Appendix H

Traffic and transport

133 Castlereagh Street, Level 15
Sydney, New South Wales 2000
Australia
www.ghd.com

Our ref: 12524108

10 March 2023

Nancy Zheng
Plasrefine Recycling Pty Ltd

Moss Vale Recycling and Reprocessing Facility – Traffic and transport assessment report addendum

Dear Nancy

1. Introduction

Plasrefine Recycling Pty Ltd (Plasrefine Recycling) is seeking approval under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) to construct and operate a plastics recycling and reprocessing facility in Moss Vale ('the proposal').

The proposal involves the construction and operation of a plastics recycling and reprocessing facility with capacity to receive up to 120,000 tonnes per year of mixed plastics. The proposal also includes construction of a new north-south public access road comprising part of Braddon Road (paper road, currently unformed) and a new connection to Collins Road (via an unnamed paper road, also currently unformed).

An extensive community and stakeholder engagement program was implemented during the preparation of the Environment Impact Statement (EIS) including proactive engagement with the community and stakeholders. During this process, key issues related to land use, traffic, transport and access, air quality, water, noise and vibration, visual, socio-economic, human health, biodiversity, waste, hazard, contamination and utilities and heritage were raised in public submissions.

Further design development and additional studies have been undertaken to address the key issues raised. This includes changes to the preferred access road and associated new access road design.

1.1 Purpose of this report

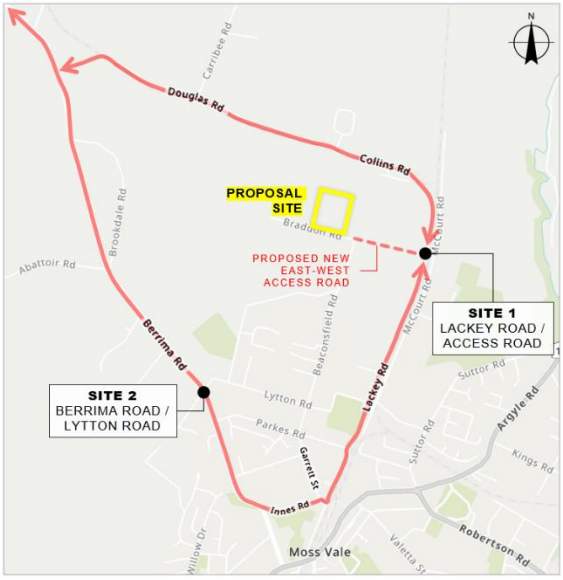
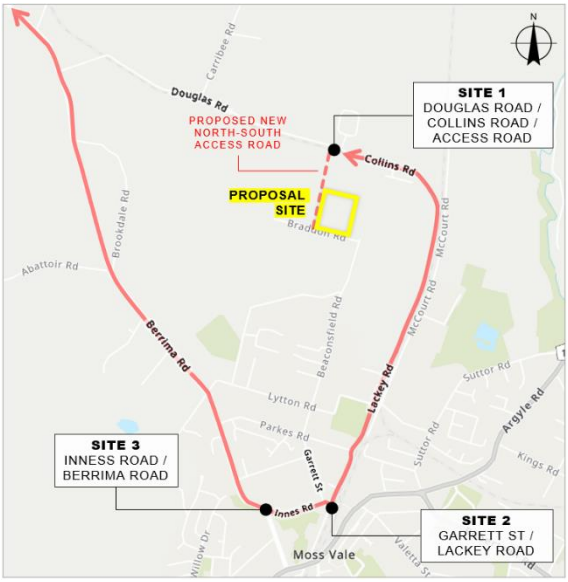
This report has been prepared to support the Response to Submissions (RTS). It provides information on the additional traffic and transport assessment that has been undertaken in consideration of the design updates described in Section 1.2.

This report should be read in conjunction with the *Moss Vale Plastics Recycling and Reprocessing Facility – Environmental Impact Statement Appendix F Transport and Traffic Assessment Report (GHD, January 2022*) ('the TIA').

1.2 Design updates

Table 1 provides information on the proposal design updates that have been considered in this technical memorandum. This is limited to updates which have the potential to impact traffic and transport in the area. *(refer to Section 4.1 of the main RTS Report for detailed information on the design changes to the preferred access road).*

Table 1 Updates impacting traffic and transport

Moss Vale Plastics Recycling and Reprocessing Facility EIS Appendix F – Transport and Traffic Assessment (GHD, January 2022)	**Design updates as of December 2022**
Preferred access route	
"Option 2" via new east-west road along the southern boundary of the proposal site, connecting with Lackey Rd Via Hume Highway (M31) → Medway Road / Taylor Ave → Berrima Road → either: – (north) Douglas Road → Collins Road → access road *(and vice-versa); OR* – (south) Innes Road (Garrett Street) → Lackey Road → new east-west public access road *(and vice-versa)*  	**"Option 3" via new north-south road along the western boundary of the site, connecting with Douglas Rd** Via Hume Highway (M31) → Medway Road / Taylor Ave → Berrima Road → – Innes Road (Garrett Street) → Lackey Road → Collins Road → new north-south public access road *(and vice-versa)* 
Weekday traffic data and volume counts	
Count sites: – Site 1: Lackey Road / Access Road – Site 2: Berrima Road / Lytton Road / Gibbons Road	Count sites: – Site 1: Douglas Road / Collins Road / Access Road – Site 2: Garrett Steet (Innes Road) / Lackey Road – Site 3: Inness Road / Berrima Road / Waite Street
Collected on 03 December **2020** (Thursday): – AM peak (three hours): 6:30 am to 9:30 am. – PM peak (three hours): 3:30 pm to 6:30 pm.	Collected on 23 November **2022** (Wednesday) – AM peak (three hours): 6:30 am to 9:30 am. – PM peak (three hours): 3:30 pm to 6:30 pm.

1.3 Assumptions

The following assumptions were made as part of this review, consistent with the approach used in the previous TIA:

– A future state base model was developed for the 2033 horizon year, allowing ten-year future growth. The future base traffic model was developed utilising an assumed **growth rate of two percent per annum**.
– Vehicle trip generation rates were based on a first principles approach of the maximum capacity of the plastic waste collection received as provided by the client. No changes in traffic generation have been assumed since the previous TIA.

2. Existing road network performance (2022)

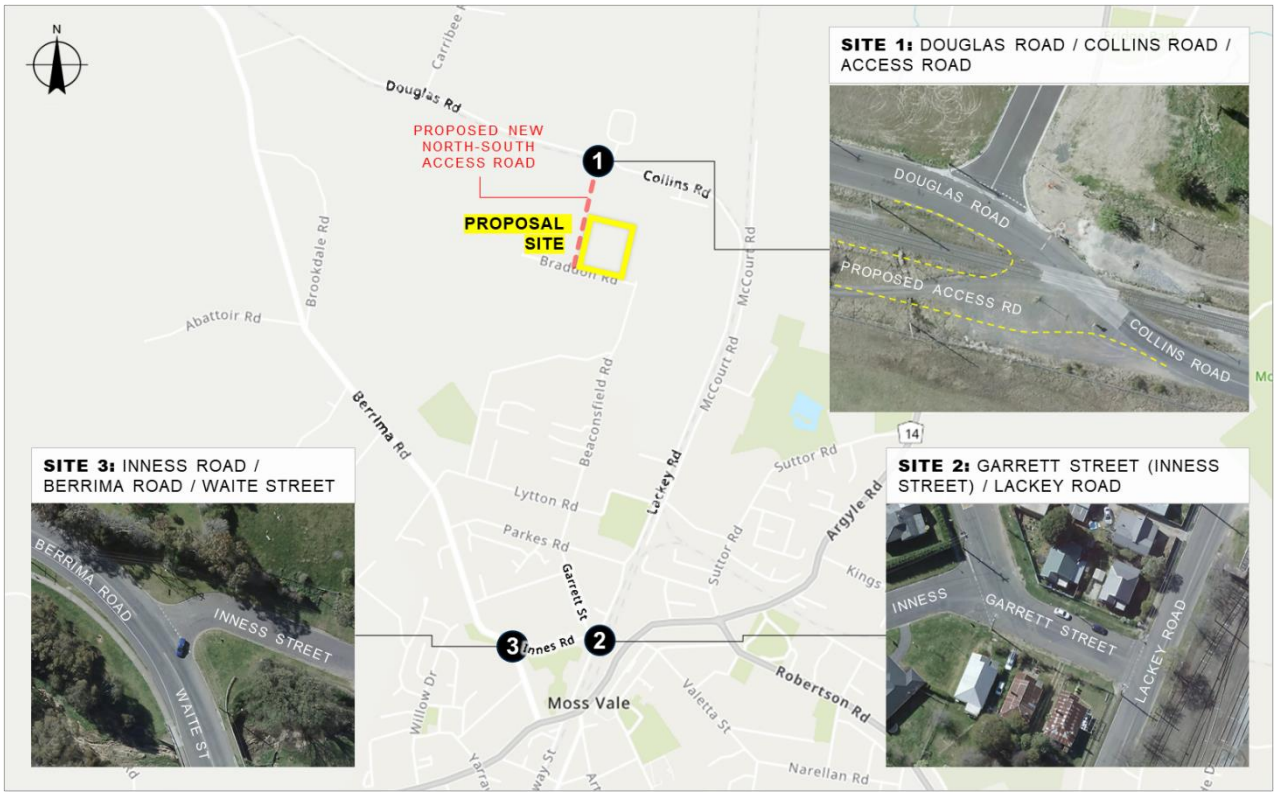
2.1 Existing peak hour intersection traffic volumes

GHD engaged Matrix Traffic and Transport Data Pty Ltd to undertake additional intersection traffic turning counts to assess the traffic impacts on key intersections associated with the amended site access route. The surveys were undertaken on Wednesday 23 November 2022 during the following time periods:

– Weekday AM peak (three hours): 6:30 am to 9:30 am.
– Weekday PM peak (three hours): 3:30 pm to 7:30 pm.

The intersection turning count surveys within the immediate vicinity of the site were performed at the following intersections as illustrated in Figure 1:

– Site 1: Douglas Road /Collins Road / North-south Access Road
– Site 2: Garrett St (Innes Road) / Lackey Road
– Site 3: Inness Road / Berrima Road / Waite Street.



Source: ESRI (base map), MetroMap (satellite image); modified by GHD

Figure 1 Traffic survey locations

Analysis of the survey data identified the peak hour periods summarised in Table 2:

Table 2 Identified peak hour periods

Traffic count location	Weekday AM peak	Weekday PM peak
Site 1: Douglas Road / Collins Road / Access Road	6:30 - 7:30	3:30 - 4:30
Site 2: Garrett St (Innes Road) / Lackey Road	7:45 - 8:45	4:15 - 5:15
Site 3: Inness Road / Berrima Road / Waite Street	8:00 - 9:00	3:30 - 4:30

The traffic movement diagrams for these intersections during the weekday morning and evening peaks are shown Figure 2 and Figure 3.

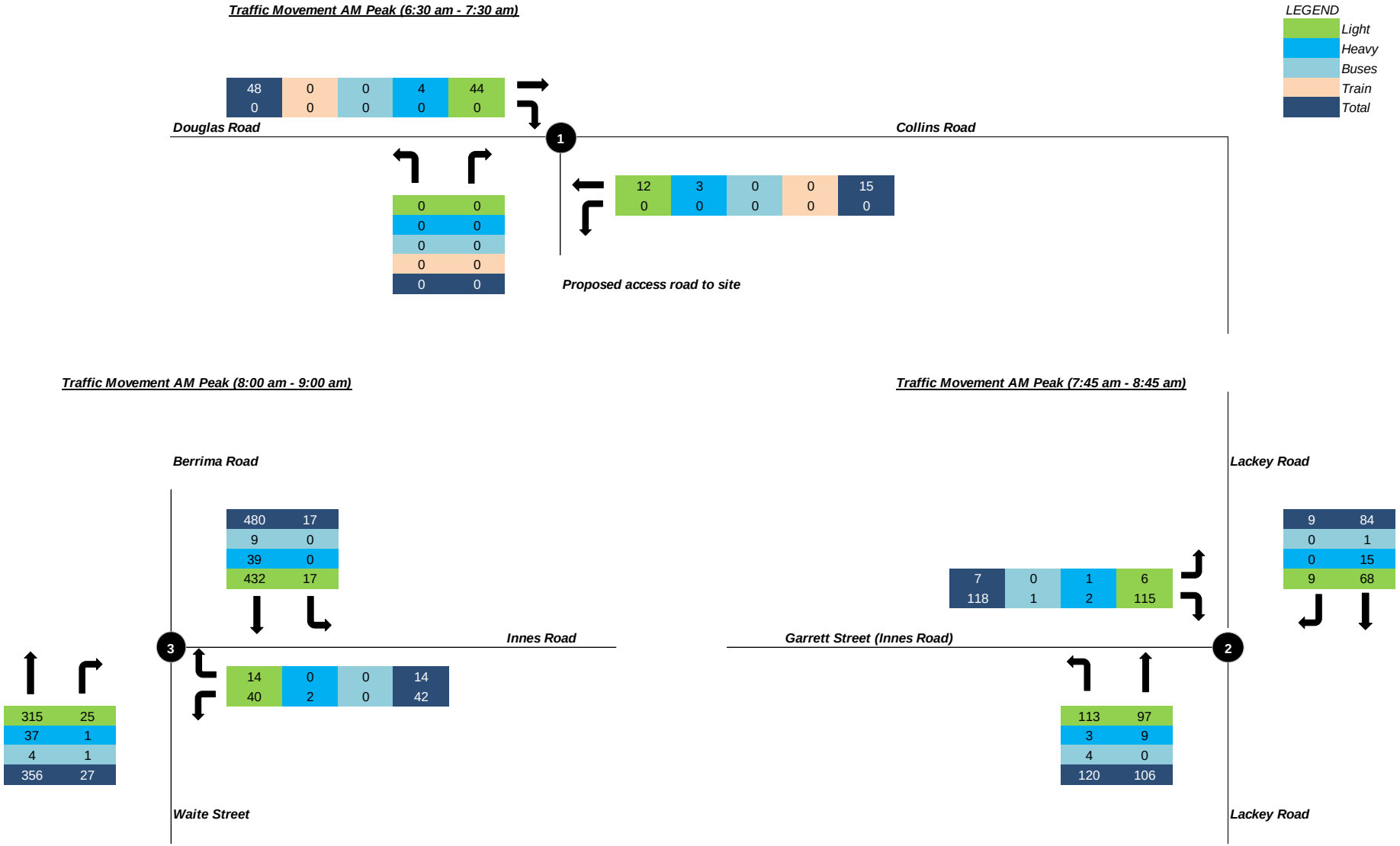


Figure 2 *Traffic Movement Diagram – AM Peak*

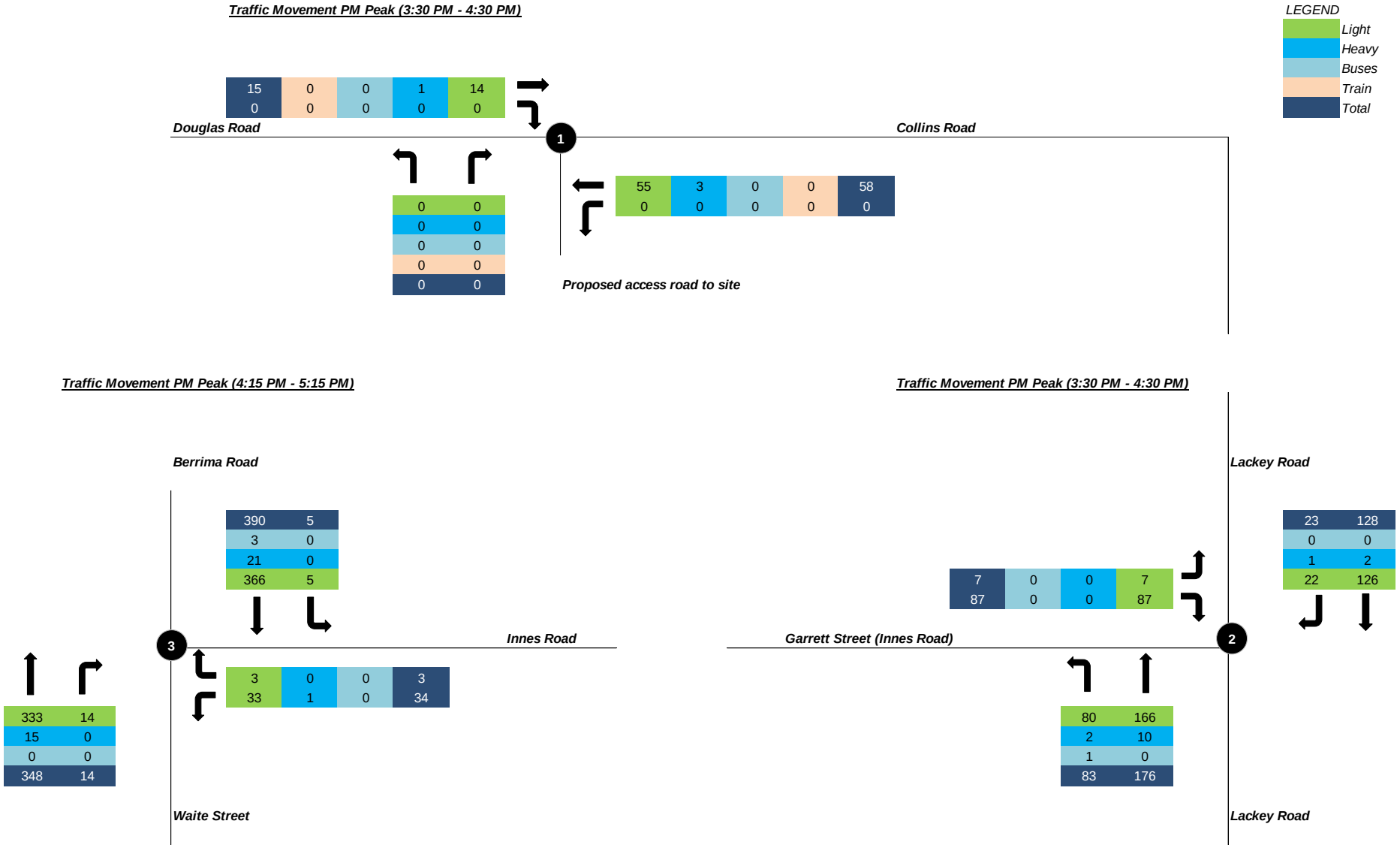


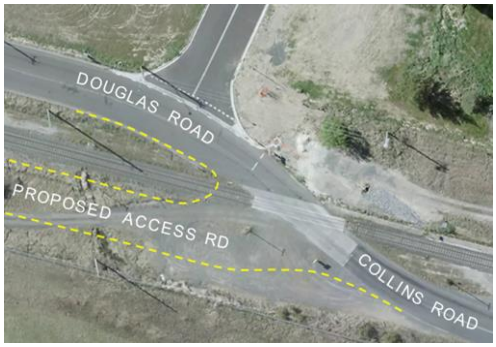
Figure 3 *Traffic Movement Diagram – PM Peak*

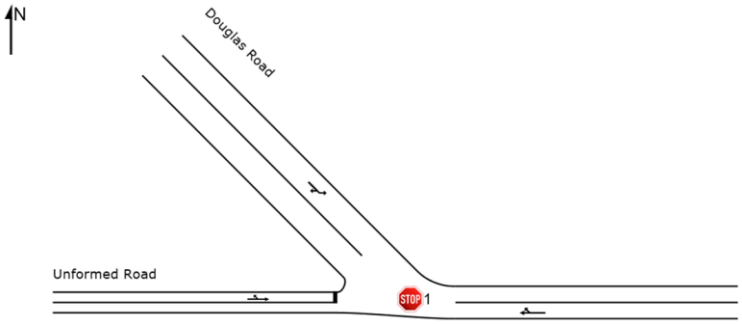
2.2 Existing intersection performance

The base 2022 traffic models were developed using the weekday AM and PM peak hour traffic count data. Existing traffic flows at key intersections were analysed using SIDRA 9 to obtain the current operation of the key intersections.

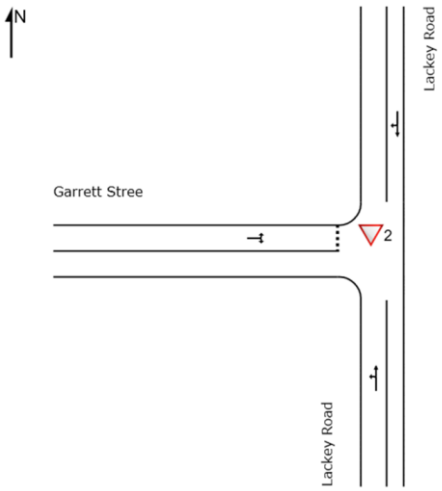
The intersection layouts adopted for this assessment shown in Figure 4 have been identified using desktop measurements of satellite imagery on Google Maps and MetroMap. No additional on-site road inventory surveys have been conducted as part of this updated study.

SITE 1: DOUGLAS ROAD / COLLINS ROAD / ACCESS ROAD





SITE 2: GARRETT ST (INNES ROAD) / LACKEY ROAD



SITE 3: INNESS ROAD / BERRIMA ROAD / WAITE STREET

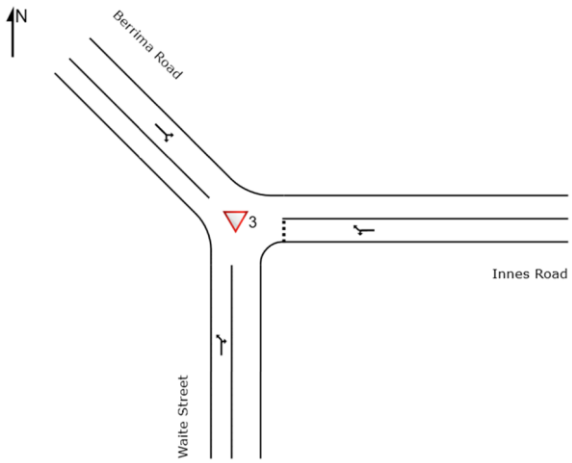


Figure 4 Intersection layouts – Base Case (2022)

The criteria for evaluating the operational performance of intersections, as provided by the *Guide to Traffic Generating Developments (Roads and Maritime Services, 2002)*, is summarised in Table 3. The criteria for evaluating the operational performance of intersections is based on a qualitative measure (i.e. Level of Service, "LoS"), which is applied to each band of average vehicle delay.

The RMS Traffic Modelling Guidelines indicate a maximum practical Degree of Saturation (DoS) of 0.80 for priority-controlled intersections.

Table 3 Level of Service (LoS) criteria for intersections

LoS	Average Delay per Vehicle (seconds/veh)	Traffic Signals, Roundabouts
A	<14	Good operation
B	15 to 28	Good with acceptable delays and spare capacity
C	29 to 42	Satisfactory
D	43 to 56	Operating near capacity
E	57 to 70	At capacity, at signals, incidents will cause excessive delays, roundabouts require other control modes
F	>70	Over capacity, unstable operation

Source: Roads and Maritime Services Traffic Modelling Guidelines

A summary of the results of the SIDRA analysis is provided in Table 4. Detailed SIDRA results are provided in Figure 5.

Table 4 Existing intersection performance – Base Case (2022)

Intersection	AM Peak			PM Peak		
	Average Delay (s)	LoS	Degree of Saturation	Average Delay (s)	LoS	Degree of Saturation
Site 1: Douglas Road / Collins Road / Access Road	6	A	0.03	5	A	0.04
Site 2: Garrett St (Innes Road) / Lackey Road	6	A	0.13	6	A	0.11
Site 3: Inness Road / Berrima Road / Waite Street	10	A	0.08	8	A	0.04

Notes:
- The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.
- The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.
- The degree of saturation (DoS) is defined as the ratio of the arrival flow (demand) to the capacity of each approach.
- Average delay is given in seconds per vehicle.

Table 4 indicates that each of the analysed intersections currently operate with good operation performance with LoS A in both the weekday morning and evening peak periods, and delays of 10 seconds or less.

3. Traffic Impact Assessment

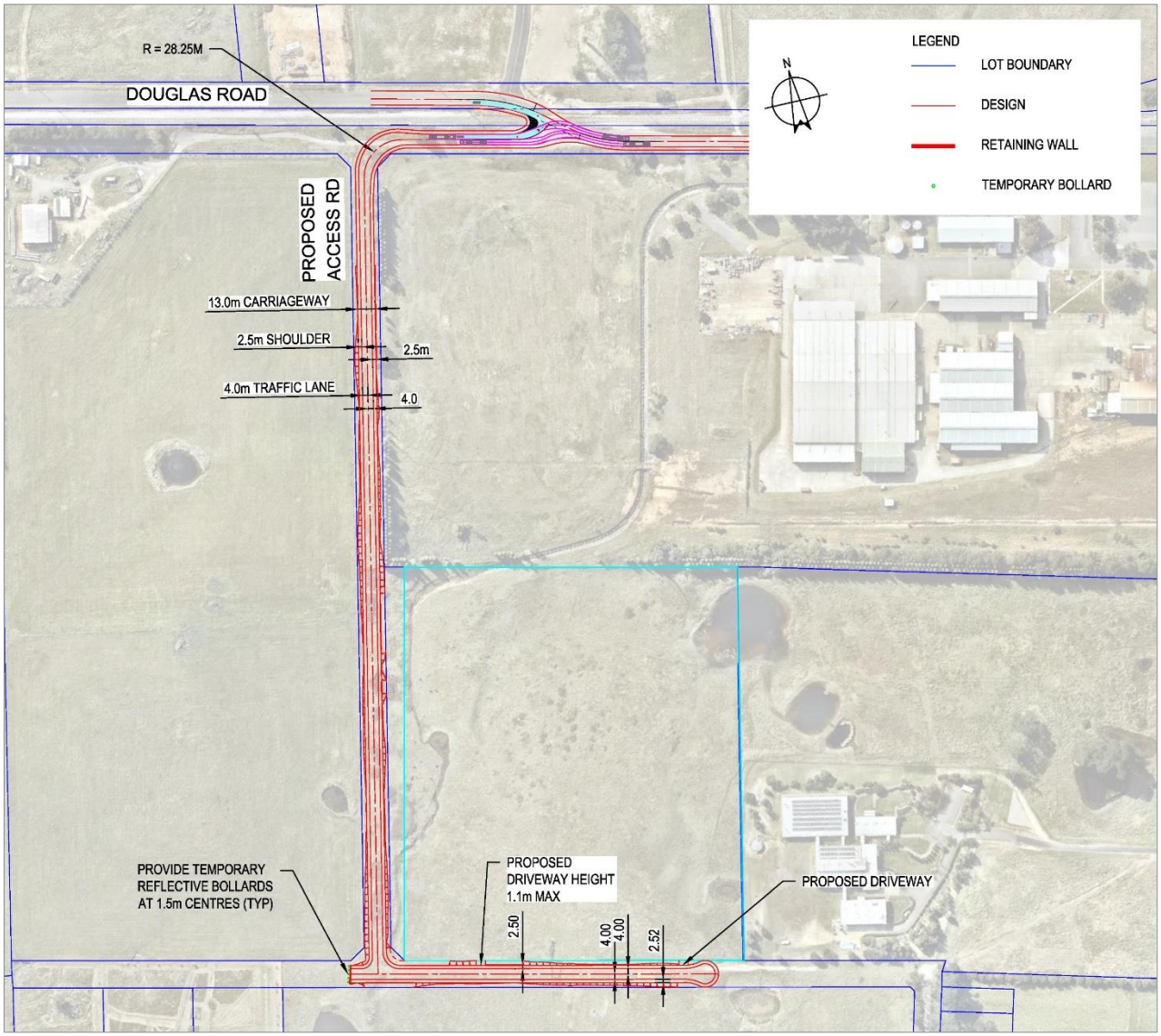
3.1 Revised site access and haulage routes

(Refer to Section 4.1 of the main RTS Report for detailed information on the design changes to the preferred access road).

Access to the proposal site was previously assessed to be via new east-west road along the southern boundary of the proposal site to Lackey Road (referred to as Option 2 access in the EIS / previous TIA).

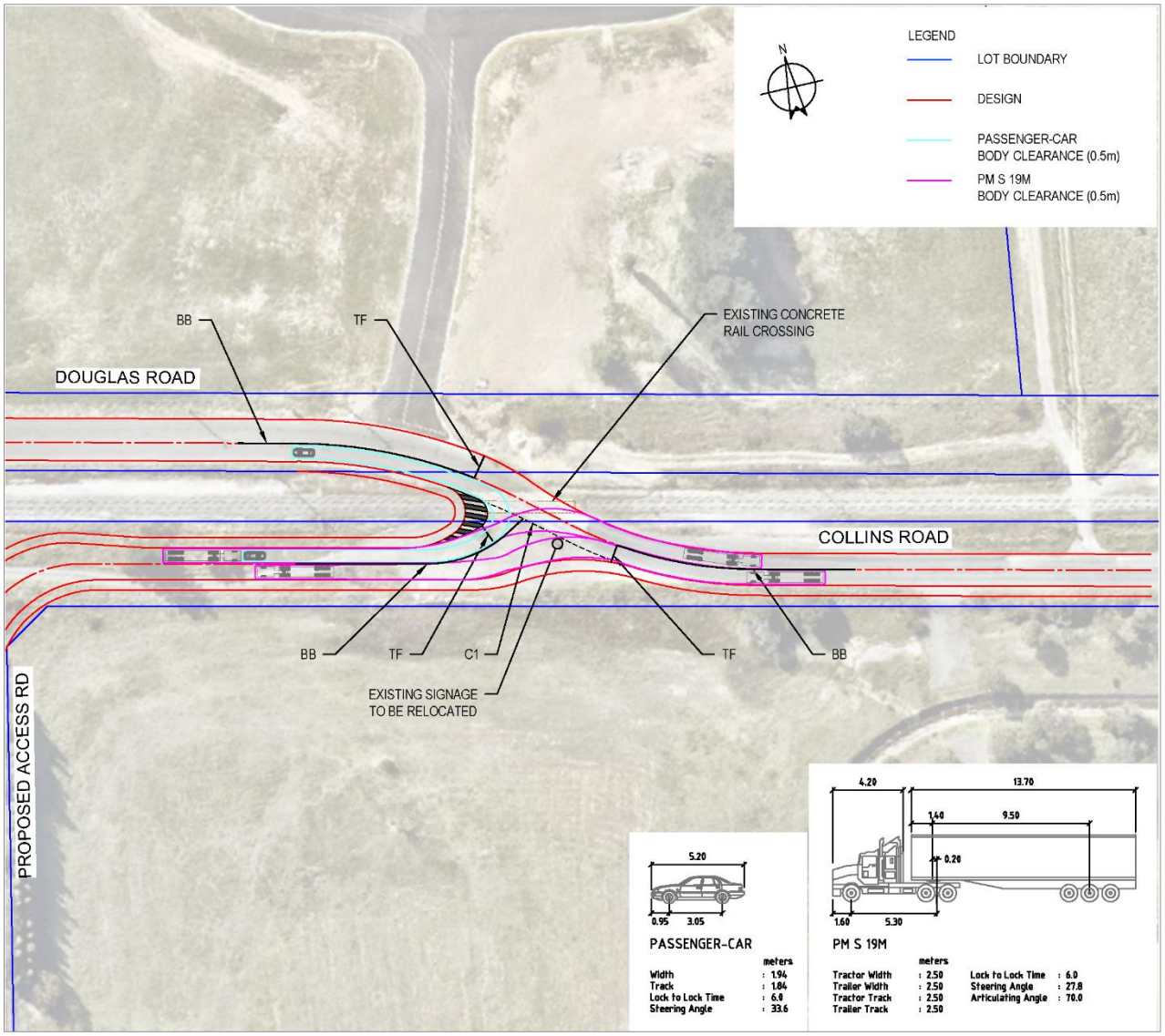
Following stakeholder discussions and land acquisition negotiations, a new preferred access route has been selected, which would be via new north-south connection along the west boundary of the site to Douglas Road / Collins Road (referred to as Option 3).

The alignment of the new preferred access is shown in Figure 5, while the proposed intersection treatment for Douglas Road / Collins Road is shown in Figure 6.



Source: : Moss Vale Plastic Recycling And Reprocessing Facility – Preferred Access Route Concept Drawings (GHD, 2022)

Figure 5 Preferred access route (proposed north-south public access road alignment)



Source: : Moss Vale Plastic Recycling And Reprocessing Facility – Preferred Access Route – Intersection Treatment and Swept Paths (GHD, 2022)

Figure 6 ***Proposed new north-south public access road intersection treatment – Douglas Road / Collins Road***

Vehicle swept turn path analysis for the proposed intersection has been conducted using AutoTURN 11 for a 19-metre semi-trailer design vehicle, which is the largest expected vehicle that will access the site. The turn path checks show at Figure 6 indicate that the proposed intersection configuration can safely accommodate vehicle movements with clearances of at least 300 mm.

3.1.1 Heavy vehicle turn restrictions at the proposed intersection

To remove the need for heavy vehicles to carry out a hook turn across the level rail crossing (resulting in a potential safety risk), it is proposed that all vehicles accessing and departing the plastics recycling and reprocessing facility site would do so via Collins Road, rather than using Douglas Road. Vehicles would therefore turn right onto the future Enterprise Zone Road from the proposed new north-south public access road or turn left from the new Enterprise Zone Road into the new north-south public access road.

3.1.2 Revised heavy vehicle haulage route

As a result of the change to the preferred access road, the revised heavy vehicle route (for both construction and operation) would be via Hume Highway (M31), Berrima Road, Innes Road (Garrett Street), Lackey Road, Collins Road and then the new north-south public access road. This proposed access route is shown at Figure 7.

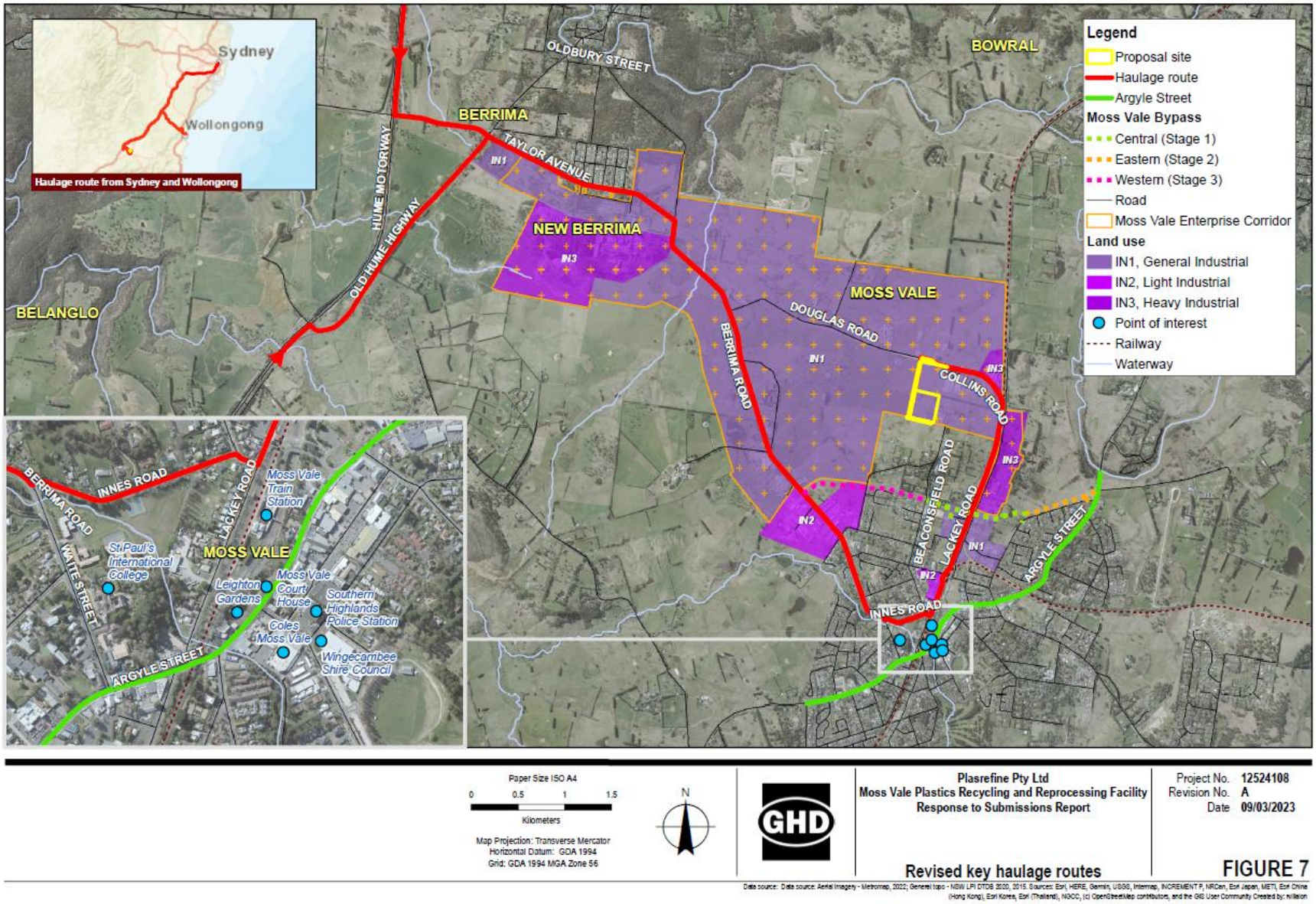


Figure 7 ***Revised key haulage route***

3.2 Traffic impacts

3.2.1 Traffic generation

Traffic generation during construction and operation of the facility is expected to remain the same as identified in the previous EIS and supporting traffic assessment. A summary of the expected vehicle movements during these periods is provided in Table 5 and Table 6.

Table 5 Vehicle movement during construction

Vehicle type	Estimated average daily vehicle movements	Estimated daily vehicle movements during peak construction period	Estimated AM Peak vehicle movement		Estimated PM Peak vehicle movement	
			In	Out	In	Out
Light vehicles	40	60	30	0	0	30
Heavy vehicles	15	40	2	2	2	2

Table 6 Vehicle movement during operation

Vehicle type	Estimated number of daily vehicle movements	Estimated AM Peak vehicle movement		Estimated PM Peak vehicle movement	
		In	Out	In	Out
Light vehicles	280 *	60	60	60	60
Heavy vehicles	100	10	10	10	10

Note (*) Assumes all FTE staff inbound and outbound daily

As the construction stage of the project is expected to generate lower traffic volumes compared to the operation stage, the analysis of the operational impacts would highlight the most significant impact that the proposal would have on the road network.

For the purposes of this assessment, the traffic generation during the operation of the facility has been adopted, to account for the worst-case scenario in terms of traffic generation.

3.2.2 Trip distribution

The following assumptions were used in estimating the distribution of vehicles trips generated by the proposal during the operation of the facility.

– **Heavy Vehicles (HV)**

  All HVs would utilise the haulage route as described in Section 3.1.

– **Light Vehicles (LV)**

  The distribution of LV trips is assumed to be split as follows, based on high-level estimates of employee place of origin/residence derived from 2021 population data [1]

  - North (via Douglas Road) 14 per cent (8 veh movements / direction / hr)
  - South (via Collins Road / Lackey Road) 86 per cent (52 veh movements / direction / hr)

Vehicles with southern origins / destinations are expected to be further distributed to the suburbs within and beyond Moss Vale.

For the purposes of a highly conservative assessment, all light vehicles using Lackey Road have been assumed to pass through Site 2 (intersection of Lackey Road / Garrett Street). Further, vehicle split of light vehicles passing through Site 3 (intersection of Inness Road / Berrima Road / Waite Street) has been estimated based on population data.

[1] Australian Bureau of Statistics, Census of Population and Housing, 2021 (Usual residence data)

Trip distribution at the assessed intersections is shown diagrammatically in Figure 8.

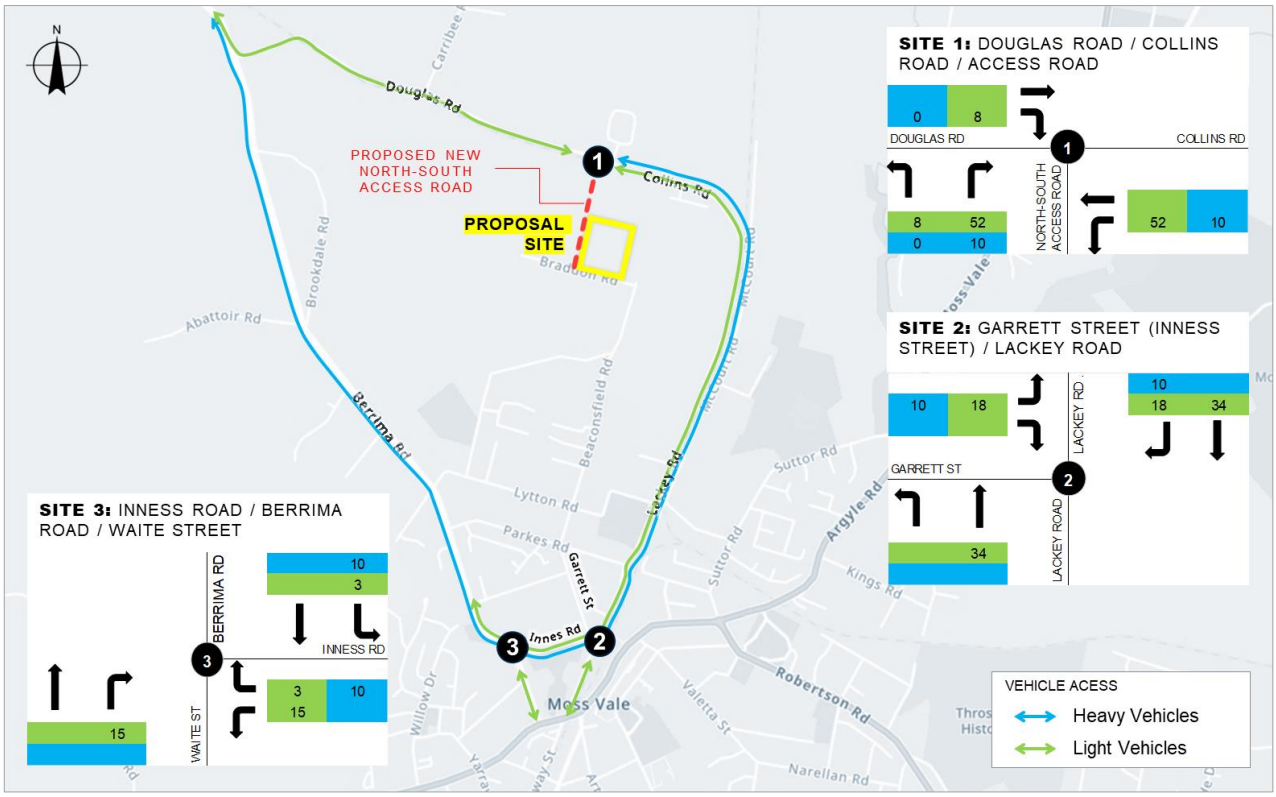


Figure 8 *Trip distribution of peak hour vehicle movements during operation*

3.2.3 Future intersection performance

The traffic impact of the proposed facility was determined by comparing the future intersection performance of the key intersection “without” and “with” the proposal. The following assessment scenarios were considered:

– 2023 (year of opening) – post-development scenario during assumed year of opening
– 2033 (ten-year horizon) – future baseline scenario (without the development)
– 2033 (ten-year horizon) – future post-development scenario.

Future baseline traffic for the years 2023 and 2033 were estimated by applying a growth rate of two percent per annum to the existing traffic volumes in Section 2.1. Vehicle traffic generated during operation was then added to the baseline traffic to assess the proposal’s impact on the affected roads.

The results of the SIDRA analysis for future scenarios are discussed in the following subsections. Detailed SIDRA results are provided in Appendix A.

(2023) Year of opening

Table 7 Future intersection performance – 2023, with development

Intersection	AM Peak			PM Peak		
	Average Delay (s)	LoS	Degree of Saturation	Average Delay (s)	LoS	Degree of Saturation
Site 1: Douglas Road / Collins Road / Access Road	9	A	0.07	9	A	0.07
Site 2: Garrett St (Innes Road) / Lackey Road	7	A	0.17	7	A	0.16
Site 3: Inness Road / Berrima Road / Waite Street	15	B	0.17	15	B	0.13

Notes:
- The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.
- The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.
- The degree of saturation (DoS) is defined as the ratio of the arrival flow (demand) to the capacity of each approach.
- Average delay is given in seconds per vehicle.

Table 7 indicates that the operation of the proposed facility is expected to have minimal impact on the analysed intersections, with each intersection operating with acceptable levels of services (LoS A or B) in both morning and evening peak periods. This translates to delays between seven to 15 seconds, which is around a five-second increase in delay when compared to the base scenario (refer to Table 4).

Overall, this increase is assessed to be negligible, and the analysed intersections would continue to operate with acceptable delays and plenty of spare capacity.

(2033) Ten-year horizon

Table 8 provides a summary of the future intersection performance for the 2033 “without” development scenario, accounting for background traffic growth only. Table 9 provides a summary of the future intersection performance “with” the development, i.e. including the operation of the proposed facility.

Table 8 Future intersection performance – 2033 baseline, without development

Intersection	AM Peak			PM Peak		
	Average Delay (s)	LoS	Degree of Saturation	Average Delay (s)	LoS	Degree of Saturation
Site 1: Douglas Road / Collins Road / Access Road	9	A	0.01	9	A	0.01
Site 2: Garrett St (Innes Road) / Lackey Road	6	A	0.17	7	A	0.15
Site 3: Inness Road / Berrima Road / Waite Street	14	A	0.13	11	A	0.06

Notes:
- The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.
- The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.
- The degree of saturation (DoS) is defined as the ratio of the arrival flow (demand) to the capacity of each approach.
- Average delay is given in seconds per vehicle.

Table 9 Future intersection performance – 2033, with development

Intersection	AM Peak			PM Peak		
	Average Delay (s)	LoS	Degree of Saturation	Average Delay (s)	LoS	Degree of Saturation
Site 1: Douglas Road / Collins Road / Access Road	9	A	0.07	9	A	0.08
Site 2: Garrett St (Innes Road) / Lackey Road	7	A	0.22	8	A	0.20
Site 3: Inness Road / Berrima Road / Waite Street	22	B	0.25	20	B	0.17

Notes:
– The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.
– The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.
– The degree of saturation (DoS) is defined as the ratio of the arrival flow (demand) to the capacity of each approach.
– Average delay is given in seconds per vehicle.

Table 8 indicates that by 2033, the analysed intersections are expected to experience a slight increase in delay compared to 2022 base scenario (refer to Table 4). Without the proposed facility, all sites are expected to continue operating at LoS A, with delays ranging from six to 14 seconds.

Table 9 indicates that the operation of the proposed facility is expected to result to a very minimal increase in delay compared to the baseline 2033 scenario. Sites 1 and 2 are expected continue to have an LoS of A for both morning and evening peak periods, while Site 3 would have an LoS of B. This indicates acceptable levels of delay and plenty of spare capacity to accommodate additional traffic associated with the proposal.

3.3 Sight distance checks

Available sight distance at key intersections was assessed to determine whether there is adequate longitudinal sight distance at the proposed access and along the haulage route to allow drivers to safely navigate to and from the site.

This assessment was undertaken based on a desktop assessment only, using Google Maps / SIX Maps and Google Street view. It is worth noting that the actual sight distances observed on site by road users, may differ from the Google images as the images may be outdated because of changes to vegetation and / or changes to the road environment. The level of the Google camera above the road surface of a vehicle may also vary from actual driver eye height etc. Nevertheless, imagery from the aforementioned sources is regarded to be reasonably accurate representations of actual site conditions and has been adopted for the purposes of this assessment.

– **Approach Sight Distance (ASD)** is the minimum requirement to provide the driver of a vehicle adequate sight distance to observe the road layout with sufficient time to react and stop, if necessary, before entering the conflict area.
– **Safe Intersection Sight Distance (SISD)** provides sufficient sight distance for a driver of a vehicle on the major road to observe approaching vehicles from the minor road and to stop before a potential collision.
– **Minimum Gap Sight Distance (MGSD)** is the minimum requirement to provide the driver of a vehicle adequate sight distance to perform a crossing or turning movement.

The required sight distances were derived from the *Austroads Guide to Road Design (AGRD) Part 3: Geometric Design (Austroads 2021)* and *Part 4A: Unsignalised and Signalised Intersections (2021)*. Table 10 provides a summary of the sight distance requirements for the key intersections, while sketches are provided in Figure 9.

Table 10 Minimum sight distance requirement

Site	Approach	Design Speed (km/h)	ASD		SISD		MGSD	
			Required	Measured	Required	Measured	Required	Available
1	Douglas Road	90	139	220	214	300	125	125+
	Collins Road	90	139	300	214	300	125	125+
	New north-south access road	60	73	144	-	-	-	-
2	Garrett Street (Innes Street)	40*	40*	70	-	-	-	-
	Lackey Road (north)	60	73	150	123	150	83	83+
	Lackey Road (south)	60	73	150	123	150	83	83+
3	Inness Road	60	73	150	-	-	-	-
	Berrima Road	60	73	160	123	160	83	83+
	Waite Street	60	73	190	123	190	83	83+

LEGEND WITH ADEQUATE SIGHT DISTANCE INADEQUATE SIGHT DISTANCE

Requirements derived from Austroads Guide to Road Design Part 3: Geometric Design (2021) and Part 4a: Unsignalised and Signalised Intersections (2021)
* Note: The lower design speed of Inness Road (40 kph) has been adopted for this review.

As summarised in Table 10, the measured sight distances meet the minimum sight distance requirement at each of the assessed intersections.

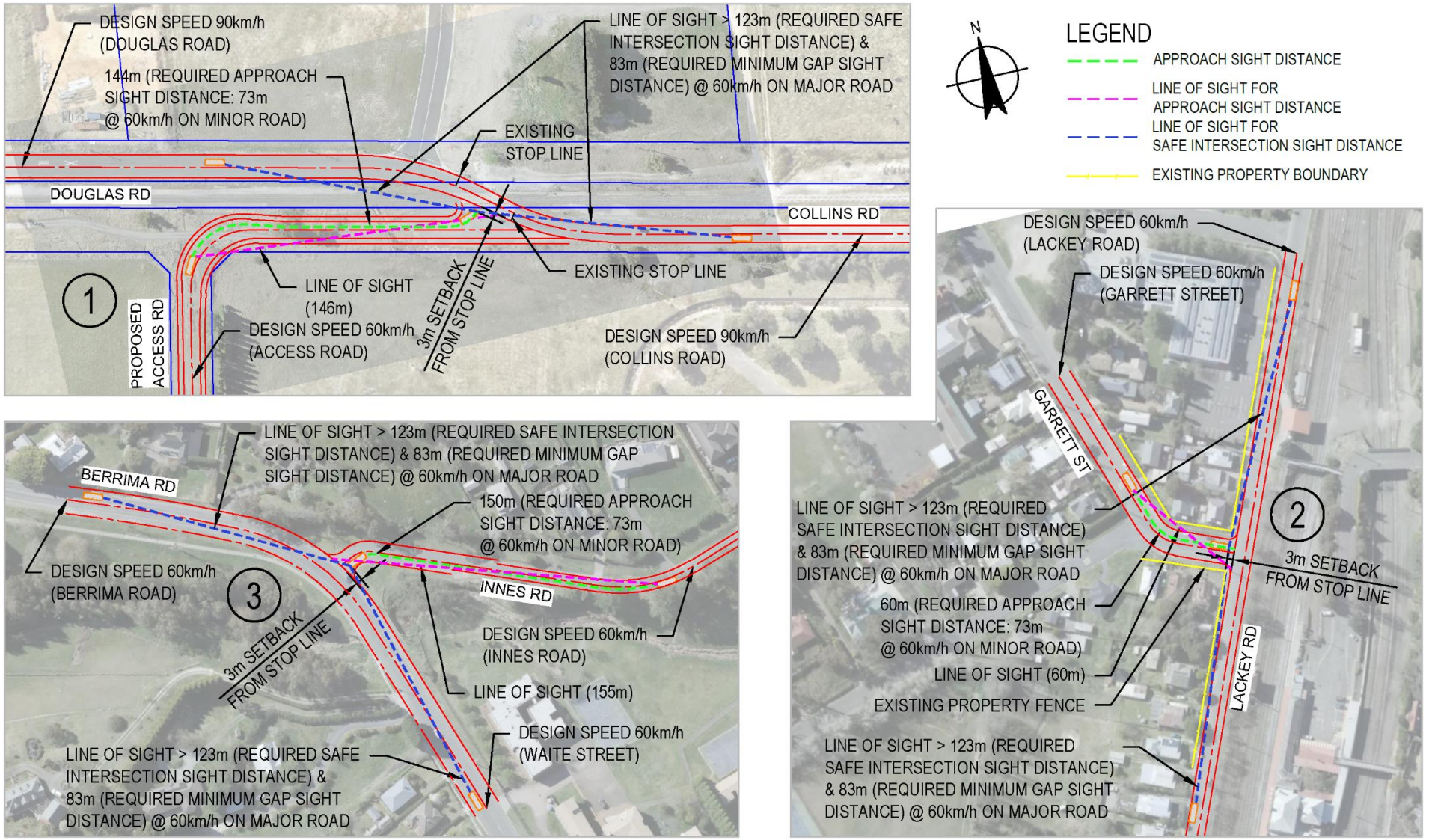
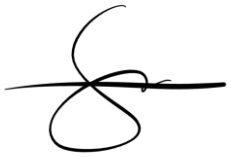


Figure 9 *Sight distance check*

4. Conclusions

Based on the outcomes of the additional assessment that has been conducted and documented in the memorandum, it is considered that the operation of the proposed facility would have negligible impact on the surrounding road network in terms of intersection performance. A review of access and key intersections also show that sufficient sight distance is available at key access points which is expected allow for the safe movement of vehicles into and out of the proposed site.

Regards



Minique Aranas

Transport Planner

Appendix A

SIDRA results

MOVEMENT SUMMARY

Site: 1 [2022_Base_AM Peak_01_Douglas Road / Collins Road / Unformed Road (Site Folder: 2022 Base)]

Douglas Road / Collins Road / Unformed Road
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Collins Road														
5	T1	1	0	1	0.0	0.010	0.0	LOS A	0.0	0.4	0.01	0.50	0.01	48.3
6a	R1	15	3	16	20.0	0.010	4.8	LOS A	0.0	0.4	0.01	0.50	0.01	51.0
Approach		16	3	17	18.8	0.010	4.5	NA	0.0	0.4	0.01	0.50	0.01	50.9
NorthWest: Douglas Road														
27a	L1	48	4	51	8.3	0.026	5.4	LOS A	0.0	0.0	0.00	0.59	0.00	49.4
29b	R3	1	0	1	0.0	0.026	6.2	LOS A	0.0	0.0	0.00	0.59	0.00	50.4
Approach		49	4	52	8.2	0.026	5.4	NA	0.0	0.0	0.00	0.59	0.00	49.4
West: Unformed Road														
10b	L3	1	0	1	0.0	0.002	9.0	LOS A	0.0	0.0	0.08	0.97	0.08	48.3
11	T1	1	0	1	0.0	0.002	7.9	LOS A	0.0	0.0	0.08	0.97	0.08	38.0
Approach		2	0	2	0.0	0.002	8.5	LOS A	0.0	0.0	0.08	0.97	0.08	44.5
All Vehicles		67	7	71	10.4	0.026	5.3	NA	0.0	0.4	0.01	0.58	0.01	49.6

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

MOVEMENT SUMMARY

Site: 2 [2022_Base_AM Peak_02_Garrett Street / Lackey Road (Site Folder: 2022 Base)]

Garrett Street / Lackey Road
Site Category: Lackey Road and Garrett Street
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lackey Road														
4	L2	120	7	126	5.8	0.121	4.7	LOS A	0.0	0.0	0.00	0.29	0.00	47.8
5	T1	106	9	112	8.5	0.121	0.0	LOS A	0.0	0.0	0.00	0.29	0.00	49.0
Approach		226	16	238	7.1	0.121	2.5	NA	0.0	0.0	0.00	0.29	0.00	48.4
North: Lackey Road														
11	T1	84	16	88	19.0	0.057	0.1	LOS A	0.1	0.5	0.08	0.06	0.08	49.5
12	R2	9	0	9	0.0	0.057	5.4	LOS A	0.1	0.5	0.08	0.06	0.08	49.0
Approach		93	16	98	17.2	0.057	0.6	NA	0.1	0.5	0.08	0.06	0.08	49.4
West: Garrett Stree														
1	L2	7	1	7	14.3	0.132	5.1	LOS A	0.5	3.3	0.33	0.59	0.33	45.7
3	R2	118	3	124	2.5	0.132	5.8	LOS A	0.5	3.3	0.33	0.59	0.33	45.6
Approach		125	4	132	3.2	0.132	5.8	LOS A	0.5	3.3	0.33	0.59	0.33	45.6
All Vehicles		444	36	467	8.1	0.132	3.0	NA	0.5	3.3	0.11	0.33	0.11	47.8

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

MOVEMENT SUMMARY

Site: 3 [2022_Base_AM Peak_03_Inness Road / Berrima Road / Waite Street (Site Folder: 2022 Base)]

Inness Road / Berrima Road / Waite Street
Site Category: Berrima Road & Innes Road & Waite Street
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Waite Street														
1a	L1	356	41	375	11.5	0.221	4.2	LOS A	0.2	1.6	0.01	0.52	0.01	46.3
3	R2	27	2	28	7.4	0.221	4.7	LOS A	0.2	1.6	0.01	0.52	0.01	46.6
Approach		383	43	403	11.2	0.221	4.2	NA	0.2	1.6	0.01	0.52	0.01	46.3
East: Innes Road														
4	L2	42	2	44	4.8	0.080	6.9	LOS A	0.3	2.0	0.53	0.71	0.53	44.3
6a	R1	14	0	15	0.0	0.080	10.0	LOS A	0.3	2.0	0.53	0.71	0.53	44.5
Approach		56	2	59	3.6	0.080	7.7	LOS A	0.3	2.0	0.53	0.71	0.53	44.3
NorthWest: Berrima Road														
27a	L1	17	0	18	0.0	0.312	4.3	LOS A	1.9	14.4	0.13	0.48	0.13	46.4
29a	R1	480	48	505	10.0	0.312	4.0	LOS A	1.9	14.4	0.13	0.48	0.13	46.5
Approach		497	48	523	9.7	0.312	4.0	NA	1.9	14.4	0.13	0.48	0.13	46.5
All Vehicles		936	93	985	9.9	0.312	4.3	NA	1.9	14.4	0.11	0.51	0.11	46.3

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

MOVEMENT SUMMARY

Site: 1 [2022_Base_PM Peak_01_Douglas Road / Collins Road / Unformed Road (Site Folder: 2022 Base)]

Douglas Road / Collins Road / Unformed Road
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Collins Road														
5	T1	1	0	1	0.0	0.035	0.0	LOS A	0.2	1.2	0.01	0.53	0.01	47.7
6a	R1	58	3	61	5.2	0.035	4.6	LOS A	0.2	1.2	0.01	0.53	0.01	51.5
Approach		59	3	62	5.1	0.035	4.5	NA	0.2	1.2	0.01	0.53	0.01	51.5
NorthWest: Douglas Road														
27a	L1	15	1	16	6.7	0.009	5.4	LOS A	0.0	0.0	0.00	0.59	0.00	49.5
29b	R3	1	0	1	0.0	0.009	6.2	LOS A	0.0	0.0	0.00	0.59	0.00	50.3
Approach		16	1	17	6.3	0.009	5.5	NA	0.0	0.0	0.00	0.59	0.00	49.6
West: Unformed Road														
10b	L3	1	0	1	0.0	0.002	9.1	LOS A	0.0	0.0	0.16	0.92	0.16	48.4
11	T1	1	0	1	0.0	0.002	8.0	LOS A	0.0	0.0	0.16	0.92	0.16	38.0
Approach		2	0	2	0.0	0.002	8.6	LOS A	0.0	0.0	0.16	0.92	0.16	44.6
All Vehicles		77	4	81	5.2	0.035	4.8	NA	0.2	1.2	0.01	0.55	0.01	50.9

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

MOVEMENT SUMMARY

Site: 2 [2022_Base_PM Peak_02_Garrett Street / Lackey Road (Site Folder: 2022 Base)]

Garrett Street / Lackey Road
Site Category: Lackey Road and Garrett Street
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lackey Road														
4	L2	83	3	87	3.6	0.135	4.6	LOS A	0.0	0.0	0.00	0.17	0.00	48.4
5	T1	176	10	185	5.7	0.135	0.0	LOS A	0.0	0.0	0.00	0.17	0.00	48.9
Approach		259	13	273	5.0	0.135	1.5	NA	0.0	0.0	0.00	0.17	0.00	48.8
North: Lackey Road														
11	T1	128	2	135	1.6	0.088	0.2	LOS A	0.2	1.4	0.14	0.08	0.14	49.1
12	R2	23	1	24	4.3	0.088	5.6	LOS A	0.2	1.4	0.14	0.08	0.14	48.6
Approach		151	3	159	2.0	0.088	1.1	NA	0.2	1.4	0.14	0.08	0.14	49.0
West: Garrett Stree														
1	L2	7	0	7	0.0	0.107	5.2	LOS A	0.4	2.5	0.38	0.63	0.38	45.7
3	R2	87	0	92	0.0	0.107	6.2	LOS A	0.4	2.5	0.38	0.63	0.38	45.4
Approach		94	0	99	0.0	0.107	6.2	LOS A	0.4	2.5	0.38	0.63	0.38	45.4
All Vehicles		504	16	531	3.2	0.135	2.2	NA	0.4	2.5	0.11	0.23	0.11	48.2

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

MOVEMENT SUMMARY

Site: 3 [2022_Base_PM Peak_03_Inness Road / Berrima Road / Waite Street (Site Folder: 2022 Base)]

Inness Road / Berrima Road / Waite Street
Site Category: Berrima Road & Innes Road & Waite Street
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Waite Street														
1a	L1	348	15	366	4.3	0.199	4.1	LOS A	0.1	0.7	0.00	0.52	0.00	46.4
3	R2	14	0	15	0.0	0.199	4.6	LOS A	0.1	0.7	0.00	0.52	0.00	46.6
Approach		362	15	381	4.1	0.199	4.1	NA	0.1	0.7	0.00	0.52	0.00	46.4
East: Innes Road														
4	L2	34	1	36	2.9	0.039	6.1	LOS A	0.1	1.0	0.44	0.62	0.44	45.1
6a	R1	3	0	3	0.0	0.039	8.2	LOS A	0.1	1.0	0.44	0.62	0.44	45.2
Approach		37	1	39	2.7	0.039	6.3	LOS A	0.1	1.0	0.44	0.62	0.44	45.1
NorthWest: Berrima Road														
27a	L1	5	0	5	0.0	0.241	4.2	LOS A	1.4	10.0	0.08	0.48	0.08	46.5
29a	R1	390	24	411	6.2	0.241	3.9	LOS A	1.4	10.0	0.08	0.48	0.08	46.6
Approach		395	24	416	6.1	0.241	3.9	NA	1.4	10.0	0.08	0.48	0.08	46.6
All Vehicles		794	40	836	5.0	0.241	4.1	NA	1.4	10.0	0.06	0.51	0.06	46.4

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

MOVEMENT SUMMARY

Site: 1 [2023_Operation_AM Peak_01_Douglas Road / Collins Road / Access Road (Site Folder: 2023 Operation)]

Douglas Road / Collins Road / Access Road
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Collins Road														
5	T1	62	10	65	16.1	0.047	0.0	LOS A	0.1	0.8	0.02	0.10	0.02	57.0
6a	R1	15	3	16	20.0	0.047	4.7	LOS A	0.1	0.8	0.02	0.10	0.02	55.5
Approach		77	13	81	16.9	0.047	0.9	NA	0.1	0.8	0.02	0.10	0.02	56.4
NorthWest: Douglas Road														
27a	L1	49	4	52	8.2	0.032	5.5	LOS A	0.1	0.4	0.05	0.57	0.05	49.1
29b	R3	8	0	8	0.0	0.032	6.5	LOS A	0.1	0.4	0.05	0.57	0.05	50.3
Approach		57	4	60	7.0	0.032	5.6	NA	0.1	0.4	0.05	0.57	0.05	49.3
West: Access Road														
10b	L3	8	0	8	0.0	0.073	9.0	LOS A	0.3	2.1	0.15	1.01	0.15	48.5
11	T1	62	10	65	16.1	0.073	9.1	LOS A	0.3	2.1	0.15	1.01	0.15	36.5
Approach		70	10	74	14.3	0.073	9.1	LOS A	0.3	2.1	0.15	1.01	0.15	38.6
All Vehicles		204	27	215	13.2	0.073	5.0	NA	0.3	2.1	0.07	0.54	0.07	47.7

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

MOVEMENT SUMMARY

Site: 2 [2023_Operation_AM Peak_02_Garrett Street / Lackey Road (Site Folder: 2023 Operation)]

Garrett Street / Lackey Road
Site Category: Lackey Road and Garrett Street
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lackey Road														
4	L2	122	7	128	5.7	0.139	4.7	LOS A	0.0	0.0	0.00	0.25	0.00	48.0
5	T1	142	9	149	6.3	0.139	0.0	LOS A	0.0	0.0	0.00	0.25	0.00	48.6
Approach		264	16	278	6.1	0.139	2.2	NA	0.0	0.0	0.00	0.25	0.00	48.3
North: Lackey Road														
11	T1	119	16	125	13.4	0.106	0.5	LOS A	0.3	2.8	0.23	0.13	0.23	48.7
12	R2	37	10	39	27.0	0.106	6.1	LOS A	0.3	2.8	0.23	0.13	0.23	47.9
Approach		156	26	164	16.7	0.106	1.9	NA	0.3	2.8	0.23	0.13	0.23	48.5
West: Garrett Stree														
1	L2	35	11	37	31.4	0.174	5.5	LOS A	0.6	4.8	0.36	0.63	0.36	45.3
3	R2	120	3	126	2.5	0.174	6.5	LOS A	0.6	4.8	0.36	0.63	0.36	45.4
Approach		155	14	163	9.0	0.174	6.2	LOS A	0.6	4.8	0.36	0.63	0.36	45.4
All Vehicles		575	56	605	9.7	0.174	3.2	NA	0.6	4.8	0.16	0.32	0.16	47.5

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

MOVEMENT SUMMARY

Site: 3 [2023_Operation_AM Peak_03_Inness Road / Berrima Road / Waite Street (Site Folder: 2023 Operation)]

Inness Road / Berrima Road / Waite Street
Site Category: Berrima Road & Innes Road & Waite Street
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Waite Street														
1a	L1	363	42	382	11.6	0.234	4.2	LOS A	0.3	2.4	0.03	0.51	0.03	46.3
3	R2	42	2	44	4.8	0.234	4.8	LOS A	0.3	2.4	0.03	0.51	0.03	46.5
Approach		405	44	426	10.9	0.234	4.3	NA	0.3	2.4	0.03	0.51	0.03	46.3
East: Innes Road														
4	L2	57	2	60	3.5	0.167	7.0	LOS A	0.6	4.4	0.60	0.77	0.60	43.1
6a	R1	28	10	29	35.7	0.167	15.3	LOS B	0.6	4.4	0.60	0.77	0.60	42.9
Approach		85	12	89	14.1	0.167	9.7	LOS A	0.6	4.4	0.60	0.77	0.60	43.1
NorthWest: Berrima Road														
27a	L1	31	10	33	32.3	0.330	4.6	LOS A	2.0	15.7	0.17	0.48	0.17	45.9
29a	R1	490	49	516	10.0	0.330	4.1	LOS A	2.0	15.7	0.17	0.48	0.17	46.4
Approach		521	59	548	11.3	0.330	4.1	NA	2.0	15.7	0.17	0.48	0.17	46.3
All Vehicles		1011	115	1064	11.4	0.330	4.6	NA	2.0	15.7	0.15	0.51	0.15	46.0

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

MOVEMENT SUMMARY

Site: 1 [2023_Operation_PM Peak_01_Douglas Road / Collins Road / Access Road (Site Folder: 2023 Operation)]

Douglas Road / Collins Road / Access Road
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Collins Road														
5	T1	62	10	65	16.1	0.072	0.0	LOS A	0.3	2.2	0.04	0.25	0.04	52.5
6a	R1	59	3	62	5.1	0.072	4.5	LOS A	0.3	2.2	0.04	0.25	0.04	54.4
Approach		121	13	127	10.7	0.072	2.2	NA	0.3	2.2	0.04	0.25	0.04	53.8
NorthWest: Douglas Road														
27a	L1	15	1	16	6.7	0.013	5.5	LOS A	0.0	0.3	0.11	0.55	0.11	48.8
29b	R3	8	0	8	0.0	0.013	6.5	LOS A	0.0	0.3	0.11	0.55	0.11	49.9
Approach		23	1	24	4.3	0.013	5.8	NA	0.0	0.3	0.11	0.55	0.11	49.2
West: Access Road														
10b	L3	8	0	8	0.0	0.074	9.2	LOS A	0.3	2.1	0.23	0.97	0.23	48.6
11	T1	62	10	65	16.1	0.074	9.1	LOS A	0.3	2.1	0.23	0.97	0.23	36.6
Approach		70	10	74	14.3	0.074	9.1	LOS A	0.3	2.1	0.23	0.97	0.23	38.8
All Vehicles		214	24	225	11.2	0.074	4.9	NA	0.3	2.2	0.11	0.52	0.11	48.5

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

MOVEMENT SUMMARY

Site: 2 [2023_Operation_PM Peak_02_Garrett Street / Lackey Road (Site Folder: 2023 Operation)]

Garrett Street / Lackey Road
Site Category: Lackey Road and Garrett Street
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lackey Road														
4	L2	85	3	89	3.5	0.144	4.6	LOS A	0.0	0.0	0.00	0.17	0.00	48.4
5	T1	193	10	203	5.2	0.144	0.0	LOS A	0.0	0.0	0.00	0.17	0.00	49.0
Approach		278	13	293	4.7	0.144	1.4	NA	0.0	0.0	0.00	0.17	0.00	48.8
North: Lackey Road														
11	T1	145	2	153	1.4	0.144	0.7	LOS A	0.6	4.5	0.30	0.18	0.30	48.2
12	R2	71	11	75	15.5	0.144	6.0	LOS A	0.6	4.5	0.30	0.18	0.30	47.6
Approach		216	13	227	6.0	0.144	2.5	NA	0.6	4.5	0.30	0.18	0.30	48.0
West: Garrett Stree														
1	L2	55	10	58	18.2	0.162	5.6	LOS A	0.6	4.4	0.38	0.64	0.38	45.4
3	R2	89	0	94	0.0	0.162	6.9	LOS A	0.6	4.4	0.38	0.64	0.38	45.3
Approach		144	10	152	6.9	0.162	6.4	LOS A	0.6	4.4	0.38	0.64	0.38	45.3
All Vehicles		638	36	672	5.6	0.162	2.9	NA	0.6	4.5	0.19	0.28	0.19	47.7

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

MOVEMENT SUMMARY

Site: 3 [2023_Operation_PM Peak_03_Inness Road / Berrima Road / Waite Street (Site Folder: 2023 Operation)]

Inness Road / Berrima Road / Waite Street
Site Category: Berrima Road & Innes Road & Waite Street
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Waite Street														
1a	L1	355	15	374	4.2	0.223	4.1	LOS A	0.4	2.6	0.03	0.51	0.03	46.3
3	R2	49	0	52	0.0	0.223	4.6	LOS A	0.4	2.6	0.03	0.51	0.03	46.5
Approach		404	15	425	3.7	0.223	4.2	NA	0.4	2.6	0.03	0.51	0.03	46.3
East: Innes Road														
4	L2	69	1	73	1.4	0.126	6.2	LOS A	0.4	3.5	0.52	0.68	0.52	44.2
6a	R1	16	10	17	62.5	0.126	15.1	LOS B	0.4	3.5	0.52	0.68	0.52	43.5
Approach		85	11	89	12.9	0.126	7.9	LOS A	0.4	3.5	0.52	0.68	0.52	44.1
NorthWest: Berrima Road														
27a	L1	18	10	19	55.6	0.260	4.8	LOS A	1.5	11.1	0.17	0.48	0.17	45.5
29a	R1	397	24	418	6.0	0.260	4.0	LOS A	1.5	11.1	0.17	0.48	0.17	46.3
Approach		415	34	437	8.2	0.260	4.1	NA	1.5	11.1	0.17	0.48	0.17	46.3
All Vehicles		904	60	952	6.6	0.260	4.5	NA	1.5	11.1	0.14	0.51	0.14	46.1

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

MOVEMENT SUMMARY

Site: 1 [2033_Base_AM Peak_01_Douglas Road / Collins Road / Access Road (Site Folder: 2033 Baseline (without development))]

Douglas Road / Collins Road / Access Road
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Collins Road														
5	T1	1	0	1	0.0	0.013	0.0	LOS A	0.1	0.5	0.01	0.49	0.01	48.4
6a	R1	19	4	20	21.1	0.013	4.7	LOS A	0.1	0.5	0.01	0.49	0.01	51.4
Approach		20	4	21	20.0	0.013	4.5	NA	0.1	0.5	0.01	0.49	0.01	51.4
NorthWest: Douglas Road														
27a	L1	60	5	63	8.3	0.033	5.4	LOS A	0.0	0.0	0.00	0.59	0.00	49.4
29b	R3	1	0	1	0.0	0.033	6.3	LOS A	0.0	0.0	0.00	0.59	0.00	50.6
Approach		61	5	64	8.2	0.033	5.4	NA	0.0	0.0	0.00	0.59	0.00	49.4
West: Access Road														
10b	L3	1	0	1	0.0	0.002	9.0	LOS A	0.0	0.0	0.09	0.96	0.09	48.3
11	T1	1	0	1	0.0	0.002	8.0	LOS A	0.0	0.0	0.09	0.96	0.09	37.9
Approach		2	0	2	0.0	0.002	8.5	LOS A	0.0	0.0	0.09	0.96	0.09	44.5
All Vehicles		83	9	87	10.8	0.033	5.3	NA	0.1	0.5	0.01	0.58	0.01	49.8

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

MOVEMENT SUMMARY

Site: 2 [2033_Base_AM Peak_02_Garrett Street / Lackey Road (Site Folder: 2033 Baseline (without development))]

Garrett Street / Lackey Road
Site Category: Lackey Road and Garrett Street
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lackey Road														
4	L2	150	9	158	6.0	0.150	4.7	LOS A	0.0	0.0	0.00	0.29	0.00	47.8
5	T1	132	11	139	8.3	0.150	0.0	LOS A	0.0	0.0	0.00	0.29	0.00	48.4
Approach		282	20	297	7.1	0.150	2.5	NA	0.0	0.0	0.00	0.29	0.00	48.1
North: Lackey Road														
11	T1	105	20	111	19.0	0.072	0.2	LOS A	0.1	0.7	0.09	0.05	0.09	49.4
12	R2	11	0	12	0.0	0.072	5.6	LOS A	0.1	0.7	0.09	0.05	0.09	48.9
Approach		116	20	122	17.2	0.072	0.7	NA	0.1	0.7	0.09	0.05	0.09	49.4
West: Garrett Stree														
1	L2	8	1	8	12.5	0.174	5.2	LOS A	0.6	4.4	0.38	0.64	0.38	45.6
3	R2	146	3	154	2.1	0.174	6.2	LOS A	0.6	4.4	0.38	0.64	0.38	45.4
Approach		154	4	162	2.6	0.174	6.2	LOS A	0.6	4.4	0.38	0.64	0.38	45.4
All Vehicles		552	44	581	8.0	0.174	3.1	NA	0.6	4.4	0.12	0.34	0.12	47.6

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

MOVEMENT SUMMARY

Site: 3 [2033_Base_AM Peak_03_Inness Road / Berrima Road / Waite Street (Site Folder: 2033 Baseline (without development))]

Inness Road / Berrima Road / Waite Street
Site Category: Berrima Road & Innes Road & Waite Street
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Waite Street														
1a	L1	443	51	466	11.5	0.274	4.2	LOS A	0.3	2.0	0.02	0.52	0.02	46.3
3	R2	33	2	35	6.1	0.274	4.7	LOS A	0.3	2.0	0.02	0.52	0.02	46.6
Approach		476	53	501	11.1	0.274	4.2	NA	0.3	2.0	0.02	0.52	0.02	46.3
East: Innes Road														
4	L2	52	2	55	3.8	0.127	7.8	LOS A	0.4	3.1	0.62	0.80	0.62	43.3
6a	R1	17	0	18	0.0	0.127	13.9	LOS A	0.4	3.1	0.62	0.80	0.62	43.5
Approach		69	2	73	2.9	0.127	9.3	LOS A	0.4	3.1	0.62	0.80	0.62	43.4
NorthWest: Berrima Road														
27a	L1	21	0	22	0.0	0.389	4.3	LOS A	2.6	19.6	0.16	0.47	0.16	46.3
29a	R1	596	59	627	9.9	0.389	4.0	LOS A	2.6	19.6	0.16	0.47	0.16	46.4
Approach		617	59	649	9.6	0.389	4.1	NA	2.6	19.6	0.16	0.47	0.16	46.4
All Vehicles		1162	114	1223	9.8	0.389	4.4	NA	2.6	19.6	0.13	0.51	0.13	46.2

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

MOVEMENT SUMMARY

Site: 1 [2033_Base_PM Peak_01_Douglas Road / Collins Road / Access Road (Site Folder: 2033 Baseline (without development))]

Douglas Road / Collins Road / Access Road
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Collins Road														
5	T1	1	0	1	0.0	0.044	0.0	LOS A	0.2	1.5	0.01	0.50	0.01	47.9
6a	R1	72	4	76	5.6	0.044	4.5	LOS A	0.2	1.5	0.01	0.50	0.01	52.0
Approach		73	4	77	5.5	0.044	4.5	NA	0.2	1.5	0.01	0.50	0.01	52.0
NorthWest: Douglas Road														
27a	L1	18	1	19	5.6	0.010	5.4	LOS A	0.0	0.0	0.00	0.59	0.00	49.6
29b	R3	1	0	1	0.0	0.010	6.3	LOS A	0.0	0.0	0.00	0.59	0.00	50.6
Approach		19	1	20	5.3	0.010	5.4	NA	0.0	0.0	0.00	0.59	0.00	49.7
West: Access Road														
10b	L3	1	0	1	0.0	0.002	9.2	LOS A	0.0	0.0	0.18	0.90	0.18	48.4
11	T1	1	0	1	0.0	0.002	8.0	LOS A	0.0	0.0	0.18	0.90	0.18	38.0
Approach		2	0	2	0.0	0.002	8.6	LOS A	0.0	0.0	0.18	0.90	0.18	44.6
All Vehicles		94	5	99	5.3	0.044	4.7	NA	0.2	1.5	0.01	0.53	0.01	51.4

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

MOVEMENT SUMMARY

Site: 2 [2033_Base_PM Peak_02_Garrett Street / Lackey Road (Site Folder: 2033 Baseline (without development))]

Garrett Street / Lackey Road
Site Category: Lackey Road and Garrett Street
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lackey Road														
4	L2	102	3	107	2.9	0.166	4.6	LOS A	0.0	0.0	0.00	0.17	0.00	48.4
5	T1	218	12	229	5.5	0.166	0.0	LOS A	0.0	0.0	0.00	0.17	0.00	48.9
Approach		320	15	337	4.7	0.166	1.5	NA	0.0	0.0	0.00	0.17	0.00	48.7
North: Lackey Road														
11	T1	159	2	167	1.3	0.111	0.3	LOS A	0.3	1.8	0.16	0.08	0.16	49.0
12	R2	28	1	29	3.6	0.111	5.9	LOS A	0.3	1.8	0.16	0.08	0.16	48.6
Approach		187	3	197	1.6	0.111	1.2	NA	0.3	1.8	0.16	0.08	0.16	49.0
West: Garrett Stree														
1	L2	9	0	9	0.0	0.147	5.4	LOS A	0.5	3.5	0.44	0.68	0.44	45.4
3	R2	108	0	114	0.0	0.147	6.8	LOS A	0.5	3.5	0.44	0.68	0.44	45.1
Approach		117	0	123	0.0	0.147	6.7	LOS A	0.5	3.5	0.44	0.68	0.44	45.1
All Vehicles		624	18	657	2.9	0.166	2.4	NA	0.5	3.5	0.13	0.24	0.13	48.1

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

MOVEMENT SUMMARY

Site: 3 [2033_Base_PM Peak_03_Inness Road / Berrima Road / Waite Street (Site Folder: 2033 Baseline (without development))]

Inness Road / Berrima Road / Waite Street
Site Category: Berrima Road & Innes Road & Waite Street
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Waite Street														
1a	L1	433	19	456	4.4	0.247	4.1	LOS A	0.1	0.9	0.00	0.52	0.00	46.4
3	R2	17	0	18	0.0	0.247	4.6	LOS A	0.1	0.9	0.00	0.52	0.00	46.6
Approach		450	19	474	4.2	0.247	4.1	NA	0.1	0.9	0.00	0.52	0.00	46.4
East: Innes Road														
4	L2	42	1	44	2.4	0.056	6.7	LOS A	0.2	1.4	0.50	0.68	0.50	44.7
6a	R1	4	0	4	0.0	0.056	10.4	LOS A	0.2	1.4	0.50	0.68	0.50	44.8
Approach		46	1	48	2.2	0.056	7.0	LOS A	0.2	1.4	0.50	0.68	0.50	44.7
NorthWest: Berrima Road														
27a	L1	6	0	6	0.0	0.300	4.2	LOS A	1.8	13.3	0.10	0.48	0.10	46.4
29a	R1	485	30	511	6.2	0.300	3.9	LOS A	1.8	13.3	0.10	0.48	0.10	46.5
Approach		491	30	517	6.1	0.300	3.9	NA	1.8	13.3	0.10	0.48	0.10	46.5
All Vehicles		987	50	1039	5.1	0.300	4.2	NA	1.8	13.3	0.07	0.51	0.07	46.4

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

MOVEMENT SUMMARY

Site: 1 [2033_Operation_AM Peak_01_Douglas Road / Collins Road / Access Road (Site Folder: 2033 Operation)]

Douglas Road / Collins Road / Access Road
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Collins Road														
5	T1	62	10	65	16.1	0.050	0.0	LOS A	0.1	1.0	0.03	0.12	0.03	56.3
6a	R1	19	4	20	21.1	0.050	4.7	LOS A	0.1	1.0	0.03	0.12	0.03	55.2
Approach		81	14	85	17.3	0.050	1.1	NA	0.1	1.0	0.03	0.12	0.03	55.8
NorthWest: Douglas Road														
27a	L1	60	5	63	8.3	0.044	5.5	LOS A	0.1	0.8	0.07	0.55	0.07	49.2
29b	R3	9	8	9	88.9	0.044	7.8	LOS A	0.1	0.8	0.07	0.55	0.07	43.8
Approach		69	13	73	18.8	0.044	5.8	NA	0.1	0.8	0.07	0.55	0.07	48.4
West: Access Road														
10b	L3	8	0	8	0.0	0.074	9.0	LOS A	0.3	2.2	0.18	1.00	0.18	48.4
11	T1	62	10	65	16.1	0.074	9.2	LOS A	0.3	2.2	0.18	1.00	0.18	36.4
Approach		70	10	74	14.3	0.074	9.2	LOS A	0.3	2.2	0.18	1.00	0.18	38.5
All Vehicles		220	37	232	16.8	0.074	5.2	NA	0.3	2.2	0.09	0.54	0.09	47.5

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

MOVEMENT SUMMARY

Site: 2 [2033_Operation_AM Peak_02_Garrett Street / Lackey Road (Site Folder: 2033 Operation)]

Garrett Street / Lackey Road
Site Category: Lackey Road and Garrett Street
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lackey Road														
4	L2	150	9	158	6.0	0.167	4.7	LOS A	0.0	0.0	0.00	0.26	0.00	48.0
5	T1	166	11	175	6.6	0.167	0.1	LOS A	0.0	0.0	0.00	0.26	0.00	48.5
Approach		316	20	333	6.3	0.167	2.2	NA	0.0	0.0	0.00	0.26	0.00	48.3
North: Lackey Road														
11	T1	139	20	146	14.4	0.122	0.6	LOS A	0.4	3.2	0.24	0.12	0.24	48.7
12	R2	39	10	41	25.6	0.122	6.5	LOS A	0.4	3.2	0.24	0.12	0.24	47.9
Approach		178	30	187	16.9	0.122	1.9	NA	0.4	3.2	0.24	0.12	0.24	48.5
West: Garrett Stree														
1	L2	36	11	38	30.6	0.218	5.7	LOS A	0.8	6.0	0.41	0.67	0.41	45.1
3	R2	146	3	154	2.1	0.218	6.9	LOS A	0.8	6.0	0.41	0.67	0.41	45.1
Approach		182	14	192	7.7	0.218	6.7	LOS A	0.8	6.0	0.41	0.67	0.41	45.1
All Vehicles		676	64	712	9.5	0.218	3.4	NA	0.8	6.0	0.17	0.33	0.17	47.4

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

MOVEMENT SUMMARY

Site: 3 [2033_Operation_AM Peak_03_Inness Road / Berrima Road / Waite Street (Site Folder: 2033 Operation)]

Inness Road / Berrima Road / Waite Street
Site Category: Berrima Road & Innes Road & Waite Street
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Waite Street														
1a	L1	443	51	466	11.5	0.284	4.2	LOS A	0.4	3.0	0.03	0.51	0.03	46.3
3	R2	48	2	51	4.2	0.284	4.8	LOS A	0.4	3.0	0.03	0.51	0.03	46.5
Approach		491	53	517	10.8	0.284	4.3	NA	0.4	3.0	0.03	0.51	0.03	46.3
East: Innes Road														
4	L2	66	2	69	3.0	0.250	8.4	LOS A	0.9	6.8	0.71	0.89	0.79	41.5
6a	R1	31	10	33	32.3	0.250	22.0	LOS B	0.9	6.8	0.71	0.89	0.79	41.4
Approach		97	12	102	12.4	0.250	12.8	LOS A	0.9	6.8	0.71	0.89	0.79	41.4
NorthWest: Berrima Road														
27a	L1	35	10	37	28.6	0.402	4.7	LOS A	2.7	20.7	0.20	0.48	0.20	45.8
29a	R1	596	59	627	9.9	0.402	4.1	LOS A	2.7	20.7	0.20	0.48	0.20	46.3
Approach		631	69	664	10.9	0.402	4.2	NA	2.7	20.7	0.20	0.48	0.20	46.3
All Vehicles		1219	134	1283	11.0	0.402	4.9	NA	2.7	20.7	0.17	0.52	0.18	45.9

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

MOVEMENT SUMMARY

Site: 1 [2033_Operation_PM Peak_01_Douglas Road / Collins Road / Access Road (Site Folder: 2033 Operation)]

Douglas Road / Collins Road / Access Road
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Collins Road														
5	T1	62	10	65	16.1	0.080	0.0	LOS A	0.3	2.6	0.04	0.27	0.04	52.0
6a	R1	72	4	76	5.6	0.080	4.5	LOS A	0.3	2.6	0.04	0.27	0.04	54.1
Approach		134	14	141	10.4	0.080	2.5	NA	0.3	2.6	0.04	0.27	0.04	53.5
NorthWest: Douglas Road														
27a	L1	18	1	19	5.6	0.015	5.5	LOS A	0.0	0.3	0.10	0.55	0.10	49.0
29b	R3	8	0	8	0.0	0.015	6.5	LOS A	0.0	0.3	0.10	0.55	0.10	50.0
Approach		26	1	27	3.8	0.015	5.8	NA	0.0	0.3	0.10	0.55	0.10	49.3
West: Access Road														
10b	L3	8	0	8	0.0	0.075	9.2	LOS A	0.3	2.2	0.25	0.97	0.25	48.6
11	T1	62	10	65	16.1	0.075	9.2	LOS A	0.3	2.2	0.25	0.97	0.25	36.5
Approach		70	10	74	14.3	0.075	9.2	LOS A	0.3	2.2	0.25	0.97	0.25	38.7
All Vehicles		230	25	242	10.9	0.080	4.9	NA	0.3	2.6	0.11	0.51	0.11	48.7

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

MOVEMENT SUMMARY

Site: 2 [2033_Operation_PM Peak_02_Garrett Street / Lackey Road (Site Folder: 2033 Operation)]

Garrett Street / Lackey Road
Site Category: Lackey Road and Garrett Street
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lackey Road														
4	L2	102	3	107	2.9	0.173	4.6	LOS A	0.0	0.0	0.00	0.17	0.00	48.4
5	T1	232	12	244	5.2	0.173	0.0	LOS A	0.0	0.0	0.00	0.17	0.00	49.0
Approach		334	15	352	4.5	0.173	1.4	NA	0.0	0.0	0.00	0.17	0.00	48.8
North: Lackey Road														
11	T1	173	2	182	1.2	0.167	0.9	LOS A	0.7	5.2	0.32	0.18	0.32	48.2
12	R2	76	11	80	14.5	0.167	6.4	LOS A	0.7	5.2	0.32	0.18	0.32	47.6
Approach		249	13	262	5.2	0.167	2.6	NA	0.7	5.2	0.32	0.18	0.32	48.0
West: Garrett Stree														
1	L2	57	10	60	17.5	0.203	5.8	LOS A	0.8	5.5	0.44	0.69	0.44	45.0
3	R2	108	0	114	0.0	0.203	7.5	LOS A	0.8	5.5	0.44	0.69	0.44	45.0
Approach		165	10	174	6.1	0.203	6.9	LOS A	0.8	5.5	0.44	0.69	0.44	45.0
All Vehicles		748	38	787	5.1	0.203	3.0	NA	0.8	5.5	0.20	0.29	0.20	47.6

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

MOVEMENT SUMMARY

Site: 3 [2033_Operation_PM Peak_03_Inness Road / Berrima Road / Waite Street (Site Folder: 2033 Operation)]

Inness Road / Berrima Road / Waite Street
Site Category: Berrima Road & Innes Road & Waite Street
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Waite Street														
1a	L1	433	19	456	4.4	0.268	4.1	LOS A	0.4	2.9	0.03	0.51	0.03	46.3
3	R2	52	0	55	0.0	0.268	4.7	LOS A	0.4	2.9	0.03	0.51	0.03	46.5
Approach		485	19	511	3.9	0.268	4.2	NA	0.4	2.9	0.03	0.51	0.03	46.3
East: Innes Road														
4	L2	77	1	81	1.3	0.169	6.8	LOS A	0.6	4.5	0.59	0.75	0.59	43.4
6a	R1	17	10	18	58.8	0.169	20.3	LOS B	0.6	4.5	0.59	0.75	0.59	42.8
Approach		94	11	99	11.7	0.169	9.3	LOS A	0.6	4.5	0.59	0.75	0.59	43.3
NorthWest: Berrima Road														
27a	L1	20	10	21	50.0	0.317	4.8	LOS A	1.9	14.3	0.19	0.48	0.19	45.5
29a	R1	485	30	511	6.2	0.317	4.1	LOS A	1.9	14.3	0.19	0.48	0.19	46.3
Approach		505	40	532	7.9	0.317	4.1	NA	1.9	14.3	0.19	0.48	0.19	46.3
All Vehicles		1084	70	1141	6.5	0.317	4.6	NA	1.9	14.3	0.15	0.52	0.15	46.0

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