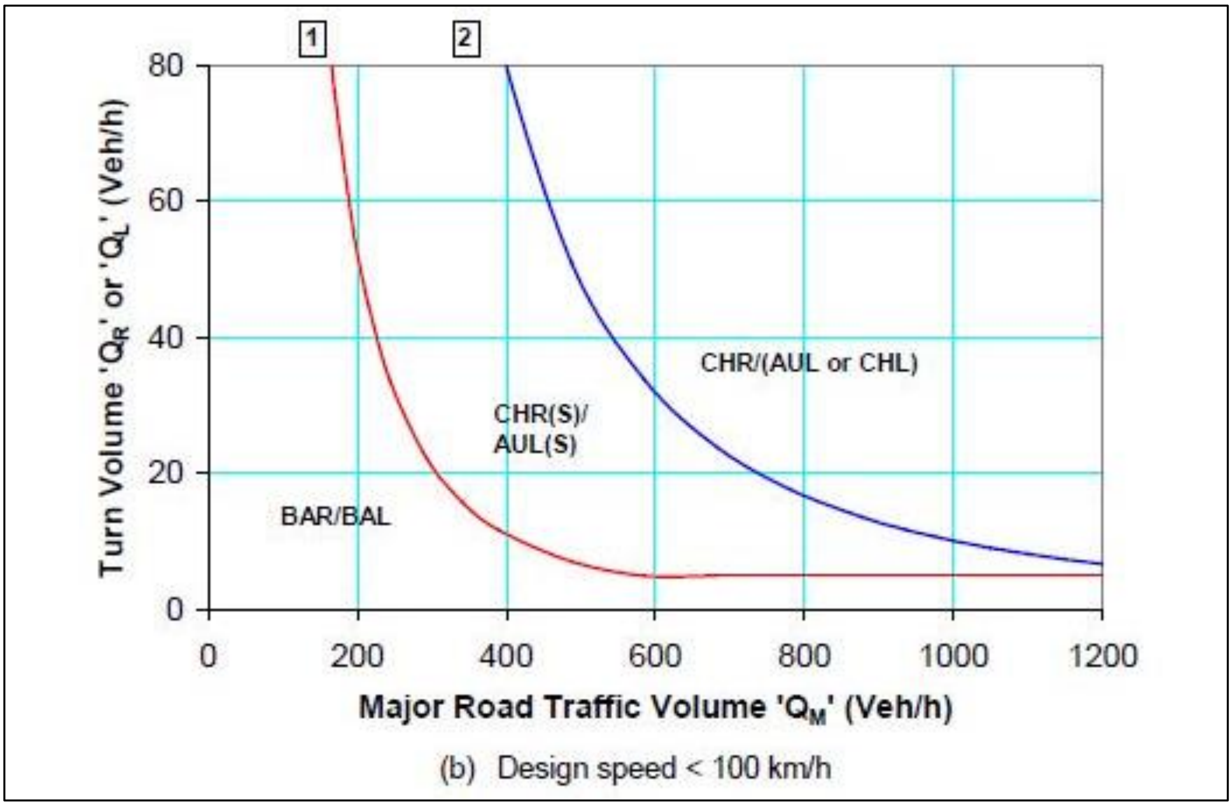

Figure 19: Austroads Turning Treatment Warrants

9.2.2 Heavy Vehicle Access (Existing Quarry Access)

The New Berrima Clay/Shale Quarry Traffic Report prepared in 2010 estimated a peak hour traffic generation of 17 vehicle trips, that is 11 vehicles trips turning right into the New Quarry access. It is estimated 115 masonry trucks and 85 brickmaking factory trucks per day would enter the Site between 5.00am – 5.00pm. This would equate to roughly 17 (both masonry and brickmaking factory) truck entry movements per hour. There would also be some 12 inbound brickmaking factory office and laboratory staff during the traditional AM peak hour. As such, a peak total of 40 right turn movements will occur during the AM peak hour.

As such, the heavy vehicle access is required to provide a rural Basic Right Turn (BAR) treatment. AT&L has provided the following draft concept plans for the upgraded heavy vehicle access for B-Double movements:

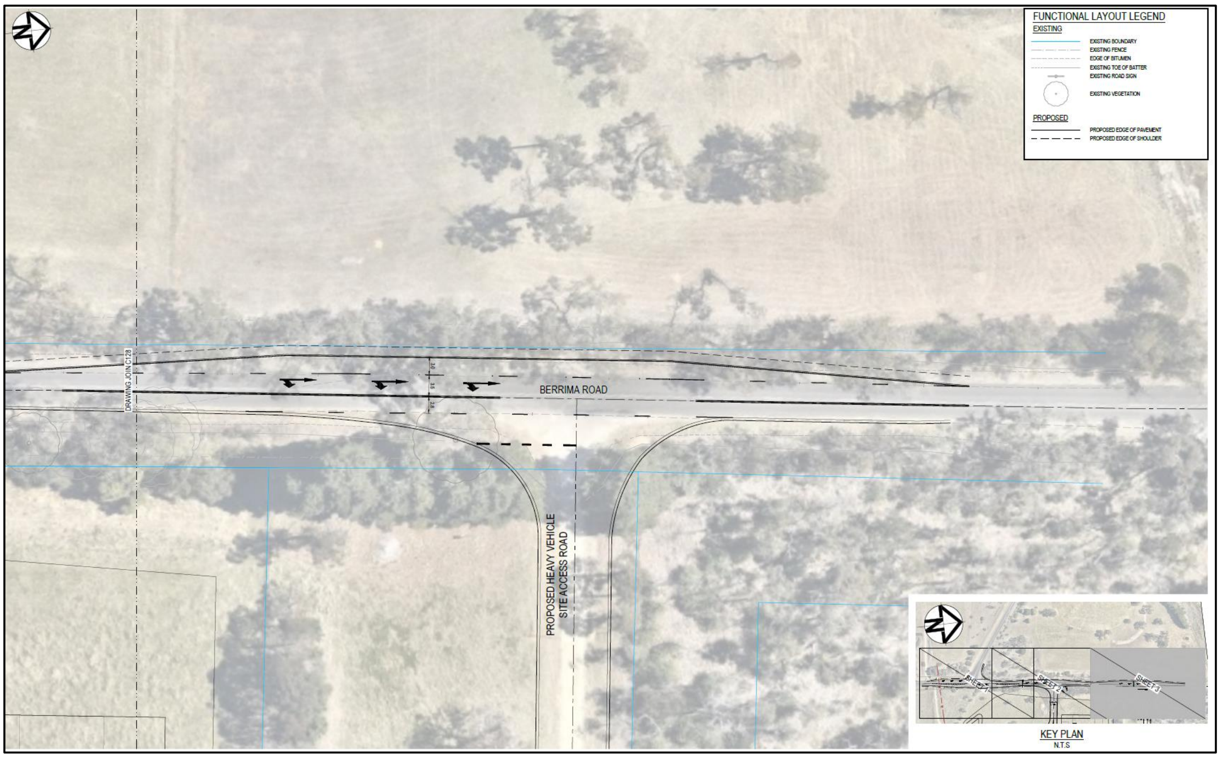

Figure 20: AT&L Proposed Heavy Vehicle Access

9.2.3 Masonry Light Vehicle Access

The existing BAR treatment at the proposed Masonry Light Vehicle access is deemed acceptable due to the low volume of vehicles entering and exiting via this access (some 6 veh/hr). The following figure details AT&L's concept draft plan for the masonry plant's intersection which remains consistent with the current design.

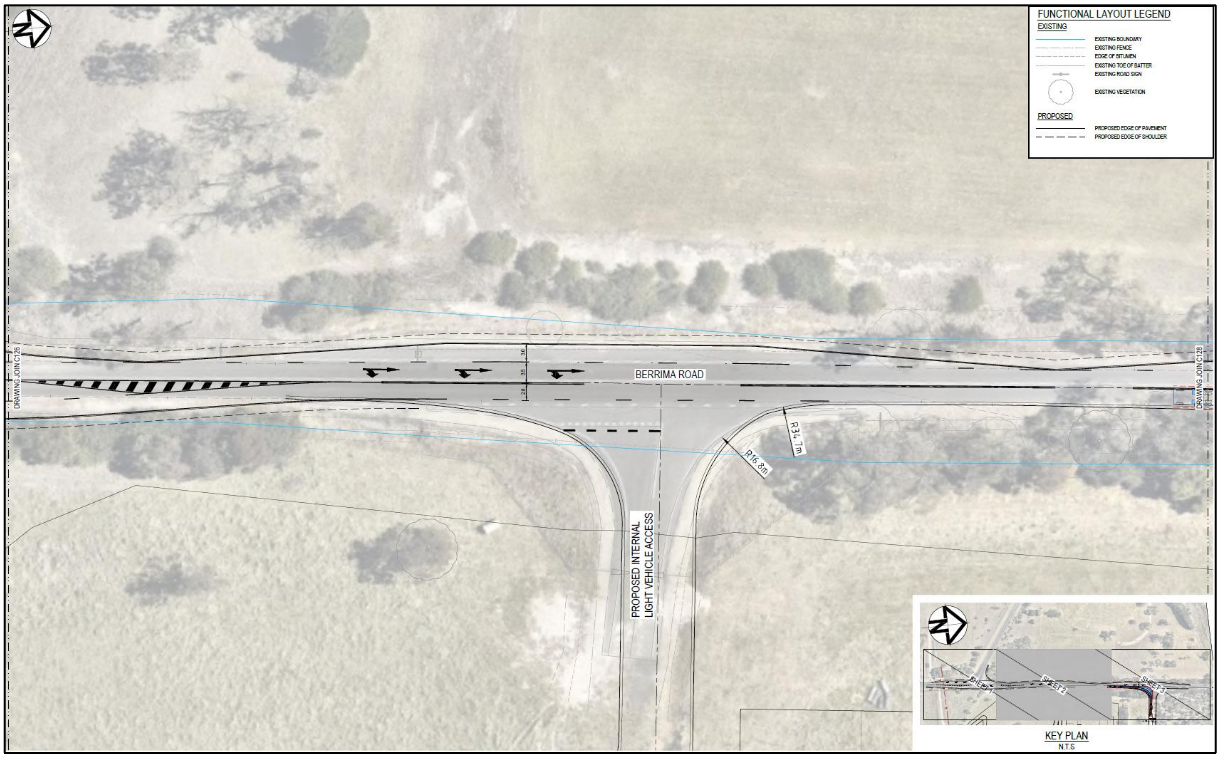

Figure 21: AT&L Proposed Masonry Plant Light Vehicle Access

9.2.4 Berrima Road / Taylor Avenue Intersection

Future traffic movements at Berrima Road / Taylor Avenue intersection are discussed in Section 7.3. As such the key future peak hour traffic volumes are:

- AM Peak: 151 veh/hr two-way through movements, 85 veh/hr left turn movements & 22 veh/hr right turn movements
- PM Peak: 124 veh/hr two-way through movements, 131 veh/hr left turn movements & 36 veh/hr right turn movements

Due to the high left turn volumes in the PM peak, an Auxiliary left-turn (AUL) treatment is required. A rural Channelised right-turn (CHR) treatment is required as a result of a moderate number of right-turning vehicles crossing peak of 255 veh/hr of through and left-turn traffic volumes. The following figure details AT&L proposed intersection upgrades to allow B-Double movements and the upgraded intersection treatments:

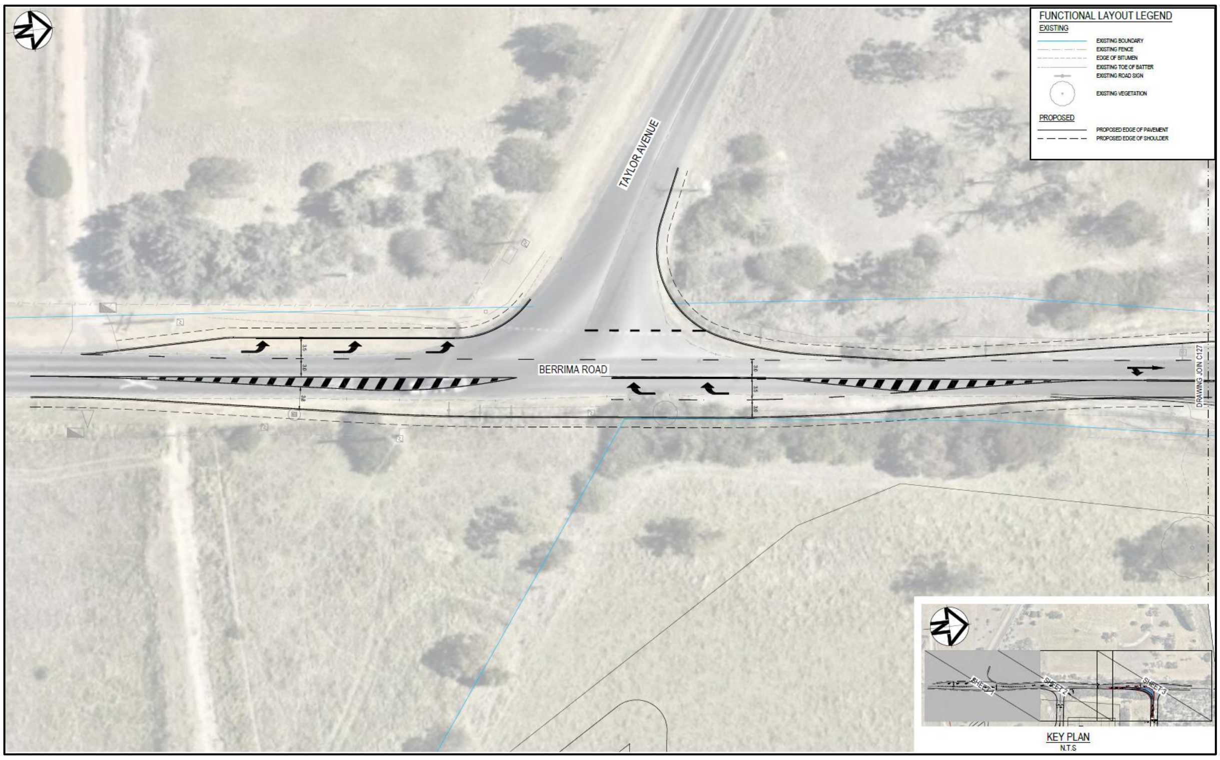

Figure 22: AT&L Proposed Berrima Road / Taylor Avenue Upgrade

9.3 Heavy Vehicle Facilities

The commercial (heavy) vehicle facilities of the development have been designed having regard for the operational requirements of the future tenant and the requirements of AS2890.2. In this regard the following is considered noteworthy:

- The minimum SSD would be achieved in the upgrade of the heavy vehicle access intersection. Please refer to AT&L concept plans for further details.
- The internal design of the loading areas has been undertaken in accordance with the requirements of AS28090.2 for the maximum length vehicle accessing the site being a B-double truck of 26m in length.
- All heavy vehicles can enter and exit the site in a forward direction.

Swept path analysis is provided in Appendix B, which demonstrates compliance with relevant sections of AS2890.2.

9.4 Carpark Facilities

A detailed review of the light vehicle access, the car park and other related areas has been undertaken and the following characteristics are noteworthy:

- The main car park aisle has been designed with a minimum clear width of 5.8m.
- All staff and visitor parking spaces are designed in accordance with a User Class 1A and are to be provided with a minimum space length of 5.4m, a minimum width of 2.4m.
- All disabled and adaptable parking spaces are to be provided in accordance with AS2890.6, which requires a space with a clear width of 2.4m and located adjacent to a minimum shared area of 2.4m.
- The carpark access has been designed in accordance AS2890.1 which requires a Category 1 driveway access to be provided with a minimum combined width of 3-5.5m (the Site access provides at least 6m in width).

It is expected that any detailed construction drawings in relation to any modified areas of the car park or site access would comply with these Standards. Furthermore, compliance with the above Standards would be expected to form a standard condition of consent to any development approval.

10 Conclusions

The key findings of this Transport Assessment are:

- The Site is located at 431 Berrima Road, New Berrima and is covered by Wingecarribee Shire Council controls. The Proposal generally relates to the development of a new brickmaking factory with associated car parking and hardstand.
- A first principles parking assessment has been conducted based on operational characteristics of the Proposal. Council's DCP and RMS guidance was referred to, although it has been deemed inappropriate to adopt these rates for the Proposal based on the unique operations and less intense nature of the development.

  The operational demand of the Proposal would result in the requirement of 36 staff parking spaces. A total of 59 spaces are to be provided, which would accommodate the staff parking and accommodate visitors if necessary.
- An assessment the key intersections has been undertaken including a cumulative assessment of the approved New Berrima Quarry site and the proposed Masonry Plant. The Proposal is predicted to generate a total of 26 vehicle movements per peak hour (14 heavy vehicles and 12 light vehicles) which is based on a first principles assessment of operational requirements of the brickmaking factory.
- The intersection between Taylor Avenue and Berrima Road has been assessed in its current layout as a priority intersection due to the unknown timeframes of when the construction of the Berrima Road Deviation Project would resume.
- Under a cumulative assessment of the approved quarry, the proposed masonry plant and the proposed brickmaking factory, there would a total future total traffic generation of 68 vehicles (22 light vehicles and 46 heavy vehicles) during the peak hours.

  Once distributed across the local road network, SIDRA analysis has indicated that the traffic generated by the Proposal, the proposed masonry plant and approved quarry can be accommodated by the existing road network without any adverse impacts to the external road network.
- The access and internal layout have been designed in accordance with the AS2890 series and Austroads standards. The critical intersections of Berrima Road / Taylor Avenue and the heavy vehicle access is proposed to be upgraded to the recommended rural intersection treatments as specified in the Austroads guide.

  These upgrades will allow B-Doubles to travel between the Site and the Taylor Avenue. AT&L has produced concept civil plans for the proposed intersection upgrades along Berrima Road.

A standard condition of consent requiring compliance with AS2890 and Austroads would be considered sufficient to ensure that any minor changes to plans required, if any, could be undertaken as part of detailed Construction Certificate documentation.

In summary, this TA Report satisfactorily addresses the traffic and transport related SEARs and it is concluded that the Proposal is supportable on traffic planning grounds.

Appendix

SIDRA Output Results

MOVEMENT SUMMARY

Site: 100 [Existing AM_Taylor Avenue x Berrima Road]

Taylor Avenue x Berrima Road
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	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Berrima Road												
1	L2	89	14.1	0.092	7.2	LOS A	0.0	0.0	0.00	0.35	0.00	64.5
2	T1	75	1.4	0.092	0.0	LOS A	0.0	0.0	0.00	0.35	0.00	70.9
Approach		164	8.3	0.092	3.9	NA	0.0	0.0	0.00	0.35	0.00	66.5
North: Berrima Road												
8	T1	78	0.0	0.041	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	79.7
9	R2	1	0.0	0.041	5.7	LOS A	0.0	0.1	0.01	0.01	0.01	52.1
Approach		79	0.0	0.041	0.1	NA	0.0	0.1	0.01	0.01	0.01	79.2
West: Taylor Avenue												
10	L2	1	0.0	0.179	4.8	LOS A	0.6	4.8	0.29	0.58	0.29	33.6
12	R2	186	6.2	0.179	5.5	LOS A	0.6	4.8	0.29	0.58	0.29	51.7
Approach		187	6.2	0.179	5.5	LOS A	0.6	4.8	0.29	0.58	0.29	51.6
All Vehicles		431	5.9	0.179	3.9	NA	0.6	4.8	0.13	0.39	0.13	59.1

Site Level of Service (LOS) Method: Delay (SIDRA). 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 [Existing AM_Old Hume Highway x Taylor Avenue x Medway Road]

Old Hume Highway x Taylor Avenue x Medway Road

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: Old Hume Highway (2800m)												
1	L2	2	0.0	0.049	7.2	LOS A	0.3	2.0	0.33	0.54	0.33	87.4
2	T1	49	2.1	0.049	7.9	LOS A	0.3	2.0	0.33	0.54	0.33	88.6
3	R2	13	33.3	0.049	15.9	LOS B	0.3	2.0	0.33	0.54	0.33	86.4
Approach		64	8.2	0.049	9.5	LOS A	0.3	2.0	0.33	0.54	0.33	88.2
East: Taylor Avenue (1000m)												
4	L2	16	46.7	0.105	5.7	LOS A	0.6	5.0	0.13	0.54	0.13	82.7
5	T1	72	30.9	0.105	5.6	LOS A	0.6	5.0	0.13	0.54	0.13	71.3
6	R2	62	10.2	0.105	12.7	LOS A	0.6	5.0	0.13	0.54	0.13	71.8
6u	U	3	0.0	0.105	12.1	LOS A	0.6	5.0	0.13	0.54	0.13	66.8
Approach		153	23.4	0.105	8.6	LOS A	0.6	5.0	0.13	0.54	0.13	73.3
North: Old Hume Highway (850m)												
7	L2	21	40.0	0.038	6.4	LOS A	0.2	1.8	0.37	0.50	0.37	69.9
8	T1	19	16.7	0.038	6.2	LOS A	0.2	1.8	0.37	0.50	0.37	86.9
9	R2	4	0.0	0.038	13.2	LOS A	0.2	1.8	0.37	0.50	0.37	73.5
Approach		44	26.2	0.038	7.0	LOS A	0.2	1.8	0.37	0.50	0.37	79.4
West: Medway Road (860m)												
10	L2	26	0.0	0.132	5.5	LOS A	0.7	6.1	0.32	0.46	0.32	72.2
11	T1	139	23.5	0.132	6.1	LOS A	0.7	6.1	0.32	0.46	0.32	73.4
12	R2	3	33.3	0.132	13.7	LOS A	0.7	6.1	0.32	0.46	0.32	85.6
Approach		168	20.0	0.132	6.2	LOS A	0.7	6.1	0.32	0.46	0.32	73.6
All Vehicles		429	20.1	0.132	7.6	LOS A	0.7	6.1	0.26	0.51	0.26	77.2

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: 102-1 [Existing AM_[Mereworth] Off ramp_Mereworth Road W]

Hume Motorway x Old Hume Highway x Mereworth
Off ramp_Mereworth Road
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	v/c	sec		veh	m				km/h
South: Off ramp (300m)												
1	L2	1	0.0	0.037	6.9	LOS A	0.0	0.0	0.00	0.67	0.00	65.7
3	R2	64	6.6	0.037	7.0	LOS A	0.0	0.0	0.00	0.67	0.00	51.1
Approach		65	6.5	0.037	7.0	NA	0.0	0.0	0.00	0.67	0.00	51.5
East: Old Hume Highway (170m)												
5	T1	2	0.0	0.001	5.9	LOS A	0.0	0.0	0.14	0.56	0.14	65.0
Approach		2	0.0	0.001	5.9	LOS A	0.0	0.0	0.14	0.56	0.14	65.0
West: Mereworth (720m)												
11	T1	1	0.0	0.001	5.9	LOS A	0.0	0.0	0.13	0.56	0.13	65.0
Approach		1	0.0	0.001	5.9	LOS A	0.0	0.0	0.13	0.56	0.13	65.0
All Vehicles		68	6.2	0.037	6.9	NA	0.0	0.0	0.01	0.67	0.01	52.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 102-2 [Existing AM_[Mereworth] On ramp_Old Hume Highway E]

Hume Motorway x Old Hume Highway x Mereworth
Off ramp_Old Hume Highway
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
North: Old Hume Highway (2800m)												
8	T1	39	29.7	0.027	5.3	LOS A	0.2	1.7	0.13	0.48	0.13	61.4
9	R2	2	100.0	0.027	13.5	LOS A	0.2	1.7	0.13	0.48	0.13	60.6
Approach		41	33.3	0.027	5.8	LOS A	0.2	1.7	0.13	0.48	0.13	61.3
West: Old Hume Highway (170m)												
10	L2	65	6.5	0.037	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	62.1
12	R2	2	100.0	0.003	7.6	LOS A	0.0	0.1	0.15	0.61	0.15	42.2
Approach		67	9.4	0.037	7.0	LOS A	0.0	0.1	0.00	0.63	0.00	62.0
All Vehicles		108	18.4	0.037	6.5	NA	0.2	1.7	0.05	0.57	0.05	61.7

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: 103-1 [Existing AM_[Medway] Off ramp_Medway Road E]

Hume Motorway x Medway
Off ramp_Medway Road
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	v/c	sec		veh	m				km/h
East: Medway Road (860m)												
5	T1	76	27.8	0.045	6.2	LOS A	0.0	0.0	0.00	0.61	0.00	64.8
Approach		76	27.8	0.045	6.2	LOS A	0.0	0.0	0.00	0.61	0.00	64.8
North: Off ramp (500m)												
7	L2	155	21.1	0.092	7.9	LOS A	0.0	0.0	0.00	0.59	0.00	67.1
9	R2	3	0.0	0.003	7.2	LOS A	0.0	0.1	0.19	0.61	0.19	58.8
Approach		158	20.7	0.092	7.9	LOS A	0.0	0.1	0.00	0.59	0.00	67.0
West: Medway Road (180m)												
11	T1	14	0.0	0.007	5.8	LOS A	0.0	0.0	0.00	0.60	0.00	67.3
Approach		14	0.0	0.007	5.8	LOS A	0.0	0.0	0.00	0.60	0.00	67.3
All Vehicles		247	21.7	0.092	7.3	NA	0.0	0.1	0.00	0.60	0.00	66.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 103-2 [Existing AM_[Medway] On ramp_Medway Road W]

Hume Motorway x Medway
On ramp_Medway Road
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: Medway Road (180m)												
5	T1	6	33.3	0.004	5.9	LOS A	0.0	0.0	0.00	0.61	0.00	64.5
6	R2	71	29.9	0.073	7.2	LOS A	0.2	2.2	0.07	0.64	0.07	47.2
Approach		77	30.1	0.073	7.1	LOS A	0.2	2.2	0.06	0.64	0.06	49.2
West: Medway Road (1000m)												
10	L2	1	0.0	0.001	7.6	LOS A	0.0	0.0	0.00	0.60	0.00	69.6
11	T1	14	7.7	0.007	5.8	LOS A	0.0	0.0	0.00	0.61	0.00	68.0
Approach		15	7.1	0.007	6.0	LOS A	0.0	0.0	0.00	0.61	0.00	68.1
All Vehicles		92	26.4	0.073	6.9	NA	0.2	2.2	0.05	0.63	0.05	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.
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: 100 [Existing PM_Taylor Avenue x Berrima Road]

Taylor Avenue x Berrima Road
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
South: Berrima Road												
1	L2	138	2.3	0.104	7.0	LOS A	0.0	0.0	0.00	0.46	0.00	67.0
2	T1	56	0.0	0.104	0.0	LOS A	0.0	0.0	0.00	0.46	0.00	67.9
Approach		194	1.6	0.104	5.0	NA	0.0	0.0	0.00	0.46	0.00	67.2
North: Berrima Road												
8	T1	68	0.0	0.037	0.0	LOS A	0.0	0.2	0.03	0.03	0.03	79.0
9	R2	3	0.0	0.037	5.7	LOS A	0.0	0.2	0.03	0.03	0.03	51.8
Approach		72	0.0	0.037	0.3	NA	0.0	0.2	0.03	0.03	0.03	77.3
West: Taylor Avenue												
10	L2	1	100.0	0.073	5.4	LOS A	0.2	1.8	0.26	0.56	0.26	32.6
12	R2	77	4.1	0.073	5.4	LOS A	0.2	1.8	0.26	0.56	0.26	52.3
Approach		78	5.4	0.073	5.4	LOS A	0.2	1.8	0.26	0.56	0.26	52.0
All Vehicles		343	2.1	0.104	4.1	NA	0.2	1.8	0.07	0.39	0.07	63.5

Site Level of Service (LOS) Method: Delay (SIDRA). 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 [Existing PM_Old Hume Highway x Taylor Avenue x Medway Road]

Old Hume Highway x Taylor Avenue x Medway Road

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: Old Hume Highway (2800m)												
1	L2	1	0.0	0.026	7.2	LOS A	0.1	1.2	0.33	0.56	0.33	86.9
2	T1	19	11.1	0.026	8.1	LOS A	0.1	1.2	0.33	0.56	0.33	87.8
3	R2	13	33.3	0.026	15.8	LOS B	0.1	1.2	0.33	0.56	0.33	85.9
Approach		33	19.4	0.026	11.0	LOS A	0.1	1.2	0.33	0.56	0.33	87.0
East: Taylor Avenue (1000m)												
4	L2	17	12.5	0.097	5.4	LOS A	0.5	4.1	0.22	0.48	0.22	85.9
5	T1	99	9.6	0.097	5.6	LOS A	0.5	4.1	0.22	0.48	0.22	73.7
6	R2	24	4.3	0.097	12.8	LOS A	0.5	4.1	0.22	0.48	0.22	73.9
Approach		140	9.0	0.097	6.8	LOS A	0.5	4.1	0.22	0.48	0.22	76.1
North: Old Hume Highway (850m)												
7	L2	31	3.4	0.072	5.4	LOS A	0.4	2.8	0.26	0.49	0.26	72.2
8	T1	54	2.0	0.072	5.6	LOS A	0.4	2.8	0.26	0.49	0.26	87.9
9	R2	18	0.0	0.072	12.9	LOS A	0.4	2.8	0.26	0.49	0.26	73.8
Approach		102	2.1	0.072	6.8	LOS A	0.4	2.8	0.26	0.49	0.26	82.6
West: Medway Road (860m)												
10	L2	4	0.0	0.058	5.1	LOS A	0.3	2.3	0.19	0.42	0.19	72.9
11	T1	77	9.6	0.058	5.5	LOS A	0.3	2.3	0.19	0.42	0.19	74.7
12	R2	1	100.0	0.058	13.7	LOS A	0.3	2.3	0.19	0.42	0.19	84.6
Approach		82	10.3	0.058	5.7	LOS A	0.3	2.3	0.19	0.42	0.19	74.8
All Vehicles		357	8.3	0.097	6.9	LOS A	0.5	4.1	0.23	0.47	0.23	79.3

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: 102-1 [Existing PM_[Mereworth] Off ramp_Mereworth Road W]

Hume Motorway x Old Hume Highway x Mereworth
Off ramp_Mereworth Road
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Off ramp (300m)												
1	L2	1	0.0	0.017	6.9	LOS A	0.0	0.0	0.00	0.67	0.00	65.7
3	R2	26	20.0	0.017	7.2	LOS A	0.0	0.0	0.00	0.67	0.00	49.4
Approach		27	19.2	0.017	7.2	NA	0.0	0.0	0.00	0.67	0.00	50.4
East: Old Hume Highway (170m)												
5	T1	2	0.0	0.001	5.8	LOS A	0.0	0.0	0.08	0.57	0.08	65.2
Approach		2	0.0	0.001	5.8	LOS A	0.0	0.0	0.08	0.57	0.08	65.2
West: Mereworth (720m)												
11	T1	1	0.0	0.001	5.8	LOS A	0.0	0.0	0.08	0.57	0.08	65.2
Approach		1	0.0	0.001	5.8	LOS A	0.0	0.0	0.08	0.57	0.08	65.2
All Vehicles		31	17.2	0.017	7.1	NA	0.0	0.0	0.01	0.66	0.01	52.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102-2 [Existing PM_[Mereworth] On ramp_Old Hume Highway E]

Hume Motorway x Old Hume Highway x Mereworth
Off ramp_Old Hume Highway
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
North: Old Hume Highway (2800m)												
8	T1	65	4.8	0.037	5.0	LOS A	0.2	1.5	0.07	0.51	0.07	62.1
9	R2	3	0.0	0.037	7.5	LOS A	0.2	1.5	0.07	0.51	0.07	62.1
Approach		68	4.6	0.037	5.1	LOS A	0.2	1.5	0.07	0.51	0.07	62.1
West: Old Hume Highway (170m)												
10	L2	29	17.9	0.018	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	61.8
12	R2	1	0.0	0.001	7.0	LOS A	0.0	0.0	0.15	0.61	0.15	53.8
Approach		31	17.2	0.018	7.1	LOS A	0.0	0.0	0.01	0.63	0.01	61.7
All Vehicles		99	8.5	0.037	5.7	NA	0.2	1.5	0.05	0.54	0.05	62.0

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: 103-1 [Existing PM_[Medway] Off ramp_Medway Road E]

Hume Motorway x Medway
Off ramp_Medway Road
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	v/c	sec		veh	m				km/h
East: Medway Road (860m)												
5	T1	117	8.1	0.062	5.9	LOS A	0.0	0.0	0.00	0.61	0.00	66.6
Approach		117	8.1	0.062	5.9	LOS A	0.0	0.0	0.00	0.61	0.00	66.6
North: Off ramp (500m)												
7	L2	77	8.2	0.042	7.7	LOS A	0.0	0.0	0.00	0.60	0.00	68.4
9	R2	2	0.0	0.002	7.3	LOS A	0.0	0.0	0.22	0.61	0.22	58.6
Approach		79	8.0	0.042	7.7	LOS A	0.0	0.0	0.01	0.60	0.01	68.3
West: Medway Road (180m)												
11	T1	6	0.0	0.003	5.8	LOS A	0.0	0.0	0.00	0.60	0.00	67.3
Approach		6	0.0	0.003	5.8	LOS A	0.0	0.0	0.00	0.60	0.00	67.3
All Vehicles		202	7.8	0.062	6.6	NA	0.0	0.0	0.00	0.60	0.00	67.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 103-2 [Existing PM_[Medway] On ramp_Medway Road W]

Hume Motorway x Medway
On ramp_Medway Road
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Medway Road (180m)												
5	T1	16	0.0	0.008	5.7	LOS A	0.0	0.0	0.00	0.61	0.00	68.6
6	R2	114	7.4	0.106	6.9	LOS A	0.4	2.8	0.05	0.65	0.05	54.2
Approach		129	6.5	0.106	6.8	LOS A	0.4	2.8	0.04	0.64	0.04	56.8
West: Medway Road (1000m)												
10	L2	3	0.0	0.002	7.6	LOS A	0.0	0.0	0.00	0.60	0.00	69.6
11	T1	5	0.0	0.003	5.7	LOS A	0.0	0.0	0.00	0.61	0.00	68.6
Approach		8	0.0	0.003	6.4	LOS A	0.0	0.0	0.00	0.61	0.00	69.0
All Vehicles		138	6.1	0.106	6.7	NA	0.4	2.8	0.04	0.64	0.04	58.0

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: 100 [Future AM_Taylor Avenue x Berrima Road]

Taylor Avenue x Berrima Road
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Berrima Road												
1	L2	89	14.1	0.095	7.2	LOS A	0.0	0.0	0.00	0.34	0.00	64.6
2	T1	81	1.3	0.095	0.0	LOS A	0.0	0.0	0.00	0.34	0.00	71.2
Approach		171	8.0	0.095	3.8	NA	0.0	0.0	0.00	0.34	0.00	66.8
North: Berrima Road												
8	T1	78	0.0	0.072	0.6	LOS A	0.3	2.4	0.21	0.21	0.21	74.8
9	R2	23	100.0	0.072	6.5	LOS A	0.3	2.4	0.21	0.21	0.21	48.5
Approach		101	22.9	0.072	2.7	NA	0.3	2.4	0.21	0.21	0.21	66.5
West: Taylor Avenue												
10	L2	35	72.7	0.217	5.7	LOS A	0.8	6.7	0.29	0.59	0.29	32.0
12	R2	186	6.2	0.217	5.8	LOS A	0.8	6.7	0.29	0.59	0.29	51.7
Approach		221	16.7	0.217	5.8	LOS A	0.8	6.7	0.29	0.59	0.29	48.7
All Vehicles		493	15.0	0.217	4.3	NA	0.8	6.7	0.17	0.43	0.17	56.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 101 [Future AM_Old Hume Highway x Taylor Avenue x Medway Road]

Old Hume Highway x Taylor Avenue x Medway Road

Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Old Hume Highway (2800m)												
1	L2	2	0.0	0.054	7.4	LOS A	0.3	2.3	0.37	0.55	0.37	87.3
2	T1	49	2.1	0.054	8.1	LOS A	0.3	2.3	0.37	0.55	0.37	88.5
3	R2	16	46.7	0.054	16.5	LOS B	0.3	2.3	0.37	0.55	0.37	85.5
Approach		67	12.5	0.054	10.0	LOS A	0.3	2.3	0.37	0.55	0.37	87.7
East: Taylor Avenue (1000m)												
4	L2	19	55.6	0.126	5.8	LOS A	0.7	6.6	0.14	0.53	0.14	82.1
5	T1	92	46.0	0.126	5.8	LOS A	0.7	6.6	0.14	0.53	0.14	70.6
6	R2	62	10.2	0.126	12.7	LOS A	0.7	6.6	0.14	0.53	0.14	71.8
6u	U	3	0.0	0.126	12.1	LOS A	0.7	6.6	0.14	0.53	0.14	66.8
Approach		176	33.5	0.126	8.3	LOS A	0.7	6.6	0.14	0.53	0.14	72.9
North: Old Hume Highway (850m)												
7	L2	21	40.0	0.039	6.7	LOS A	0.2	1.9	0.42	0.51	0.42	69.7
8	T1	19	16.7	0.039	6.4	LOS A	0.2	1.9	0.42	0.51	0.42	86.8
9	R2	4	0.0	0.039	13.4	LOS A	0.2	1.9	0.42	0.51	0.42	73.3
Approach		44	26.2	0.039	7.2	LOS A	0.2	1.9	0.42	0.51	0.42	79.2
West: Medway Road (860m)												
10	L2	26	0.0	0.163	5.5	LOS A	0.9	8.2	0.34	0.47	0.34	72.1
11	T1	171	32.1	0.163	6.3	LOS A	0.9	8.2	0.34	0.47	0.34	73.0
12	R2	3	33.3	0.163	13.8	LOS A	0.9	8.2	0.34	0.47	0.34	85.6
Approach		200	27.9	0.163	6.3	LOS A	0.9	8.2	0.34	0.47	0.34	73.2
All Vehicles		487	27.6	0.163	7.6	LOS A	0.9	8.2	0.28	0.50	0.28	76.5

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.
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: 102-1 [Future AM_[Mereworth] Off ramp_Mereworth Road W]

Hume Motorway x Old Hume Highway x Mereworth
Off ramp_Mereworth Road
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	v/c	sec		veh	m				km/h
South: Off ramp (300m)												
1	L2	1	0.0	0.040	6.9	LOS A	0.0	0.0	0.00	0.67	0.00	65.7
3	R2	67	10.9	0.040	7.0	LOS A	0.0	0.0	0.00	0.67	0.00	50.5
Approach		68	10.8	0.040	7.0	NA	0.0	0.0	0.00	0.67	0.00	50.9
East: Old Hume Highway (170m)												
5	T1	2	0.0	0.001	5.9	LOS A	0.0	0.0	0.14	0.56	0.14	64.9
Approach		2	0.0	0.001	5.9	LOS A	0.0	0.0	0.14	0.56	0.14	64.9
West: Mereworth (720m)												
11	T1	1	0.0	0.001	5.9	LOS A	0.0	0.0	0.14	0.56	0.14	64.9
Approach		1	0.0	0.001	5.9	LOS A	0.0	0.0	0.14	0.56	0.14	64.9
All Vehicles		72	10.3	0.040	7.0	NA	0.0	0.0	0.01	0.67	0.01	51.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102-2 [Future AM_[Mereworth] On ramp_Old Hume Highway E]

Hume Motorway x Old Hume Highway x Mereworth
Off ramp_Old Hume Highway
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
North: Old Hume Highway (2800m)												
8	T1	42	35.0	0.030	5.4	LOS A	0.2	1.9	0.14	0.48	0.14	61.2
9	R2	2	100.0	0.030	14.5	LOS B	0.2	1.9	0.14	0.48	0.14	60.6
Approach		44	38.1	0.030	5.9	LOS A	0.2	1.9	0.14	0.48	0.14	61.2
West: Old Hume Highway (170m)												
10	L2	68	10.8	0.040	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	62.0
12	R2	2	100.0	0.003	7.7	LOS A	0.0	0.1	0.16	0.61	0.16	42.1
Approach		71	13.4	0.040	7.0	LOS A	0.0	0.1	0.00	0.63	0.00	61.9
All Vehicles		115	22.9	0.040	6.6	NA	0.2	1.9	0.06	0.57	0.06	61.6

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: 103-1 [Future AM_[Medway] Off ramp_Medway Road E]

Hume Motorway x Medway
Off ramp_Medway Road
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	v/c	sec		veh	m				km/h
East: Medway Road (860m)												
5	T1	96	42.9	0.062	6.5	LOS A	0.0	0.0	0.00	0.61	0.00	63.6
Approach		96	42.9	0.062	6.5	LOS A	0.0	0.0	0.00	0.61	0.00	63.6
North: Off ramp (500m)												
7	L2	186	29.4	0.116	8.0	LOS A	0.0	0.0	0.00	0.59	0.00	66.2
9	R2	3	0.0	0.003	7.4	LOS A	0.0	0.1	0.22	0.61	0.22	58.6
Approach		189	28.9	0.116	8.0	LOS A	0.0	0.1	0.00	0.59	0.00	66.1
West: Medway Road (180m)												
11	T1	14	0.0	0.007	5.8	LOS A	0.0	0.0	0.00	0.60	0.00	67.3
Approach		14	0.0	0.007	5.8	LOS A	0.0	0.0	0.00	0.60	0.00	67.3
All Vehicles		299	32.0	0.116	7.4	NA	0.0	0.1	0.00	0.60	0.00	65.5

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: 103-2 [Future AM_[Medway] On ramp_Medway Road W]

Hume Motorway x Medway
On ramp_Medway Road
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Medway Road (180m)												
5	T1	6	33.3	0.004	5.9	LOS A	0.0	0.0	0.00	0.61	0.00	64.5
6	R2	91	45.3	0.100	7.4	LOS A	0.4	3.4	0.07	0.64	0.07	43.3
Approach		97	44.6	0.100	7.3	LOS A	0.4	3.4	0.07	0.64	0.07	45.1
West: Medway Road (1000m)												
10	L2	1	0.0	0.001	7.6	LOS A	0.0	0.0	0.00	0.60	0.00	69.6
11	T1	14	7.7	0.007	5.8	LOS A	0.0	0.0	0.00	0.61	0.00	68.0
Approach		15	7.1	0.007	6.0	LOS A	0.0	0.0	0.00	0.61	0.00	68.1
All Vehicles		112	39.6	0.100	7.2	NA	0.4	3.4	0.06	0.63	0.06	48.9

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: 100 [Future PM_Taylor Avenue x Berrima Road]

Taylor Avenue x Berrima Road
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
South: Berrima Road												
1	L2	138	2.3	0.104	7.0	LOS A	0.0	0.0	0.00	0.46	0.00	67.0
2	T1	56	0.0	0.104	0.0	LOS A	0.0	0.0	0.00	0.46	0.00	67.9
Approach		194	1.6	0.104	5.0	NA	0.0	0.0	0.00	0.46	0.00	67.2
North: Berrima Road												
8	T1	75	0.0	0.081	0.7	LOS A	0.4	3.0	0.27	0.17	0.27	75.5
9	R2	38	66.7	0.081	6.3	LOS A	0.4	3.0	0.27	0.17	0.27	48.3
Approach		113	22.4	0.081	2.6	NA	0.4	3.0	0.27	0.17	0.27	63.5
West: Taylor Avenue												
10	L2	24	95.7	0.099	5.8	LOS A	0.4	3.0	0.22	0.57	0.22	31.7
12	R2	77	4.1	0.099	5.6	LOS A	0.4	3.0	0.22	0.57	0.22	52.4
Approach		101	26.0	0.099	5.7	LOS A	0.4	3.0	0.22	0.57	0.22	47.4
All Vehicles		407	13.4	0.104	4.5	NA	0.4	3.0	0.13	0.41	0.13	59.6

Site Level of Service (LOS) Method: Delay (SIDRA). 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 [Future PM_Old Hume Highway x Taylor Avenue x Medway Road]

Old Hume Highway x Taylor Avenue x Medway Road

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	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Old Hume Highway (2800m)												
1	L2	1	0.0	0.027	7.4	LOS A	0.1	1.2	0.37	0.57	0.37	86.7
2	T1	19	11.1	0.027	8.3	LOS A	0.1	1.2	0.37	0.57	0.37	87.6
3	R2	13	33.3	0.027	16.1	LOS B	0.1	1.2	0.37	0.57	0.37	85.8
Approach		33	19.4	0.027	11.3	LOS A	0.1	1.2	0.37	0.57	0.37	86.9
East: Taylor Avenue (1000m)												
4	L2	20	26.3	0.128	5.6	LOS A	0.7	6.1	0.24	0.47	0.24	85.0
5	T1	131	24.2	0.128	5.8	LOS A	0.7	6.1	0.24	0.47	0.24	73.1
6	R2	24	4.3	0.128	12.8	LOS A	0.7	6.1	0.24	0.47	0.24	73.9
Approach		175	21.7	0.128	6.7	LOS A	0.7	6.1	0.24	0.47	0.24	75.4
North: Old Hume Highway (850m)												
7	L2	31	3.4	0.073	5.5	LOS A	0.4	2.9	0.30	0.50	0.30	72.0
8	T1	54	2.0	0.073	5.7	LOS A	0.4	2.9	0.30	0.50	0.30	87.8
9	R2	18	0.0	0.073	13.0	LOS A	0.4	2.9	0.30	0.50	0.30	73.6
Approach		102	2.1	0.073	6.9	LOS A	0.4	2.9	0.30	0.50	0.30	82.4
West: Medway Road (860m)												
10	L2	4	0.0	0.077	5.1	LOS A	0.4	3.6	0.20	0.42	0.20	72.8
11	T1	97	28.3	0.077	5.7	LOS A	0.4	3.6	0.20	0.42	0.20	73.8
12	R2	1	100.0	0.077	13.7	LOS A	0.4	3.6	0.20	0.42	0.20	84.6
Approach		102	27.8	0.077	5.9	LOS A	0.4	3.6	0.20	0.42	0.20	73.9
All Vehicles		412	18.2	0.128	6.9	LOS A	0.7	6.1	0.25	0.47	0.25	78.3

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: 102-1 [Future PM_[Mereworth] Off ramp_Mereworth Road W]

Hume Motorway x Old Hume Highway x Mereworth
Off ramp_Mereworth Road
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
South: Off ramp (300m)												
1	L2	1	0.0	0.020	6.9	LOS A	0.0	0.0	0.00	0.67	0.00	65.7
3	R2	31	27.6	0.020	7.4	LOS A	0.0	0.0	0.00	0.67	0.00	48.4
Approach		32	26.7	0.020	7.4	NA	0.0	0.0	0.00	0.67	0.00	49.3
East: Old Hume Highway (170m)												
5	T1	2	0.0	0.001	5.8	LOS A	0.0	0.0	0.09	0.57	0.09	65.2
Approach		2	0.0	0.001	5.8	LOS A	0.0	0.0	0.09	0.57	0.09	65.2
West: Mereworth (720m)												
11	T1	1	0.0	0.001	5.8	LOS A	0.0	0.0	0.09	0.57	0.09	65.2
Approach		1	0.0	0.001	5.8	LOS A	0.0	0.0	0.09	0.57	0.09	65.2
All Vehicles		35	24.2	0.020	7.2	NA	0.0	0.0	0.01	0.66	0.01	51.2

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: 102-2 [Future PM_[Mereworth] On ramp_Old Hume Highway E]

Hume Motorway x Old Hume Highway x Mereworth
Off ramp_Old Hume Highway
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
North: Old Hume Highway (2800m)												
8	T1	68	9.2	0.040	5.1	LOS A	0.2	1.6	0.07	0.50	0.07	62.0
9	R2	3	0.0	0.040	7.8	LOS A	0.2	1.6	0.07	0.50	0.07	62.1
Approach		72	8.8	0.040	5.2	LOS A	0.2	1.6	0.07	0.50	0.07	62.0
West: Old Hume Highway (170m)												
10	L2	33	25.8	0.021	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	61.6
12	R2	1	0.0	0.001	7.1	LOS A	0.0	0.0	0.15	0.61	0.15	53.8
Approach		34	25.0	0.021	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	61.5
All Vehicles		105	14.0	0.040	5.8	NA	0.2	1.6	0.05	0.54	0.05	61.9

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: 103-1 [Future PM_[Medway] Off ramp_Medway Road E]

Hume Motorway x Medway
Off ramp_Medway Road
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: Medway Road (860m)												
5	T1	148	21.3	0.085	6.1	LOS A	0.0	0.0	0.00	0.61	0.00	65.4
Approach		148	21.3	0.085	6.1	LOS A	0.0	0.0	0.00	0.61	0.00	65.4
North: Off ramp (500m)												
7	L2	97	27.2	0.059	8.0	LOS A	0.0	0.0	0.00	0.59	0.00	66.4
9	R2	2	0.0	0.002	7.6	LOS A	0.0	0.0	0.25	0.61	0.25	58.4
Approach		99	26.6	0.059	8.0	LOS A	0.0	0.0	0.01	0.59	0.01	66.3
West: Medway Road (180m)												
11	T1	6	0.0	0.003	5.8	LOS A	0.0	0.0	0.00	0.60	0.00	67.3
Approach		6	0.0	0.003	5.8	LOS A	0.0	0.0	0.00	0.60	0.00	67.3
All Vehicles		254	22.8	0.085	6.8	NA	0.0	0.0	0.00	0.60	0.00	65.9

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: 103-2 [Future PM_[Medway] On ramp_Medway Road W]

Hume Motorway x Medway
On ramp_Medway Road
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Medway Road (180m)												
5	T1	16	0.0	0.008	5.7	LOS A	0.0	0.0	0.00	0.61	0.00	68.6
6	R2	145	21.0	0.144	7.1	LOS A	0.5	4.3	0.05	0.65	0.05	49.8
Approach		161	19.0	0.144	6.9	LOS A	0.5	4.3	0.05	0.64	0.05	52.3
West: Medway Road (1000m)												
10	L2	3	0.0	0.002	7.6	LOS A	0.0	0.0	0.00	0.60	0.00	69.6
11	T1	5	0.0	0.003	5.7	LOS A	0.0	0.0	0.00	0.61	0.00	68.6
Approach		8	0.0	0.003	6.4	LOS A	0.0	0.0	0.00	0.61	0.00	69.0
All Vehicles		169	18.0	0.144	6.9	NA	0.5	4.3	0.04	0.64	0.04	53.5

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.

Appendix B

Swept Path Analysis