Appendix 6

Road Transport Assessment

prepared by
The Transport Planning Partnership Pty Ltd

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Austen Quarry

Road Transport Assessment

Prepared for:

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19/01/2018

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Austen Quarry

Road Transport Assessment

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APPENDICES

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1 Introduction

This report has been prepared on behalf of Hy-Tec Industries Pty Ltd to present the findings of an assessment of the existing road transport environment in the vicinity of the Austen Quarry. Hy-Tec Industries are seeking a modification to Condition 8 of Schedule 2 of Development Consent SSD 6084 to increase the annual transport of quarry products to 1.6 million tonnes and to increase the maximum daily laden trucks from the site to 300 and increase average daily laden trucks from the site to 200, averaged over the number of days in a calendar month. Of relevance to this Project, Hy-Tec Industries are also seeking to commence transport operation from 4.00am rather than the currently approved start time of 5.00am.

It is noted that Hy-Tec Industries is also proposing minor modifications to the existing approved extraction area and overburden emplacement and subsequent modification to biodiversity offsetting obligations. These final two matters are not addressed in this report.

Austen Quarry is located 3.5 kilometres (km) south-southwest of Hartley village and 10 km south of Lithgow; approximately 100km west of Sydney (see Figure 2.1). Austen Quarry is accessed via the Quarry Access Road off Jenolan Caves Road.

The aim of this report is to present background information regarding the road transport environment in the vicinity of the Austen Quarry, and identify any issues or constraints regarding the road transport environment which may influence the proposed increase of daily laden trucks from the site for the Project.

The results of traffic surveys between 4.00am and 5.00am have also been included to provide an overview of existing traffic at this time.

The remainder of this report is set out as follows:

- Section 2 presents a brief overview of the proposed modification, to provide the context of possible effects on the road transport environment.
- Section 3 describes the existing road environment conditions in the vicinity of Austen Quarry, including the road network, traffic volumes and composition, historical growth in traffic, road safety history, and the capacity of the road network.
- Section 4 discusses traffic impacts that the intensified operation may impose on the surrounding road network.
- Section 5 discusses the mitigation measures that are required to manage the traffic impacts on the road network.
- Section 6 draws a conclusion on the road transport assessment.

2 Background to the Project

2.1 Site Location

The Austen Quarry is accessed from a sealed access road ("the Quarry Access Road") which intersects with Jenolan Caves Road 4.2km south of the intersection of Jenolan Caves Road with the Great Western Highway. The Quarry Access Road extends southwards and then eastwards from Jenolan Caves Road, crossing Yorkeys Creek (an ephemeral tributary of Coxs River) at an elevated culvert crossing, before entering the secondary processing area of the Quarry via the incoming weighbridge. The site location is shown in in Figure 2.1.

Figure 2.1: Site Location and its Surrounding Environment

Base map source: Google Map 2017

2.2 Existing Austen Quarry Operations

The Austen Quarry is a hard rock quarry that has been operational since 1995 under the original development consent which was granted by Lithgow City Council in March

1995. Development Consent SSD 6084 was granted in July 2015 to permit an extension of the Quarry and operations under this consent commenced in September 2016.

The Austen Quarry has approval to despatch up to 1.1 million tonnes per annum (Mtpa) of products until March 2050. Products are currently despatched between 5.00am and 10.00pm Monday to Friday, and between 5.00am and 3.00pm on Saturdays, public holidays excluded.

Product transportation is largely influenced by customer requirements and so varies from day to day, using a variety of truck configurations, depending on the customer and the destinations of the product. Transportation routes are generally determined by the destinations. However, products destined for the Sydney metropolitan area are generally despatched with articulated trucks, or 19m long B-Doubles. Deliveries to local road works projects tend to be undertaken using smaller volume rigid trucks, with a capacity of less than 15 tonnes (t). All trucks travelling to and from the Quarry use Jenolan Caves Road to reach the Great Western Highway.

The Austen Quarry's Driver Code of Conduct sets out requirements of all truck drivers approaching, leaving, and being loaded at the Austen Quarry to provide safe standard procedures and guidelines. The plan aims to maximise the safety of road users both inside the Quarry and on public roads, ensure compliance with applicable legislation, standards, codes, licences, and approvals, and to result in no significant traffic incidents or delays caused by quarry-related traffic movements.

Hy-Tec operates a driver and vehicle check system at the Austen Quarry (and all of its operations). Hy-Tec developed the standard, *Hy-Tec Chain of Responsibility – Driver/Vehicle Checks*, which applies to any person involved in consigning; packing; loading; driving; operating a business which controls the use of a commercial vehicle and receiving goods or freight. This standard addresses legal obligations relating to drivers, vehicles, roads and route selection and vehicle operations (e.g. fatigue management, vehicle mass and load compliance, load restraint, daily vehicle checks). A Driver Fatigue Manual has been produced and issued to all Hy-Tec drivers as well as everyone with links to the Chain of Responsibility. A systematic and documented approach has been developed to check compliance of all drivers, be they Hy-Tec drivers or contractors.

An adequate amount of informal on-site parking is provided on site to meet the demands of employees and visitors. Due to the Quarry's isolated location and the operating hours of the Quarry, all employees/visitors travel to and from the Quarry is by car.

2.3 The Proposal

The current production and transportation limits are specified in Condition 8 of Schedule 2 of SSD-6084 as follows:

The Applicant shall not:

(a) transport more than 1.1 million tonnes of quarry products from the site during any financial year;

(b) dispatch more than 250 laden trucks from the site on any one day; and

(c) dispatch more than 150 laden trucks from the site per day, averaged over the total number of dispatch days in any calendar month.

Increasing demand for the products of the Quarry requires that the Company seek a modification to Condition 8 to increase the annual transport of quarry products from 1.1 to 1.6 Mtpa tonnes to increase the maximum daily laden trucks from the site to 300 and to increase average daily laden trucks from the site to 200, averaged over the total number of dispatch days in any calendar month.

In addition, recent experience with transport operations between Hartley and Sydney-based destinations indicates that the peak hours for vehicles travelling towards Sydney are occurring earlier in the day. Hy-Tec Industries is proposing to commence product despatch earlier in the day to avoid the majority of delays.

3 Existing Road Transport Environment

This section describes the existing road transport conditions in the vicinity of the Austen Quarry. It presents the results of surveys conducted during February 2017, and reviews the history of traffic growth in the region. As the majority of traffic arriving and departing the Quarry uses the Quarry Access Road, Jenolan Caves Road and the Great Western Highway, these roads are focused in this assessment.

3.1 Road Network

The road network in the vicinity of the Austen Quarry is described below and is shown in Figure 3.1.

Figure 3.1: Surrounding Road Network

3.1.1 Quarry Access Road

The Quarry Access Road is a private road connecting the Austen Quarry to the external road network. It has a single travel lane in each direction with a sealed width of approximately 10 metres (m) with both incoming centre and road edge line-markings. It is approximately 3.1km long from its intersection with Jenolan Caves Road to the incoming Quarry weighbridge. It is the only vehicular access for personnel and product transportation to and from the Quarry. The land adjacent to the Austen Quarry is leased to a contractor whose workforce also uses the Quarry Access Road to access that land.

At its priority-controlled intersection with Jenolan Caves Road, drivers have a good sight distance of approximately 200m to the left and right when exiting from the Quarry Access Road. Widening of Jenolan Caves Road at the intersection assists drivers turning right from the Quarry Access Road to do so with minimal disruption to northbound through traffic, through provision of an auxiliary northbound lane over approximately 100m. Vehicles turning left into the Quarry Access Road use an auxiliary deceleration lane which is approximately 70m long.

3.1.2 Jenolan Caves Road

Jenolan Caves Road forms part of a classified road route (253) from the Great Western Highway near Hartley via Hampton, Jenolan Caves and Oberon to the Great Western Highway near Bathurst. It is a State Road along this route, aside from the section between Kanangra Walls Road via Edith to Oberon, which is a Regional Road. Jenolan Caves Road intersects with the Great Western Highway near Hartley, approximately 11km northwest of the town of Mount Victoria. In the vicinity of the Austen Quarry, Jenolan Caves Road has a sealed width of approximately 6.5m with shoulders of varying widths, and typically has a single travel lane in each direction, with marked centre lines and edge lines. It is an approved route for use by heavy vehicles up to 19m long B-Doubles, which may use the route 24 hours per day, seven days per week. It has a posted speed limit of 80 kilometres per hour (km/h).

Jenolan Caves Road provides a major tourist link between the Great Western Highway and the Jenolan Caves. Traffic volumes on weekends are generally higher than weekdays.

At its priority-controlled intersection with the Quarry Access Road, Jenolan Caves Road is widened to provide an auxiliary right turn (AUR) treatment and auxiliary left turn (AUL) treatment, which allow through traffic on Jenolan Caves Road to pass vehicles slowing to turn right or left into the Quarry. Drivers on Jenolan Caves Road have adequate sight distance when approaching the intersection from either direction to observe a vehicle turning or waiting to turn at the intersection.

City of Lithgow Council has been granted $490,000 as part of the 2016/17 Black Spot funding to improve sealed shoulder to high level non-skid surface in Jenolan Caves Road for up to 2.5m on the curve south of the Great Western Highway.

The intersection of Jenolan Caves Road with the Great Western Highway and Blackmans Creek Road is a four-way priority-controlled intersection. A left turn deceleration lane and a right turn bay are provided on the Great Western Highway for vehicles turning into Jenolan Caves Road.

Drivers exiting Jenolan Caves Road onto the Great Western Highway have good sight distance available of approximately 200m to the south and 400m to the north.

3.1.3 Great Western Highway

The Great Western Highway is the major arterial road linking the Sydney metropolitan area to the Blue Mountains, Lithgow, Bathurst and other regional centres in the central west of New South Wales (NSW). It provides the major road freight, tourist and commercial link between Sydney and the Central West and Western NSW, and also serves local commuting trips, local freight and industry and tourist trips.

Roads and Maritime completed the upgrade works on the Great Western Highway in the Blue Mountains in July 2015, including the widening the highway to four lanes between Emu Plains and Katoomba; and the highway safety improvements between Katoomba and Mount Victoria.

The Australian and NSW Governments are currently investing $250 million to upgrade the Great Western Highway between Katoomba and Lithgow. Some completed works included five kilometres of safety upgrades through Hartley Valley opened to traffic at the end of December 2016. This involved the upgrade at the Great Western Highway intersection with Jenolan Caves intersection, consisting the following key features:

- widening of sealed shoulder on both sides of the Great Western Highway
- provision of a continuous left turn lane from Jenolan Caves Road into the Great Western Highway westbound and a single westbound through lane in the Great Western Highway.
- increased length of right turn bay in the Great Western Highway into Jenolan Caves Road.
- relocation of the start of the westbound overtaking lane to west of Jenolan Caves Road to reduce the number of traffic manoeuvres occurring at the intersection.

As westbound traffic is limited to one lane, this layout reduces the gap required for turning right from Jenolan Caves Road into the Great Western Highway, and hence reduces the delay for traffic turning from the minor road.

It is understood that traffic monitoring will commence in 2022 for any necessary upgrade at this intersection.

3.2 Historic Traffic Volumes

Roads and Maritime collects data on traffic volumes at certain locations on the road network. Traffic data for the Great Western Highway between Meadow Flat and Falconbridge was obtained from the Roads and Maritime Traffic Volume Viewer at locations as shown in in Figure 3.2.

Figure 3.2: Roads and Maritime Count Stations

3.2.1 Heavy Vehicles

Table 3.1 shows the Heavy vehicle percentage of the total vehicles in Great Western Highway.

Table 3.1: Heavy Vehicle Data for Great Western Highway (2017)

Count Station	Location	Daily Heavy Vehicle %
6105	60m West of Curly Dick Road, Meadow Flat	18%
6191	1.41km South of Forty Bends Road, Hartley	20%
6188	260m West of Victoria Street, Mount Victoria	17%
T0485	300m South of Carawatha Road, Blackheath	27%

Source: Roads and Maritime; peak hour heavy vehicle percentage based on monthly data in March 2017

The proportion of heavy vehicles on the Great Western Highway is reported to be approximately 20 percent of total daily traffic which is consistent with this data.

3.2.2 Annual Average Daily Traffic

The data is expressed in terms of Annual Average Daily Traffic (AADT) which is an annualised measure of the number of vehicles crossing a point on each road.

Historic AADT data for roads in the vicinity of the Austen Quarry are presented in Table 3.2.

Table 3.2: AADT Data for Great Western Highway (2015 to 2017)

Count Station	Location	2015	2016	2017	Growth Rate p.a.
6191	1.41km South of Forty Bends Road, Hartley	8,699	-	8,687	-0.1%
6105	60m West of Curly Dick Road, Meadow Flat	8,177	-	8,487	1.9%
6188	260m West of Victoria Street, Mount Victoria	11,174	-	11,337	0.7%
T0485	300m South of Carawatha Road, Blackheath	11,898	12,096	12,471	2.4%

AADT data for years 1992 to 2005 are presented in Table 3.3. The data suggests that over the period for which the data is available, AADT volumes on the Great Western Highway have fluctuated but have generally increased steadily at an average of approximately 2 percent per annum. Insufficient data is available to determine growth on Jenolan Caves Road. It is noted that in more recent years, Roads and Maritime only collects traffic data in one travel direction at these count stations in the Great Western Highway, and therefore a growth rate cannot be established for traffic in both directions.

Table 3.3: AADT Data (1992 to 2005)

Location	1992	1996	1999	2002	2005	Growth Rate p.a.
Great Western Highway						
Hartley, West of Jenolan Caves Road	6,711	8,027	7,485	8,583	8,757	2.3%
Little Hartley, East of Cox River Road	8,443	9,511	9,598	10,820	10,948	2.3%
East of Jenolan Caves Road	8,059	8,371	8,548	9,565	9,968	1.8%
Jenolan Caves Road						
Oberon, East of Dudley Street	800	-	-	-	-	-

Traffic volumes on the Great Western Highway between Mount Victoria and Lithgow generally decrease towards the west based on volumes[1] presented in the highway

[1] *Traffic volumes summarised in Appendix 4 of the Review of Great Western Highway Upgrades West of Katoomba – Independent review, Evans & Peck, (2012). The data was originally sourced from the Great Western Highway Upgrade, Mount Victoria to Lithgow Implementation Strategy, RTA Alliance, (2011).*

upgrade assessment review (Evans and Peck, 2012). These traffic volumes are shown as follows:

- Victoria Pass 14,000 vehicles per day
- Little Hartley 10,400 vehicles per day
- Hartley 8,800 vehicles per day
- Forty Bends 7,900 vehicles per day.

3.3 Traffic Survey Program

To quantify current traffic conditions on the immediate roads serving the subject site, a program of additional traffic surveys was commissioned by TTPP.

Automatic tube count surveys were completed over seven days between Thursday 16 February 2017 and Wednesday 1 March 2017. The tube count surveys collected vehicle volume and classification data at hourly intervals over a 14-day period on Jenolan Caves Road and the Quarry Access Road. The locations of the tube count surveys are displayed on Figure 3.3.

Table 3.4 provides a summary of the traffic volumes collected in 2017.

Figure 3.3: Traffic Survey Location

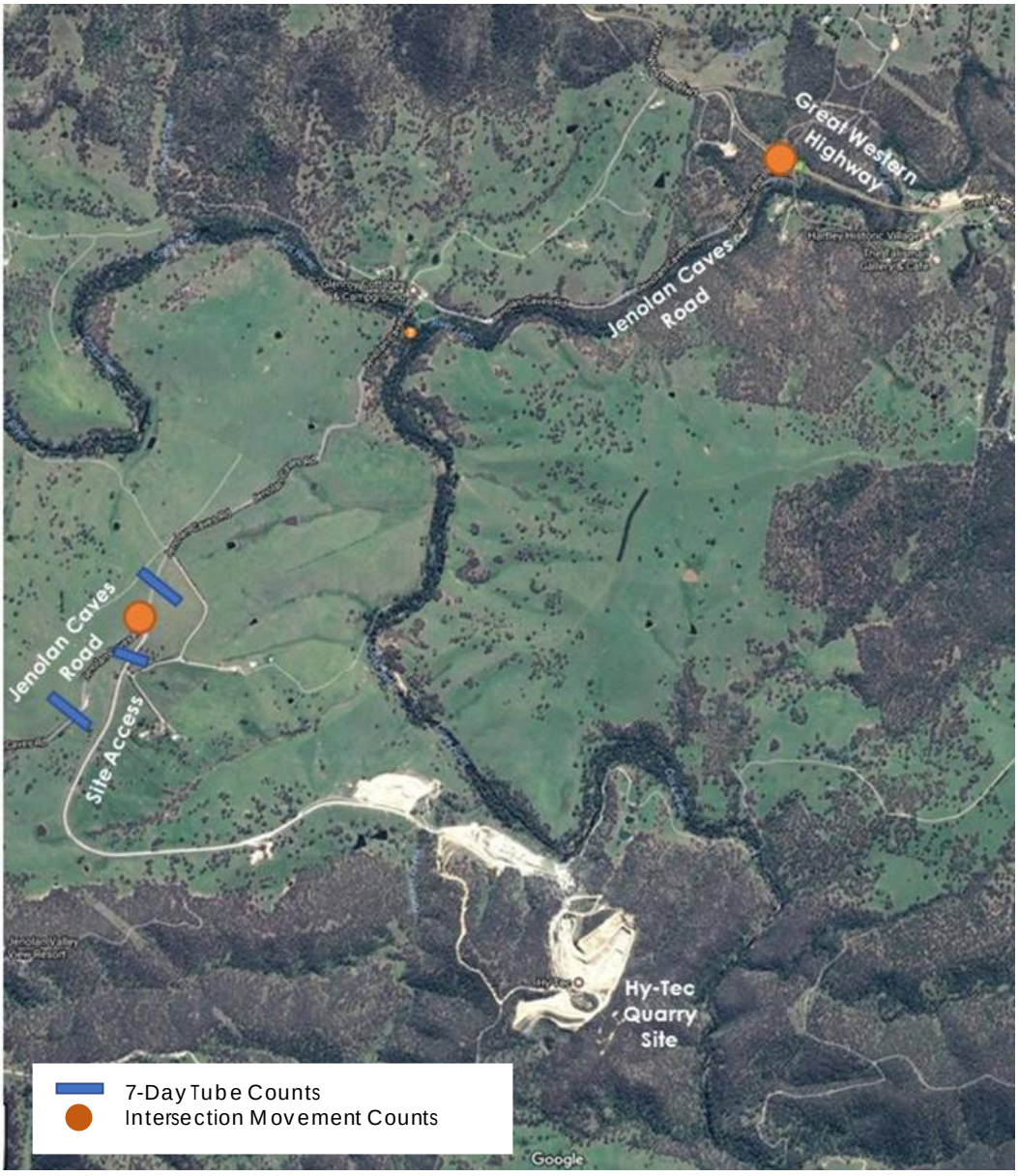


Table 3.4: Surveyed 2017 Average Daily Two-Way Traffic Volumes (vehicles/day)

Day and Date	Jenolan Caves Road North of Quarry Access Road	Jenolan Caves Road South of Quarry Access Road	Quarry Access Road
Monday	1,534	889	371
Tuesday	1,450	884	349
Wednesday	1,422	902	302
Thursday	1,366	882	329
Friday	1,678	1,097	346
Saturday	1,657	1,374	157
Sunday	1,467	1,447	15
Average Weekday	**1,490**	**931**	**339**

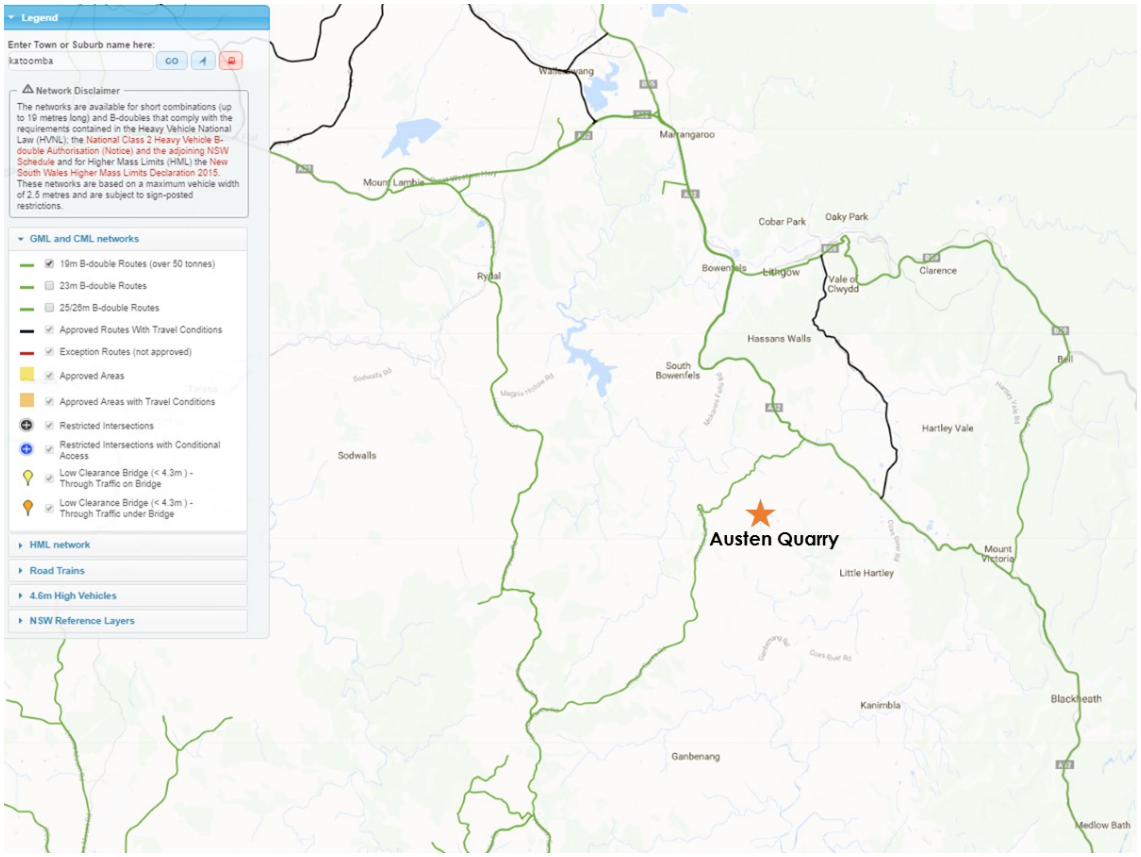
The surveys indicate that Quarry Access Road carried between 15 and 371 vehicles per day (two way) over the two weeks of surveys, and an average of 339 vehicles per day on weekdays. The traffic activity at the Quarry differed significantly between weekdays and weekend days, with an average of 157 vehicles per day on the Saturdays and 15 vehicles per day on the Sundays. In contrast, the busiest days on Jenolan Caves Road were Friday and weekend days, and the Quarry traffic was at its lowest on weekend days. The Quarry thus makes only a very minor contribution to weekend day traffic on Jenolan Caves Road compared with weekdays.

Jenolan Caves Road carried between 1,366 and 1,678 vehicles per day north of the Quarry Access Road, and between 882 and 1,447 vehicles per day south of the Quarry Access Road.

3.4 Approved B-Double Route

Both Great Western Highway and Jenolan Caves Road are approved B-Double routes, as shown in the green lines in the Restriction Access Vehicle Map in Figure 3.4. These routes permit up to B-Double vehicles up to 19m (over 50 tonnes).

Figure 3.4: B-Double Routes



Source: Roads and Maritime

3.5 Traffic Composition

The surveys described in Section 3.3 also provided data on the composition of traffic on the roads, using the Austroads (2004) Vehicle Classification System. Light vehicles include motorcycles, cars, vans, 4WDs, and utilities (including those towing a trailer or caravan). Heavy vehicles include single unit "rigid" trucks and buses with two to four axles and articulated vehicles such as semitrailers, rigid trucks with trailers, B-doubles and road trains. Table 3.5 provides a summary of the percentage composition of the traffic on the average weekday and Saturday over the seven-day survey period.

Table 3.5: Average Daily Traffic Composition (February 2017)

Site No.	Jenolan Caves Road North of Quarry Access Road	Jenolan Caves Road South of Quarry Access Road	Quarry Access Road
Vehicles per Weekday			
Light	1,045	673	69
Rigid	125	94	35
Articulated	317	164	232

Site No.	Jenolan Caves Road North of Quarry Access Road	Jenolan Caves Road South of Quarry Access Road	Quarry Access Road
Total	1,487	931	335
Percent of Weekday Traffic			
Light	70%	72%	20%
Rigid	8%	10%	10%
Articulated	21%	18%	69%
Total	100%	100%	100%
Vehicles per Saturday			
Light	1,398	1,223	31
Rigid	135	112	12
Articulated	115	39	113
Total	1,648	1,374	155
Percent of Saturday Traffic			
Light	85%	89%	20%
Rigid	8%	8%	7%
Articulated	7%	3%	73%
Total	100%	100%	100%

Note: Difference between total vehicles per weekday and Table 3.4 is due to "Class 13" classification unknown vehicles

Table 3.5 demonstrates the difference between the types of vehicles on the Quarry Access Road and those on Jenolan Caves Road on the average weekday and Saturday. On the average weekday, approximately 30 percent of vehicles on Jenolan Caves Road are heavy vehicles, whilst heavy vehicles were approximately 80 percent of vehicles on the Quarry Access Road. On Saturdays, all heavy vehicles (including those travelling to and from Austen Quarry as well as those not associated with the Quarry) accounted for between approximately 11 percent and 15 percent of total traffic on Jenolan Caves Road.

3.6 Peak Hour Traffic Volumes

A review of the traffic survey results indicates that on the average weekday, the traffic generated by the Austen Quarry peaked at different times to the passing traffic on Jenolan Caves Road. Table 3.6 presents the weekday hourly volumes measured at each of the survey locations over the hours during which the Austen Quarry operates.

It is noted that approved hours for product despatch at the Austen Quarry commenced at 5.00am. Heavy vehicles recorded between 4.00am and 5.00am are trucks arriving prior to being loaded for 5.00am. It is common for trucks to park in the vicinity of the site administrative facilities until 5.00am.

Table 3.6: Average Weekday Hourly Two-Way Traffic 4.00am to 10.00pm (vehicles/hour) – February 2017

Time	Jenolan Caves Road North of Quarry Access Road				Jenolan Caves Road South of Quarry Access Road				Quarry Access Road			
	Light	Rigid	AV	Total	Light	Rigid	AV	Total	Light	Rigid	AV	Total
4.00-5.00	22	2	9	33	4	1	6	11	1	0	7	9
5.00-6.00	50	3	19	73	15	3	6	24	10	2	21	**33**
6.00-7.00	47	5	19	70	22	5	5	32	3	1	19	23
7.00-8.00	60	8	20	88	31	6	10	46	2	3	17	22
8.00-9.00	72	9	25	106	40	7	14	61	3	2	19	23
9.00-10.00	83	8	23	114	48	5	12	65	2	3	19	23
10.00-11.00	90	12	30	**131**	49	9	16	**75**	3	3	22	28
11.00-12.00	79	11	27	117	47	8	14	69	3	4	19	25
12.00-13.00	66	8	25	100	47	6	12	65	4	2	18	24
13.00-14.00	62	9	27	98	46	6	12	65	3	3	19	**25**
14.00-15.00	69	10	21	**100**	55	9	10	**73**	4	3	14	21
15.00-16.00	70	9	16	96	50	8	7	65	8	3	13	24
16.00-17.00	74	9	14	97	59	8	5	72	5	1	12	18
17.00-18.00	66	7	9	82	55	4	6	65	8	3	7	17
18.00-19.00	44	7	6	57	39	5	4	48	2	1	3	6
19.00-20.00	32	3	5	40	21	3	4	27	1	1	4	5
20.00-21.00	18	3	3	24	17	1	2	20	1	1	1	4
21.00-22.00	13	2	2	16	11	1	2	14	1	1	0	2

Note: bold is the peak hour before and after midday at each survey location

The results demonstrate that on the average weekday, the Austen Quarry traffic peaks earlier in the morning and earlier in the afternoon than the traffic on Jenolan Caves Road. The variation in hourly traffic on the Quarry Access Road is however quite low throughout the average weekday, ranging between 9 and 33 vehicles per hour

between 4.00am and 6.00pm. Overall peak hour volumes on Jenolan Caves Road are relatively low, with up to 131 vehicles per hour using the road.

Traffic volumes on Jenolan Caves Road are subject to tourist traffic, particularly on weekends. A review of the traffic survey results indicates that on the Saturday, the traffic generated by the Austen Quarry peaked at different times to the passing traffic on Jenolan Caves Road. Table 3.7 presents the Saturday hourly volumes measured at each of the survey locations over the hours during which the Austen Quarry operates.

Table 3.7: Average Saturday Hourly Two Way Traffic 5.00am to 3.00pm (vehicles/hour)

Time	Jenolan Caves Road North of Quarry Access Road				Jenolan Caves Road South of Quarry Access Road				Quarry Access Road			
	Light	Rigid	AV	Total	Light	Rigid	AV	Total	Light	Rigid	AV	Total
5.00-6.00	35	2	16	53	9	2	4	15	6	2	17	**25**
6.00-7.00	45	4	10	59	22	7	2	30	2	1	11	13
7.00-8.00	51	11	9	70	42	6	4	52	2	1	9	11
8.00-9.00	91	8	8	107	75	7	3	84	1	1	9	10
9.00-10.00	125	14	13	151	94	9	3	105	1	2	16	19
10.00-11.00	111	13	15	138	96	8	2	105	1	2	18	20
11.00-12.00	126	14	15	**155**	100	7	4	**111**	1	1	19	**21**
12.00-13.00	93	8	7	108	94	6	0	100	7	2	6	15
13.00-14.00	102	8	1	111	101	9	2	111	0	1	0	1
14.00-15.00	106	12	3	**120**	107	11	3	**120**	1	1	0	2

Note bold is the peak hour before and after midday at each survey location

The results demonstrate that on Saturdays, the variation in hourly traffic on the Quarry Access Road is however quite low throughout morning, ranging between 10 and 25 vehicles per hour between 5.00am and midday. After midday, the traffic on the Quarry Access Road declined to reach a very low level during the afternoon operating hours. Overall peak hour volumes on Jenolan Caves Road are relatively higher than the Quarry Access Road, albeit with fewer than 155 vehicles per hour using the road during the Austen Quarry operating hours, which is higher than the average weekday morning and afternoon peak hours of 131 vehicles per hour and 100 vehicles per hour, respectively (Table 3.6).

3.7 Intersection Survey

The intersection turning movement surveys completed on Thursday 16 February 2017 identified the busiest hours at the intersections of Jenolan Caves Road with the Quarry Access Road and the Great Western Highway. The peak hours at the two intersections,

which are those intersections most directly impacted by current/future quarry operation coincide during the peak hours, namely, 8.15am to 9.15am, and 3.30pm to 4.30pm. These peak hours represent the hours during which the highest number of vehicles passed through each intersection during the surveyed periods, thus the times at which the operation of the intersections would be at their worst. They are not necessarily the peak hours associated with the movement of vehicles generated by the Quarry.

The turning movement surveys are presented in Appendix A, and the two-way volumes recorded during the peak hours on each of the intersection approaches are summarised in Table 3.8.

Table 3.8: Weekday Peak Hour Two Way Traffic at Intersection Approaches (vehicles/hour)

Intersection and Approach	AM Peak	PM Peak
Jenolan Caves Road and Great Western Highway	8.15am-9.15am	3.30pm-4.30pm
Blackmans Creek Road	4	3
Great Western Highway (East)	536	619
Jenolan Caves Road	91	85
Great Western Highway (West)	469	559
Jenolan Caves Road and Quarry Access Road	8.15am-9.15am	3.30pm-4.30pm
Jenolan Caves Road (North)	83	83
Quarry Access Road	24	23
Jenolan Caves Road (South)	59	70

The turning movement data at the Quarry Access Road intersection (Appendix A) indicates that during the 3-hour morning survey periods, the Quarry generated a total of 29 inbound and 25 outbound trips. During the 3-hour evening survey period, the Quarry generated a total of 21 inbound and 32 outbound trips, over 50 percent of these trips were associated with light vehicles in either inbound or outbound direction.

Over the survey period, all heavy vehicle movements in and out of the Quarry Access Road were to and from the north. Over the six hours surveyed, approximately 70 percent of light vehicles generated by the Austen Quarry travelled to and from the north, and 30 percent of light vehicles travelled to and from the south.

3.8 Austen Quarry Traffic Generation

Data was obtained from the Austen Quarry weighbridge providing information on the total number of truck loads between 1 July 2016 and 30 April 2017 inclusive. On the basis of this data, the average number of loads per weekday and Saturday has been calculated for the period as a whole, and for the days during which the traffic surveys were conducted, taking into consideration the number of operating hours each day, the variation in operating hours between weekdays and Saturdays, and public holiday closures. The results are summarised in Table 3.9.

Table 3.9: Austen Quarry Truck Loads at Weighbridge

	Total Number of Truck Loads	Average Truck Loads per Weekday	Average Truck Loads per Saturday
Weighbridge data (1/7/ 2016 to 30/4/2017)	27,883	117	68
Weighbridge data (aligned with TTPP Survey Period 15/2/2017 to 28/2/2017)	1,425	130	63

During the 10-month period, the Austen Quarry produced an average of 117 truckloads of products per weekday, and 68 truckloads of product per Saturday, which generated an average of 234 truck trips per weekday and 136 truck trips per Saturday. This is equivalent to an average of 14 truck trips per operating hour (including despatch of loaded trucks and return of empty trucks). Comparison between the records from the Quarry and the surveyed traffic during February 2017 (Section 3.5) indicates that the traffic surveys correlate well with the despatch records. The despatch records show that on those surveyed days, an average of 130 truckloads of products were despatched per weekday, generating 260 truck trips per weekday on the Quarry Access Road and Jenolan Caves Road to the north. The traffic surveys show an average of 267 heavy vehicle trips generated per weekday over the same period, being 35 rigid truck trips and 232 articulated truck trips (Table 3.5). The small difference of seven truck trips per weekday is likely to be truck trips which are not associated with despatch of quarry products, for example, deliveries of consumables, maintenance and repair vehicles, and contractors.

On the surveyed Saturdays, the surveyed average of 125 truck trips (63 truckloads) of product per day correlates well with the records from the Quarry (63 truckloads).

Notably, the Quarry is currently operating below its production limit (i.e. maximum 250 truckloads per day and average 150 truckloads).

Table 3.9 demonstrates that the level of activity on the surveyed weekdays of 260 truck trips per weekday (average of less than 10 truckloads per hour over the operating

hours) was above the average of 234 truckloads per weekday calculated over the 10 months from July 2016 to April 2017. The surveyed weekdays can be considered to have covered a reasonably busy period over the year and are thus considered to be a reasonably robust basis for examining the existing road transport environment associated with the Austen Quarry, being both consistent with the Quarry's records and representing above average activity.

Light vehicle traffic generation by the Austen Quarry is the result of the workforce of 16 people arriving and departing each day, together with the arrival and departure of visitors plus/or contractors. The surveyed average of light vehicle trips per weekday also includes trips associated with the movement of staff to and from the adjacent leased land, which is not related to activity at the Austen Quarry. For the purpose of this assessment, the light vehicle traffic generated by the Austen Quarry is estimated as follows:

- 16 workers arriving and departing at start and end of shift = 32 vehicle trips per day
- 10 visitors or contractors arriving and departing on average weekday = 20 vehicle trips per weekday
- 4 visitors or contractors arriving and departing on Saturday = 8 vehicle trips per Saturday.

The balance of the surveyed light vehicle trips on the Quarry Access Road is assumed to be the movement of staff for the adjacent site and a number of Quarry staff being required to exit and re-enter the Quarry during the day.

The surveyed traffic generated by the Austen Quarry has been assessed to estimate its contribution to traffic on Jenolan Caves Road on the average weekday. The resulting volumes are summarised in Table 3.10 for the average weekday and Saturday total traffic and for the peak hours previously identified as being the busiest weekday hours associated with the Quarry traffic and Jenolan Caves Road traffic.

Table 3.10: Austen Quarry Two Way Traffic on Surveyed Roads February 2017 (vehicles/hour)

Time	Jenolan Caves Road North of Quarry Access Road				Jenolan Caves Road South of Quarry Access Road				Quarry Access Road			
	Light	Rigid	AV	Total	Light	Rigid	AV	Total	Light	Rigid	AV	Total
Weekday												
4.00-5.00	1	0	7	8	0	0	0	0	1	0	7	9
5.00-6.00	6	2	21	29	3	0	0	3	9	2	21	32
10.00-11.00	2	3	22	27	0	0	0	0	2	3	22	27
11.00-12.00	2	4	19	24	0	0	0	0	2	4	19	24

Time	Jenolan Caves Road North of Quarry Access Road				Jenolan Caves Road South of Quarry Access Road				Quarry Access Road			
	Light	Rigid	AV	Total	Light	Rigid	AV	Total	Light	Rigid	AV	Total
16.00-17.00	3	1	12	16	1	0	0	1	4	1	12	17
17.00-18.00	6	3	7	15	1	0	0	1	7	3	7	16
Weekday Daily Total	50	35	232	317	9	0	0	9	59	35	232	325
Saturday												
5.00-6.00	4	2	17	23	1	0	0	1	5	2	17	24
11.00-12.00	0	1	19	20	1	0	0	1	1	1	19	21
12.00-13.00	6	2	6	14	1	0	0	1	7	2	6	15
14.00-15.00	0	1	0	1	1	0	0	1	1	1	0	2
Saturday Daily Total	15	12	113	139	7	0	0	7	22	12	113	146

Note: the above traffic volumes include two-way Quarry truck trips (not laden loads).

Over the two weeks of surveys, on the average weekday, the Austen Quarry contributed approximately 22 percent of the total traffic and 60 percent of heavy vehicle traffic on Jenolan Caves Road north of the Quarry Access Road, and less than 1 percent of the total traffic on Jenolan Caves Road south of the Quarry Access Road. On the Saturday, the Austen Quarry contributed six percent of the total traffic and 50 percent of heavy vehicle traffic on Jenolan Caves Road north of the Quarry Access Road, and less than 1 percent of the total traffic on Jenolan Caves Road south of the Quarry access.

Thus, the Austen Quarry generates approximately half of the heavy vehicles on Jenolan Caves Road north of the Quarry Access Road. Other heavy vehicles using Jenolan Caves Road include tourist coaches, buses, and some trucks associated with Oberon White Granite Quarry (Mudgee Stone Company) which has approval to generate around 90 two ways trips per day (AADT); Oberon Hardrock Quarry (Oberon Quarries) which generates traffic principally to Sydney markets at a rate of up to 400 000 tpa and the Highland Pine sawmill complex at Oberon which is reported to generate just over 100 trucks per day.

3.9 Austen Quarry Traffic Distribution

The surveyed traffic volumes and Quarry records provided by Hy-Tec provide information regarding how the number of trucks despatched varies through the day. Figure 3.5 presents the number of inbound and outbound heavy vehicle movements on the Quarry Access Road throughout the average weekday, as surveyed during February 2017.

Figure 3.5: Average Weekday Heavy Vehicles on the Quarry Access Road February 2017

Figure 3.5 demonstrates that the distribution of truck trips through the day is similar for inbound and outbound trucks, i.e. trucks are not typically held at the Quarry waiting for despatch throughout the day. There is a decrease in truck trips made during the morning "commuter" peak hours, with a peak in outbound trips between 5am and 6am, followed by a decrease in outbound trips being made between 8am and 9am.

The surveys show a small number of empty trucks arrive at the Quarry prior to 5am prior to being loaded at 5.00am. It is common for trucks to park in the vicinity of the site administrative facilities until 5.00am. Trucks proceed to the incoming weighbridge after 5am.

School zones on the Great Western Highway operate between 8am and 9.30am, and between 2.30pm and 4pm. The Austen Quarry operating hours for product despatch from 5am to 10pm allow Hy-Tec to despatch trucks earlier in the morning so as to reduce the impacts of the Quarry trucks during commuter peaks and during operation of the morning school zones along the Great Western Highway. During the afternoon, the number of trucks despatched from the Quarry is generally lower than the morning, and the number of trucks travelling on the Great Western Highway during the commuter peak and school zone periods is low.

Hy-Tec's management of despatch times benefits the local communities in Hartley and throughout the Blue Mountains by reducing the impact of the truck traffic during the

more sensitive hours, but also benefits Hy-Tec by reducing the number of truck trips made at times when traffic speeds are lower due to either school zone limits or increased demand.

3.10 Road Safety Review

3.10.1 Hartley Area

As part of the baseline conditions assessment, validated crash data was obtained from Roads and Maritime for the most recent five-year period available at that time, being from 1 July 2011 to 30 June 2016 inclusive.

The data is based on crashes reported to the Police, including Jenolan Caves Road between the Great Western Highway and McKanes Falls Road, and McKanes Falls Road between Jenolan Caves Road and Great Western Highway. Over the five years, 16 crashes were reported. Of these, 11 crashes occurred between the Quarry Access Road and the Great Western Highway, including at the intersection with the Great Western Highway, and these are summarised in Table 3.11.

The locations of the crashes as plotted by Roads and Maritime are provided in Appendix B. It is noted that while all crashes are included in the graphic, some are overlaid by a crash reported at the same location. In these cases, one or more crashes are not identified by their ID number and so may not be easily identified in the graphic. The crashes on Jenolan Caves Road were typically on the bends to the north of the Quarry Access Road.

Table 3.11: Reported Crash Types Jenolan Caves Road North of the Quarry Access Road (2011 to 2016)

	Single Vehicles	Multiple Vehicles
	Off Path, on Curve	Opposite Direction
Total Crashes	10	1
Location		
At intersection	0	1
Mid-block	10	0
Road Surface Condition		
Dry Road	7	1
Wet Road	3	0
Natural Lighting		
Dawn	1	0
Daylight	8	1
Darkness	1	0
Weather		
Fine	5	1

	Single Vehicles	Multiple Vehicles
	Off Path, on Curve	Opposite Direction
Fog or mist	1	0
Overcast	2	0
Raining	2	0
Vehicle Type		
Motorcycle	3	1
Car	4	0
Light Truck	1	0
Semi-trailer	1	0
B-Double	1	0
Severity of Crash		
Fatal	0	1
Injury	6	0
Non-injury	4	0
Factors*		
Speed	10	1
Fatigue	3	0
None	0	0

** More than one factor can be nominated for a single crash*

The majority of crashes involved a single vehicle leaving the carriageway and typically striking an object such as an embankment. Speed was a main contributing factor in all of these crash types, and all occurred on bends on Jenolan Caves Road.

The head-on crash involved a motorcycle and large rigid vehicle in Jenolan Caves Road north of the Glenroy Bridge. The records suggest that this fatal event involved the motorcycle travelling on the incorrect side of the road.

The reported crashes occurred between 6.20am and 8.15pm, although over 50 percent of the crashes (6 crashes) occurred around mid-day between 11.22am and 13.42pm. This suggests that icy road conditions were not a contributing factor to crashes on Jenolan Caves Road. Two of these crashes occurred when the road surface was wet. The fatal event occurred in fine weather conditions during mid-day at 12.50pm.

The review of the history of crashes on Jenolan Caves Road indicates that although there is no specific location (such as an intersection) with a particularly poor record, the speed of vehicles on bends to the north of Austen Quarry have resulted in drivers losing control of their vehicle.

The crash record indicates that heavy vehicles do not appear to contribute to the history of crashes in Jenolan Caves Road. Hy-Tec Industries have confirmed that there have been no crashes involving Quarry vehicles.

3.10.2 Blue Mountains Area

Validated crash data was also obtained from the Roads and Maritime for all crashes on the Great Western Highway between Lapstone and Lithgow for the most recent five-year period available, being 1 July 2011 to 30 June 2016 inclusive. A total of 1,111 crashes were reported, as follows:

- 8 fatal crashes, which resulted in 9 fatalities
- 589 injury crashes, which resulted in 789 people being injured
- 514 non-casualty crashes.

Crashes are identified by a coding system which groups crash types into general categories such as intersection, overtaking or off path. They are then further categorised into specific crash types, such as intersection cross traffic, overtaking cutting in, off path on straight to left, or off path to left on right bend into object. Review of the data reveals the following key findings:

- The single most common general crash type was rear-end type crashes. These accounted for 34 percent of all crashes (380 crashes).
- The next most common general crash type was of single vehicles which lost control and left the carriageway. These accounted for 31 percent of all crashes (347 crashes).
- The third most common general crash type was intersection-type crashes, which accounted for 28 percent of all crashes (306 crashes).
- 110 crashes, i.e., 10 percent of all crashes, involved a rigid, articulated truck or a B-Double. Of these, approximately 39 percent were rear end type crashes, 25 percent involved single vehicles which left the carriageway, 15 percent involved vehicles changing lane, and 3 percent were head on crashes.
- Pedestrians were involved in two crashes.
- Speed was nominated as a contributing factor in 35 percent of crashes, and fatigue was nominated as a contributing factor in 8 percent of crashes, noting these factors are not mutually exclusive.
- 38 percent of crashes (420 crashes) occurred on a wet road surface and 0.5 percent (5 crashes) occurred on a snow or iced road surface.
- 29 percent (321 crashes) occurred during rain, 10 percent (116 crashes) occurred when overcast, and 3 percent (29 crashes) occurred during fog or mist.
- 28 percent of crashes occurred on weekend days, and 72 percent on weekdays.
- The worst hours of the day for crashes were 3pm to 4pm (8.3 percent), 1pm to 2pm (8.1 percent), 4pm to 5pm (7.7 percent) and 5pm to 6pm (6.8 percent).

The locations of all crashes along the Great Western Highway between Lapstone and Lithgow are also presented in Appendix A.

3.11 Roadway Capacity and Efficiency

The capacity of a road is defined as the maximum hourly rate at which vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under the prevailing roadway, traffic and control conditions. The capacity of a single traffic lane will be affected by factors such as the pavement width and restricted lateral clearances, the presence of heavy vehicles and grades.

Level of Service (LOS) is defined as a qualitative measure describing the operational conditions within a traffic stream as perceived by drivers and/or passengers. A LOS definition generally describes these conditions in terms of factors such as speed and travel time, freedom to manoeuvre, traffic interruptions, comfort, convenience and safety. LOS A provides the best traffic conditions, with no restriction on desired travel speed or overtaking. LOS B, C and D describe progressively worse traffic conditions. LOS E occurs when traffic conditions are at or close to capacity, and there is virtually no freedom to select desired speeds or to manoeuvre in the traffic stream. The service flow rate for LOS E is taken as the capacity of a lane or roadway.

Austroads (2013) provides guidelines for the capacity of two lane, two-way rural roads, which in turn, refers to the Highway Capacity Manual (Transportation Research Board [TRB], 2010). TRB (2010) distinguishes between different categories of two lane two-way roads, with Class I being roads on which motorists expect to travel at relatively high speeds. They most often serve long-distance trips or provide connecting links between facilities that serve long-distance trips. Class II roads are those on which motorists do not necessarily expect to travel at high speeds, and may function as access routes to Class I facilities, serve as scenic or recreational routes or pass through rugged terrain.

On this basis, Jenolan Caves Road is considered a Class II road. The LOS for Class II roads is defined only by percent-time-spent-following (PTSF). The LOS criteria for Class II two-lane highways are as shown in Table 3.12.

Table 3.12: Automobile LOS for Two-Lane Highway (Class II)

LOS	Percent Time Sent Following PRSF (%)
A	≤ 40
B	> 40-55
C	> 55-70
D	> 70-85
E	> 85

TRB (2010) presents detailed methods for calculating the PTSF, however it also presents a basic relationship between traffic flow rate and PTSF for base conditions on a two-way road. This indicates that below a two-way peak hourly two-way volume of around 650 vehicles per hour, the PTSF would typically be below 40 percent, and LOS would be A for Class II roads (refer to Table 3.12). Nevertheless, the PTSF for Jenolan Caves Road has been assessed based on the surveyed traffic conditions.

The PTSF is estimated from the demand traffic volumes, the directional distribution of that traffic, and the percentage of no-passing zones. As a general review of the existing Levels of Service on the subject roads, the following assumptions/estimates have been made in calculating the PTSF:

- The passenger-car equivalent for heavy vehicles for calculation of PTSF 1.8 – this is a factor which is used to take into account the influence of heavy vehicles on the flow of traffic on a road, assessing each heavy vehicle as a multiple of passenger cars. This factor applies where two-way traffic volumes are below 600 passenger car units per hour (pc/hr), and assumes that the terrain causes heavy vehicles to reduce their speeds substantially below that of passenger cars, but not to operate at crawl speeds for any significant length of time or at frequent intervals.
- 100 percent no-passing opportunities along the routes, i.e. along the route, drivers would be restricted from passing another vehicle for the whole length of Jenolan Caves Road between the Quarry Access Road and the Great Western Highway. Jenolan Caves Road has a single travel lane in each direction with no overtaking lanes between the Quarry Access Road and the Great Western Highway, so restrictions on overtaking would generally be as a result of centre line marking which prevents drivers from crossing to the wrong side of the carriageway to overtake due to sight distance or other constraints.

On this basis, the surveyed volumes have been converted to passenger-car units, and the PTSF and Levels of Service results estimated in Table 3.13.

Table 3.13: PTSF and Levels of Service

Location	AM Peak Hour				PM Peak Hour			
	Hour Starting	pc/hr (2-way)	PTSF	LOS	Hour Starting	pc/hr (2-way)	PTSF	LOS
Weekday								
Jenolan Caves Road North of Quarry Access Road	10am	164	35.4	A	12pm	127	32.6	A
Jenolan Caves Road South of Quarry Access Road	10am	95	32.0	A	2pm	87	31.4	A
Saturday								
Jenolan Caves Road North of Quarry Access Road	11am	178	39.5	A	2pm	131	36.9	A
Jenolan Caves Road South of Quarry Access Road	10am	112	35.4	A	1pm	119	35.9	A

The results in Table 3.13 indicate that, based on the assumptions discussed above, the surveyed locations would be expected to experience good Levels of Service with regard to roadway efficiency and delays during the busiest hours.

It should be noted that this LOS is a general measure of the vehicle operating conditions on the roads with regard to the number of vehicles and their potential for interaction with each other. It does not reflect the existing road pavement conditions.

3.12 Intersection Operation

The operation of the key intersections within the study area have been assessed using SIDRA Intersection 7, a computer based modelling package which assesses intersection performance under prevailing traffic conditions.

The operating characteristics can be compared with the performance criteria set out in Table 3.14. It is noted that average delay per vehicle is expressed in seconds per vehicle and is measured for the movement with the highest average delay per vehicle at priority intersections such as the two surveyed intersections on Jenolan Caves Road.

3.13 Performance of Key Intersections

3.13.1 Model Performance Indicators

SIDRA Intersection 7 modelling provides several useful indicators to determine the level of intersection performance.

Level of Service (LOS) is a basic performance parameter used to describe the operation of an intersection. Levels of service indicators range from A (indicating good

intersection operation) to F (indicating over-saturated conditions with long delays and queues). At priority controlled (give-way and stop controlled) and roundabout intersections, the LOS is based on the modelled delay (seconds per vehicle) for the most delayed movement (refer to Table 3.14).

Table 3.14: Level of Service

Level of Service	Average Delay (seconds per vehicle)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	Less than 14	good operation	good operation
B	15 to 28	good with acceptable delays and spare capacity	acceptable delays and spare capacity
C	29 to 42	satisfactory	satisfactory, but accident study required
D	43 to 56	operating near capacity	near capacity and accident study required
E	57 to 70	at capacity At signals, incidents will cause excessive delays.	at capacity, requires other control mode
F	Greater than 71	unsatisfactory with excessive queuing	unsatisfactory with excessive queuing; requires other control mode

Source: Roads and Maritime Guide to Traffic Generating Developments, 2002

3.13.2 Intersection Performance

SIDRA Intersection 7.0 modelling summarised the existing LOS during the AM and PM peaks for the Jenolan Caves Road and the Quarry Access Road intersection, with the worst average delay governing the intersection LOS. This is shown below in Table 3.15 and Appendix C in detail.

Table 3.15: Existing Intersection Level of Service

Approach	AM Peak LOS		PM Peak LOS	
	Delay (sec/veh)	Level of Service	Delay (sec/veh)	Level of Service
Jenolan Caves Road/ Quarry Access Road	12	A	13	A
Great Western Highway/Jenolan Caves Road	25	B	21	B

Both intersections currently operate satisfactorily at LOS B or better during both the AM and PM peak hours.

3.14 Pedestrians

There are no formal pedestrian footpaths on either side of the road in the vicinity of the subject site. However, pedestrian activity along Jenolan Caves Road and the Quarry Access Road is negligible and formal facilities are not warranted along these roads.

3.15 Bus Services

There are a number of private bus operators with regular bus services operating between Mount Victoria, Lithgow and Oberon in the vicinity of the Quarry. These bus operators are:

- Blue Mountains Bus Company (school buses)
- Lithgow Bus Lines (school buses)
- NSW TrainLink.

Regular bus services along Jenolan Caves Road are summarised in Table 3.16 below.

Table 3.16: Peak Period Frequency of Bus Services on Jenolan Caves Road

Bus Operator	7am to 9am	3pm to 5pm
Lithgow Bus Lines (during peak periods)	2	2
NSW TrainLink (during peak periods)	2	1
NSW Train Link (during off-peak period)	1	2

A Blue Mountains Bus Company school bus also runs along the Great Western Highway between Lithgow and the Upper Blue Mountains in the morning and afternoon. Suburbs with schools included in the service are:

- Blackheath
- Blaxland
- Faulconbridge
- Glenbrook
- Hazelbrook
- Katoomba
- Lapstone
- Lawson
- Leura
- Lithgow
- Mount Riverview
- Mount Victoria
- Springwood
- Warrimoo

- Wentworth Falls
- Winmalee.

Approximately 60 bus routes service schools within these suburbs before and after school times. There are one to two services per route in the morning and afternoon periods.

In addition, there are a number of sight-seeing tour buses which operate to Jenolan Caves along Jenolan Caves Road and within the Blue Mountains. These operate infrequently and during off-peak times.

4 Future Road Transport Environment

Changes can be expected to occur to the operation of the road network currently used by vehicles travelling to and from the Austen Quarry which are unrelated to the proposed modifications, and so would occur regardless of the status of the modified operations. These are discussed in this section, which considers the future road network conditions for the following future assessment years:

- 2022: commencement of monitoring at the intersection of Jenolan Caves Road with Great Western Highway.
- 2035: Roads and Maritime's traffic forecast year is up to 2035 for the Great Western Highway Upgrade project.

It is acknowledged that 2050 is the expiry year under the current approval and would not change under the proposed modifications. However approved extraction activities may occur faster under the modified consent due to the increased annual production.

4.1 Background Traffic Growth

The technical paper (Mount Victoria to Lithgow Alliance, 2012b) prepared as part of the assessment process for the works along the Great Western Highway presented the following forecasts of expected traffic volumes on the Great Western Highway near Forty Bends.

Table 4.1: Traffic Forecasts on the Great Western Highway near Forty Bends (2-way)

Year	Daily (vehicle/day)		AM Peak (vehicle/day)		AM Peak (vehicle/day)	
	Eastbound	Westbound	Eastbound	Westbound	Eastbound	Westbound
2011	3,950	3,950	220	260	350	300
2015	4,200	4,200	230	270	380	320
2022	4,725	4,725	258	305	429	362
2025	4,950	4,950	270	320	450	380
2035	5,900	5,900	320	390	530	450

Source: Mount Victoria to Lithgow Alliance (2012b)

These forecasts suggest that over the period from 2011 to 2035, traffic volumes on the Great Western Highway are expected to increase by an average of approximately 2 percent per year. Traffic counts over the six years to 2012 indicate that heavy vehicle movements have been growing at a rate of about 1.3 percent per annum and light vehicle movement have been growing at a rate of about 1.7 percent per annum (Mt Victoria to Lithgow Alliance, 2012c). Therefore, adoption of a 2 percent per annum growth rate for both light and heavy vehicles is therefore considered to be robust.

Based on the existing traffic volumes on the Great Western Highway at various locations presented in Section 3.2, and the daily and peak hourly forecasts for the Great Western Highway at Forty Bends (Table 4.1) from the Roads and Maritime works for the highway upgrade program, two way traffic volumes at locations on the Great Western Highway have been developed. Table 4.2 presents the daily and peak hour forecasts for the same forecast years up to 2035, as well as interpolated results for 2022.

Table 4.2: Traffic Forecasts on the Great Western Highway near Forty Bends (2-way)

Location	2011 [AB]	2015 [A]	2022	2025 [A]	2035 [A]
Daily (vehicles/day)					
Forty Bends	7,900	8,400	9,450	9,900	11,800
Hartley	8,800	9,400	10,590	11,100	13,200
Little Hartley	10,400	11,100	12,500	13,100	15,600
Victoria Pass	14,000	14,900	16,790	17,600	21,000
AM Peak (vehicles/hour)					
Forty Bends	480	500	563	590	710
Hartley	530	560	630	660	790
Little Hartley	630	660	744	780	940
Victoria Pass	850	890	1,002	1,050	1,260
PM Peak (vehicles/hour)					
Forty Bends	650	700	791	830	980
Hartley	720	780	885	930	1,100
Little Hartley	860	930	1,049	1,100	1,300
Victoria Pass	1,150	1,240	1,408	1,480	1,740

A RMS daily forecasts
B RMS peak hourly forecasts

A number of reports prepared by or for Roads and Maritime (GHD 2006, Transport & Urban Planning 2009, Roads and Traffic Authority 2006, and GHD 2002) document traffic forecasts along the Great Western Highway to the east of the Austen Quarry. It is noted that the reports were prepared between 2002 and 2009, and so predate the forecasts in Table 4.1, and the observed growth rates of 1.3 and 1.7 percent per annum for light and heavy vehicles respectively discussed above. The reports suggested that the likely traffic growth on the Great Western Highway between Woodford and Wentworth Falls would be about 2.2 to 2.4 percent per annum until 2030. The data has been interpolated or extrapolated where required to generate forecasts for the same future

time horizons as in Table 4.2. An extract showing the original forecasts from each of the reports are presented in Appendix D.

Notably, these are general forecasts which do not specifically consider the Austen Quarry traffic or the relative levels of activity at the Quarry. It is considered that these forecasts in Table 4.2 should be assumed to relate to average day traffic associated with the Austen Quarry, i.e. generation of 260 truck trips per day in 2017 on the Great Western Highway east of Jenolan Caves Road assuming all Quarry traffic head east. Furthermore, it is assumed that these general forecasts assume the transport task of the Austen Quarry would not change significantly over time.

4.2 Changes to the Road Network

As of December 2017, Roads and Maritime has completed detailed design of the Katoomba to Mount Victoria safety upgrade and expects to start construction in mid 2018. Generally, works involve reduced speed limits in towns, upgrade of various intersections, widening sealed road shoulders, sight distance improvement and installation of safety barriers.

Pedestrian and cyclist facilities would also be upgraded along the Great Western Highway, with the provision of new or upgraded pedestrian crossing facilities, footpath and off road shared paths at various locations.

4.3 Austen Quarry Traffic Generation

4.3.1 Heavy Vehicles

Hy-Tec Industries are proposing to increase annual quarry production and associated despatch limits compared to existing limits, as shown in Table 4.3.

Table 4.3: Changes in Annual Product and Truck Despatch Limits

Limit	Current Approval	Proposed
Annual production	1.1 Mtpa	1.6 Mtpa
Daily maximum laden truck loads despatched	250	300
Daily average laden truck loads despatched	150	200

The increased transport of quarry products from 1.1 to 1.6 Mtpa would result in an increase of the maximum daily laden trucks from the site to 300 and the average daily laden trucks from the site to 200. Given recent improvements in truck capacity and safety, Hy-Tec Industries is comfortable that the proposed traffic levels will be sufficient to manage the larger quantity of materials produced.

As these daily figures are averaged over the total number of despatch days in any calendar month, the actual daily loads would fluctuate throughout the year. Based on 2016-2017 weighbridge data, it is estimated that a maximum of 480 truck trips (240 trucks loads) would occur on a peak day on a weekday on a pro-rata basis, which are estimated to occur less than 10 days per year. For Saturdays, it is estimated that up to 260 truck trips (130 trucks loads) would occur on a peak day that would occur for one to two Saturdays over the year.

On days when there are higher numbers of truck trips made, these trips include a number of smaller rigid vehicles with lower capacity rather than the larger articulated vehicles.

The above traffic generation estimates are considered conservative for peak future conditions. The assessment which follows is based on this peak day activity, i.e. 480 truck trips on a weekday and 260 truck trips on a Saturday, with the majority of customers located in the Sydney metropolitan area where 32.5T trucks would typically be used. For deliveries to local areas, smaller trucks with a capacity of 15T would be used. Conservatively, the assessment has been assumed 90 percent of the Quarry trucks are articulated or B-double trucks, and the remaining 10 percent are rigid trucks. With a combination of Sydney and local customers, on a peak day there would be up to 300 loads per day, generating 600 truck trips per day as shown in Table 4.3. This higher trip generation is likely to occur less than 10 days per year.

4.3.2 Light Vehicles

Hy-Tec Industries is also proposing to commence product despatch earlier in the day to avoid the majority of delays in the AM peak period. Instead of the current 5.00am start, it is proposed to start one hour earlier on weekdays. As such, the proposed hours of loading and despatch are:

- 4.00am to 10.00pm Monday to Friday
- 5.00am to 3.00pm Saturdays
- At no time on Sundays or public holidays.

Based on the above operating hours, the site would generate an average of 17 laden trucks per hour during the 18 operating hours on a weekday. The hourly distribution of the trucks has been derived using the existing profile (Figure 3.5) as a base, with adjustment made to the proposed operating hours. Notably, the on-site loading capacity is up to 20 trucks per hour, equating to three minutes per truck, therefore it is anticipated that the hourly traffic generation would not exceed 20 laden trucks per hour.

The increase in product despatch would require up to nine additional employees, and is assumed to increase the number of visitors and contactors visiting the site each day,

which would increase the light vehicle traffic generation. The number of workers, contractors and visitors are shown as follows in Table 4.4.

Table 4.4: Light Vehicle Traffic Generation

Light vehicle trip type	Weekday	Weekend	Note
Worker or regular contractors	16-day shift workers resulting in 32 light vehicle trips 10 night shift workers resulting in 20 light vehicle trips	16 day shift workers resulting in 32 light vehicle trips	On weekdays, 2 workers generally start at 5.00am with the rest arriving before 6.00am. The day shift finishes as 5.00pm with those workers that started at 5.00am leaving around 4.00pm. The same applies to Saturday, except the day shift starts one hour later than a weekday. No night shift on Saturdays. The night shift starts between 2.00pm and 3.00pm and continues to 10.00pm. Up to 5 workers will stay on for maintenance work until 2.00am but may be as late as 6.00am.
Visitor or contractor	10 visitors or contractors resulting in 20 light vehicle trips	4 visitors or contractors resulting in 8 light vehicle trips	Visitors and contractors arrive at the site throughout the working hours, averaging up to 2 trips (two-way) per hour on a weekday and a Saturday.

4.3.3 Total Traffic Generation

Table 4.5 provides a summary of the future peak weekday and Saturday traffic generated by the Austen Quarry and its distribution on Jenolan Caves Road during the peak hours previously identified. This assumes that the Quarry traffic is spread through the day with a maximum of 40 heavy vehicles (2-way) per hour in Quarry Access Road based on its maximum product despatch levels per hour.

Table 4.5: Peak Daily Two Way Austen Quarry Traffic Year (vehicles/hour)

Time	Jenolan Caves Road North of Quarry Access Road			Jenolan Caves Road South of Quarry Access Road			Quarry Access Road		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
Weekday									
4.00-5.00	2	12	14	0	0	0	2	12	14
5.00-6.00	16	14	30	0	0	0	16	14	30
6.00-7.00	5	18	23	0	0	0	5	18	23
10.00-11.00	2	39	41	0	0	0	2	39	41
11.00-12.00	2	38	40	0	0	0	2	38	40
16.00-17.00	2	40	42	2	0	2	4	40	44

Time	Jenolan Caves Road North of Quarry Access Road			Jenolan Caves Road South of Quarry Access Road			Quarry Access Road		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
17.00-18.00	8	28	36	8	0	8	16	28	44
Weekday Total (vehicles/day)	48	432	480	26	48	74	74	**480**	554
Saturday									
5.00-6.00	12	31	43	4	0	4	16	31	47
6.00-7.00	0	28	28	0	0	0	0	28	28
10.00-11.00	1	31	32	1	0	1	2	31	33
11.00-12.00	1	30	32	1	0	1	2	30	32
14.00-15.00	1	6	7	1	1	1	2	6	8
Saturday Total (vehicles/day)	44	234	278	0	26	26	44	**260**	304

Peak day with Austen Quarry operating at 1.6 Mtpa that would only be likely to occur on less than 10 days per year.

The above traffic volumes include two-way Quarry truck trips (not by laden loads).

4.4 Future Traffic Volumes

4.4.1 Year 2022

Figure 4.1 and Figure 4.2 depict the indicative peak daily traffic generation superimposed on the 2022 baseline traffic volume, with a traffic growth of 2 percent per annum applied to the non-Quarry traffic in Jenolan Caves Road (north of the Quarry Access Road). This assumes that any growth in non-Quarry traffic would occur across the day in proportion to the existing traffic volumes, i.e. a 10 percent increase in total weekday traffic would result in a 10 percent increase in hourly traffic for each and every hour of the day. In reality, additional traffic is more likely to spread through the day, lengthening the time over which peak volumes occur rather than proportionally increasing the peak volume.

It is assumed that the weekday traffic currently generated by the adjacent leased land would continue in the future while the Austen Quarry operates, and would increase at the same rate of 2 percent per annum as the other traffic not associated with the Austen Quarry operations.

Figure 4.1: Peak Daily Traffic Generation on Weekdays (2022) – 2-Way Movements

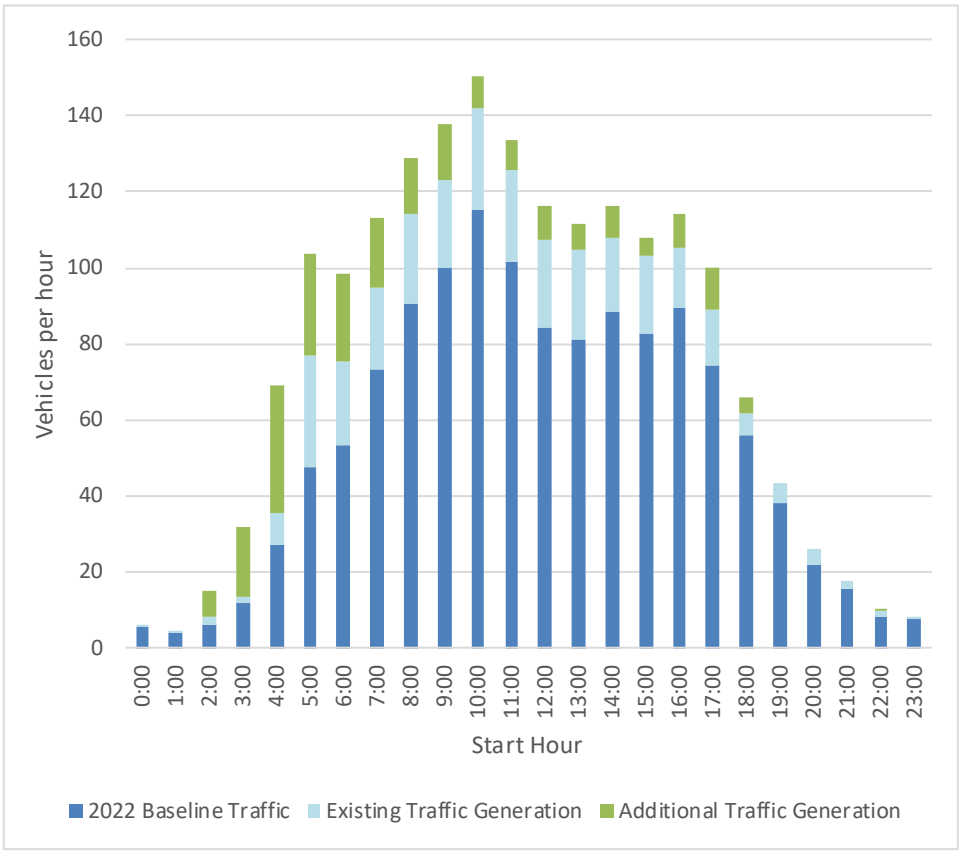
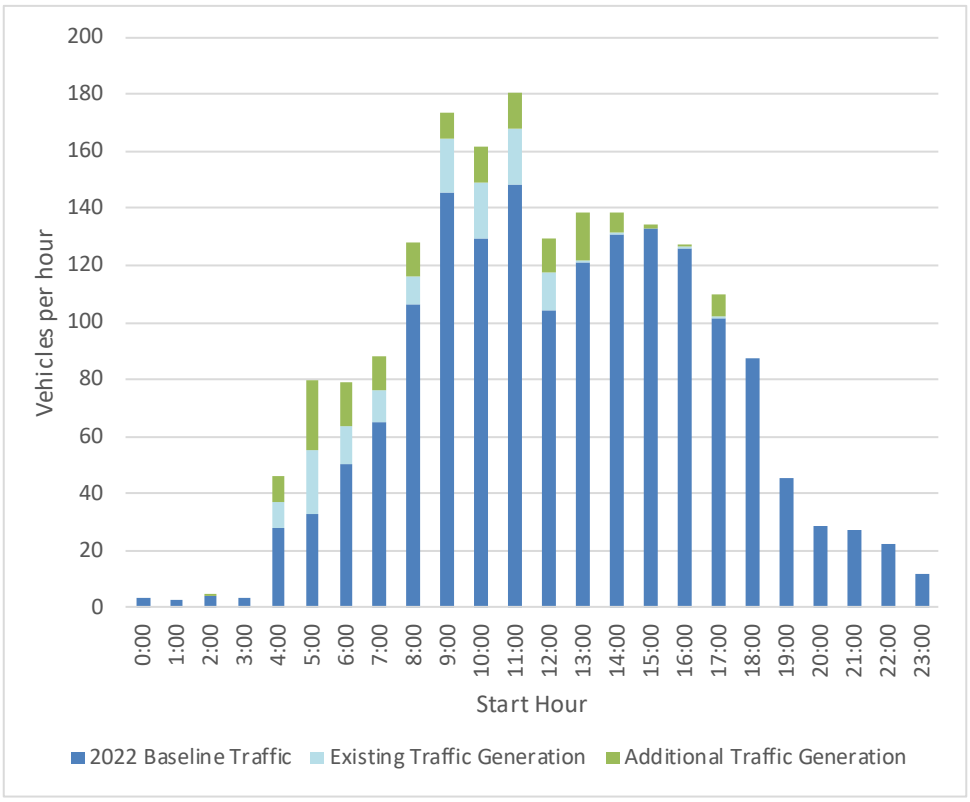


Figure 4.2: Peak Daily Traffic Generation on Saturdays (2022) – 2-Way Movements



The hourly profiles in Figure 4.1 and Figure 4.2 show that the traffic generation generally decreases during the AM and PM peak hours and spreads across the day similar to the existing hourly distribution. The transportation load eases one to two hours before the end of the permitted transport hours. A small number of light vehicles would leave the site after the night shift (10.00pm).

Table 4.6 demonstrates that with the combined effects of background growth and peak day activity at the Austen Quarry, Jenolan Caves Road would carry up to approximately 1,830 vehicles per day on a weekday and 1,950 vehicles per day on a Saturday to the north of Austen Quarry in 2022.

Table 4.6: Peak Day Two Way Traffic in 2022 (vehicles/hour)

Time	Jenolan Caves Road North of Quarry Access Road			Jenolan Caves Road South of Quarry Access Road			Quarry Access Road		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
Weekday									
4.00-5.00	25	44	69	4	7	12	2	40	42
5.00-6.00	64	39	104	14	10	23	17	40	57
10.00-11.00	99	52	150	54	28	82	3	33	36
11.00-12.00	86	47	134	51	24	75	3	30	33
16.00-17.00	81	33	114	65	14	79	5	22	27
17.00-18.00	75	25	100	67	11	78	17	17	34
Weekday Total (vehicles/day)	1,155	673	1,828	743	283	1,027	84	**480**	564
Saturday									
5.00-6.00	50	30	80	9	6	15	17	31	48
6.00-7.00	47	31	79	24	9	33	0	28	28
10.00-11.00	122	39	162	106	10	116	2	31	33
11.00-12.00	141	40	181	109	12	120	2	30	32
14.00-15.00	117	21	138	117	15	132	2	6	8
Saturday Total (vehicles/day)	1,555	397	1,952	1,347	166	1,512	54	**260**	314

Peak day with Austen Quarry operating at 1.6 Mtpa that would only be likely to occur on less than 10 days per year.

Note: light vehicles in Quarry Access Road include traffic to and from the neighbouring property.

Table 4.7 presents indicative future traffic volumes on the Great Western Highway in 2022. These are based on the forecasts on the Great Western Highway presented by

Roads and Maritime, and adjusted to reflect the increased truck trips, work/contractor vehicle trips associated with the Quarry operation. The Quarry products transported to the east are assumed to travel to the Sydney metropolitan area, i.e. through the Blue Mountains, via the Great Western Highway. There are a small number of truck trips assigned to the west for local customer deliveries via the Great Western Highway. It has been assumed that 90 percent of Quarry trucks travel to/from east via Great Western Highway, with the remaining 10 percent travel to/from west via Great Western Highway.

Table 4.7: Indicative Peak Day Traffic Volumes on the Great Western Highway 2022 (2-way)

Location	AM Peak (vehicles/hour)	PM Peak (vehicles/hour)	Daily (vehicles/day)
Meadow Flat	614	778	9,512
Hartley	557	730	9,732
Mount Victoria	763	949	12,647
Blackheath	801	1,054	13,895
Forty Bends	579	796	9,656
Hartley	646	890	10,796
Little Hartley	760	1,054	12,706
Victoria Pass	1,018	1,413	16,996
Medlow Bath	1,226	1,227	18,250
Leura	2,083	2,294	32,791
Bullaburra	1,801	1,851	25,410
Faulconbridge	2,348	2,497	31,198

Based on the Roads and Maritime traffic data (Table 3.1), on average heavy vehicles made up 20 percent of total traffic on the Great Western Highway in 2017. The contribution of the Quarry traffic on the Great Western Highway is summarised in Table 4.8 for a peak day in 2022.

Table 4.8: Indicative Peak Day Heavy Vehicles on the Great Western Highway 2022 (2-way)

Location	Peak Hour (heavy vehicles/hour)		Daily (heavy vehicles/day)	
	Total	Quarry	Total	Quarry
Meadow Flat	156	2	1,902	48
Hartley (west of Jenolan Caves Road)	146	2	1,946	48
Mount Victoria	190	20	2,529	432
Blackheath	211	20	2,779	432
Forty Bends	159	20	1,931	432
Hartley	178	20	2,159	432
Little Hartley	211	20	2,541	432
Victoria Pass	283	20	3,399	432
Medlow Bath	245	20	3,650	432
Leura	459	22	6,558	432
Bullaburra	370	22	5,082	432
Faulconbridge	499	20	6,240	432

Austen Quarry operating at 1.1Mtpa that would only be likely to occur on less than 10 days per year. Assumes background weekday traffic is 20 percent heavy vehicles.

These results demonstrate that the contribution of the Austen Quarry to total heavy vehicles on the Great Western Highway on peak days would decrease through the Blue Mountains to the east. The overall proportion of heavy vehicles on the Great Western Highway would remain at a similar level to the existing situation, with an increase from 20 percent to approximately 21 percent heavy vehicles on the peak days of activity at the Austen Quarry, that would only be likely to occur on less than 10 days per year.

4.4.2 Year 2035

Under the current development consent, the Austen Quarry will continue to operate until 2050, after which it would be decommissioned. However, it is acknowledged that completion of approved extraction activities may occur faster under the modified consent.

The assessment year is beyond the typical 10-year planning horizon required by Roads and Maritime, and is therefore ensure a robust review of the potential future traffic on key routes. As above, a growth rate of 2 percent per annum has been applied, which is

consistent with forecasts presented by Roads and Maritime on the Great Western Highway (Table 4.2) up to year 2035.

Figure 4.3 and Figure 4.4 depict the indicative peak daily traffic generation superimposed on the 2035 baseline traffic volume, with a traffic growth of 2 percent per annum applied to the non-Quarry traffic in Jenolan Caves Road (north of the Quarry Access Road).

It is assumed that the weekday traffic currently generated by the adjacent leased land would continue in the future while the Austen Quarry operates, and would increase at the same rate of 2 percent per annum as the other traffic not associated with the Austen Quarry operations.

Figure 4.3: Peak Daily Traffic Generation on Weekdays (2035) – 2-Way Movements

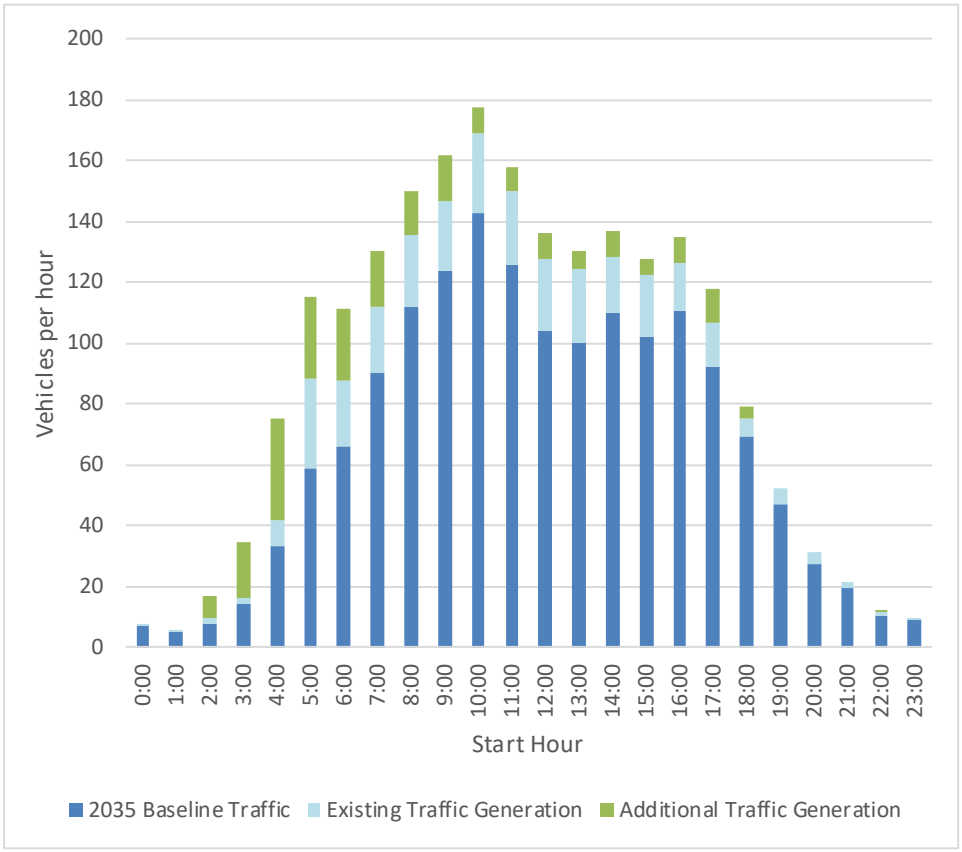
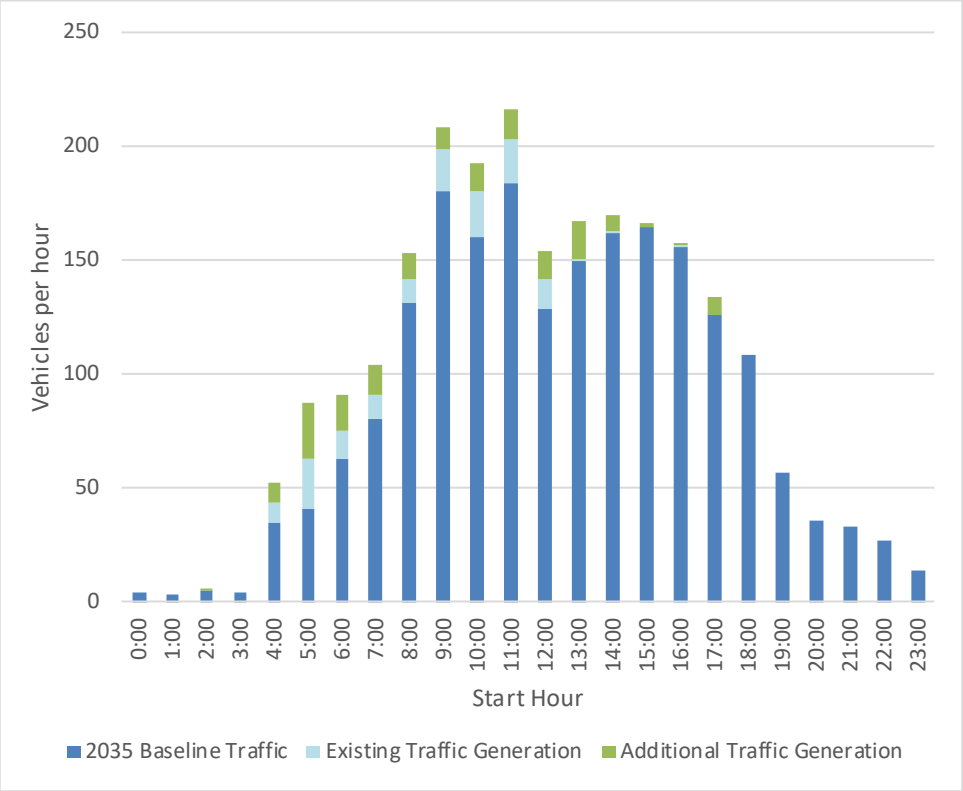


Figure 4.4: Peak Daily Traffic Generation on Saturdays (2035) – 2-Way Movements



Traffic generation associated with the Quarry activities remain unchanged from the 2022 assessment. The only increase in traffic is the background traffic unrelated to Quarry activities.

Table 4.9 provides a summary of the resulting traffic volumes in Jenolan Caves Road and the Quarry Access Road for weekday and Saturday conditions for the long term scenario (year 2035).

This assumes that any growth in non-Quarry traffic would occur across the day in proportion to the existing traffic volumes, i.e. a 36 percent increase in total weekday traffic would result in a 36 percent increase in hourly traffic for each and every hour of the day. In reality, additional traffic is more likely to spread through the day, lengthening the time over which peak volumes occur rather than proportionally increasing the peak volume. It has been assumed all Quarry trucks travel to/from east via Great Western Highway.

Table 4.9: Peak Day Two Way Traffic in 2035 (vehicles/hour)

Time	Jenolan Caves Road North of Quarry Access Road			Jenolan Caves Road South of Quarry Access Road			Quarry Access Road		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
Weekday									
4.00-5.00	31	45	76	5	9	14	2	40	42
5.00-6.00	76	39	115	17	12	29	17	40	57
10.00-11.00	121	56	178	67	34	101	3	33	36
11.00-12.00	106	51	158	63	30	93	3	30	33
16.00-17.00	99	36	135	80	17	98	5	22	27
17.00-18.00	90	27	118	81	13	95	17	17	34
Weekday Total (vehicles/day)	1,413	718	2,132	916	350	1,266	84	**480**	564
Saturday									
5.00-6.00	58	29	88	11	7	18	17	31	48
6.00-7.00	58	32	91	29	12	41	0	28	28
10.00-11.00	151	41	192	131	12	143	2	31	33
11.00-12.00	173	43	216	135	14	149	2	30	32
14.00-15.00	145	25	169	144	18	163	2	6	8
Saturday Total (vehicles/day)	1,915	429	2,344	1,663	205	1,868	56	**260**	316

Peak day with Austen Quarry operating at 1.6 Mtpa that would only be likely to occur on less than 10 days per year.

Note: light vehicles in Quarry Access Road include traffic to and from the neighbouring property.

Table 4.9 demonstrates that with the combined effects of background growth and the Austen Quarry operations, Jenolan Caves Road would carry up to approximately 2,140 vehicles per day on a weekday and 2,350 vehicles per day on a Saturday to the north of Austen Quarry in 2035.

Table 4.10 presents indicative future traffic volumes on the Great Western Highway in 2035. These are based on the forecasts on the Great Western Highway presented by Roads and Maritime.

Table 4.10: Indicative Peak Day Heavy Vehicles on the Great Western Highway 2035 (2-way)

Location	AM Peak (vehicles/hour)	PM Peak (vehicles/hour)	Daily (vehicles/day)
Meadow Flat	754	967	11,178
Hartley (west of Jenolan Caves Road)	680	908	11,450
Mount Victoria	935	1,178	15,054
Blackheath	982	1,308	16,597
Forty Bends	726	985	12,006
Hartley	806	1,105	13,406
Little Hartley	956	1,305	15,806
Victoria Pass	1,276	1,745	21,206
Medlow Bath	1,514	1,522	22,446
Leura	2,573	2,841	40,424
Bullaburra	2,225	2,294	31,298
Faulconbridge	2,901	3,093	38,454

Table 4.10 indicates that traffic volumes on the Great Western Highway would be expected to increase to approximately 21,200 vehicles per day at Victoria Pass in 2035 and in the order of 38,500 vehicles per day at Faulconbridge.

Assuming that the aforementioned general forecasts of total traffic on the Great Western Highway included an average of 20 percent heavy vehicles on the Great Western Highway, the contribution of the Quarry to heavy vehicles on the Great Western Highway on a peak day in 2025 is summarised in Table 4.11.

Table 4.11: Indicative Peak Day Heavy Vehicles on the Great Western Highway 2035 (2-way)

Location	Peak Hour (heavy vehicles/hour)		Daily (heavy vehicles/day)	
	Total	Quarry	Total	Quarry
Meadow Flat	193	2	2,236	48
Hartley (west of Jenolan Caves Road)	182	2	2,290	48
Mount Victoria	236	20	3,011	432
Blackheath	262	20	3,319	432
Forty Bends	197	20	2,401	432
Hartley	221	20	2,681	432
Little Hartley	261	20	3,161	432
Victoria Pass	349	20	4,241	432
Medlow Bath	304	20	4,489	432
Leura	568	22	8,085	432
Bullaburra	459	22	6,260	432
Faulconbridge	619	20	7,691	432

Austen Quarry operating at 1.6Mtpa that would only be likely to occur on less than 10 days per year.

These results demonstrate that the contribution of the Austen Quarry to total heavy vehicles on the Great Western Highway on peak days would decrease through the Blue Mountains to the east. The overall proportion of heavy vehicles on the Great Western Highway would remain at a similar level to the existing situation, with an increase from 20 percent to approximately 21 percent heavy vehicles on the peak days of activity at the Austen Quarry, that would only be likely to occur on less than 10 days per year.

4.5 Future Roadway Capacity and Efficiency

4.5.1 Year 2022

As a general indication of the effects of background growth on the Level of Service experienced by drivers along Jenolan Caves Road, the PTSF has been recalculated for a peak day for year 2022 – the commencement year for monitoring the Jenolan Caves Road intersection with Great Western Highway. The PTSF results are summarised in Table 4.12.

Table 4.12: PTSF and Levels of Service (2022)

Location	AM Peak Hour				PM Peak Hour			
	Hour Starting	pc/hr (2-way)	PTSF	LOS	Hour Starting	pc/hr (2-way)	PTSF	LOS
Weekday								
Jenolan Caves Road North of Quarry Access Road	10am	192	38.5	A	12pm	152	35.5	A
Jenolan Caves Road South of Quarry Access Road	10am	104	32.8	A	2pm	96	32.1	A
Saturday								
Jenolan Caves Road North of Quarry Access Road	11am	213	42.1	B	2pm	156	36.8	A
Jenolan Caves Road South of Quarry Access Road	10am	122	35.2	A	1pm	131	35.9	A

These results indicate that the traffic volumes on Jenolan Caves Road would remain sufficiently low with background growth in traffic that drivers would continue to experience good levels of service when driving along it on both a weekday and Saturday with peak activity at the Austen Quarry.

Along the Great Western Highway, a number of complex factors will influence the capacity and perceived service levels experienced by drivers. Drivers' expectations would vary significantly between sections of road within Blue Mountains villages (and from one village to another) and those between the villages. Austroads (2013) presents a general guide to Levels of Service for uninterrupted traffic flow on multi-lane roads, i.e. outside of the influences of signals and intersections. The LOS guide is based on travel speeds and vehicle densities to develop thresholds for maximum service flow rates per lane for various speed environments. These have been compared with the estimated traffic volumes presented in Table 4.7 to provide a guide to expected future LOS during peak hours along the Great Western Highway. This assumes vehicles travel at a free-flow speed of 8 to 10 km/h above the posted speed limit, as suggested by Austroads (2017).

Table 4.13: Indicative Future Peak Day Levels of Service on the Great Western Highway 2022 (2-way)

Location	Peak Hour (vehicles/hour)	Number of Lanes	Speed Limit	Level of Service
Meadow Flat	778	3	90	A
Hartley (west of Jenolan Caves Road)	730	3	90	A
Mount Victoria	949	3	90	A
Blackheath	1,054	3	90	A

Location	Peak Hour (vehicles/hour)	Number of Lanes	Speed Limit	Level of Service
Forty Bends	796	3	80	A
Hartley	890	3	90	A
Little Hartley	1,054	3	90	A
Victoria Pass	1,413	3	60	A
Medlow Bath	1,227	3	90	A
Leura	2,294	4	80	B
Bullaburra	1,851	4	80	B
Faulconbridge	2,497	4	70	C

4.5.2 Year 2035

As an indication of the effects of longer term background growth on the Level of Service experienced by drivers along Jenolan Caves Road, the PTSF has been recalculated for a weekday and Saturday in 2035. The results are summarised in Table 4.12.

Table 4.14: PTSF and Levels of Service (2035)

Location	AM Peak Hour				PM Peak Hour			
	Hour Starting	pc/hr (2-way)	PTSF	LOS	Hour Starting	pc/hr (2-way)	PTSF	LOS
Weekday								
Jenolan Caves Road North of Quarry Access Road	10am	223	40.8	B	12pm	175	37.2	A
Jenolan Caves Road South of Quarry Access Road	10am	129	34.7	A	2pm	118	33.9	A
Saturday								
Jenolan Caves Road North of Quarry Access Road	11am	250	44.7	B	2pm	190	39.4	A
Jenolan Caves Road South of Quarry Access Road	10am	151	37.4	A	1pm	162	38.3	A

These results indicate that the traffic volumes on Jenolan Caves Road would remain sufficiently low with background growth in traffic that drivers would continue to experience good levels of service when driving along it on both a weekday and Saturday in year 2035.

Indicative Levels of Service along the Great Western Highway in 2035 are presented in Table 4.15, based on the highest estimated peak hour traffic volumes presented in Table 4.10 and provide a guide to expected future Level of Service during peak hours along the Great Western Highway.

Table 4.15: Indicative Future Peak Day Levels of Service on the Great Western Highway 2035 (2-way)

Location	Peak Hour (vehicles/hour)	Number of Lanes	Speed Limit	Level of Service
Meadow Flat	967	3	90	A
Hartley (west of Jenolan Caves Road)	908	3	90	A
Mount Victoria	1,178	3	90	A
Blackheath	1,308	3	90	A
Forty Bends	985	3	80	A
Hartley	1,105	3	90	A
Little Hartley	1,305	3	90	A
Victoria Pass	1,745	3	60	B
Medlow Bath	1,522	3	90	A
Leura	2,841	4	80	C
Bullaburra	2,291	4	80	B
Faulconbridge	3,093	4	70	C

The results demonstrate that in 2035, levels of service along the Great Western Highway are expected to be C or better.

4.6 Future Intersection Operation

4.6.1 Year 2022

The weekday peak hour operating characteristics of the surveyed intersections have been reassessed to quantify the future conditions for year 2022 when the monitoring commences at the intersection of Jenolan Caves Road with Great Western Highway for any necessary intersection upgrade. The results are summarised in Table 4.16, and the results by movement are presented in Appendix C. As noted, the forecast turning movements at the intersections assume that growth in background traffic will increase the volume in each hour of the day pro rata to the daily increase. It has been assumed that 90 percent of Quarry trucks travel to/from east via Great Western Highway, with

the remaining 10 percent travel to/from west via Great Western Highway. The truck composition consists of 90 percent articulated/ B-Double trucks and 10 percent rigid trucks.

Table 4.16: Intersection Level of Service (2022)

Approach	AM Peak LOS		PM Peak LOS	
	Delay (sec/veh)	Level of Service	Delay (sec/veh)	Level of Service
Jenolan Caves Road/Access Road	14	A	14	A
Great Western Highway/Jenolan Caves Road	33	C	30	C

Peak day with the Austen Quarry operating at 1.6 Mtpa, that would only be likely to occur on less than 10 days per year

The results in Table 4.16 indicate that the intersections would operate satisfactorily at LoS C or better. At the intersection of the Great Western Highway and Jenolan Caves Road, the movements with the highest average delay per vehicle would be the right turn out of Jenolan Caves Road during the morning peak, and the left turn out of Jenolan Caves Road during the evening peak.

4.6.2 Year 2035

The weekday peak hour operating characteristics of the surveyed intersections have been reassessed to quantify the future conditions in year 2035. The results are summarised in Table 4.17, and the results by movement are presented in Appendix C. As noted, the forecast turning movements at the intersections assume that growth in background traffic will increase the volume in each hour of the day pro rata to the daily increase. It has been assumed that 90 percent of Quarry trucks travel to/from east via Great Western Highway, with the remaining 10 percent travel to/from west via Great Western Highway. The truck composition consists of 90 percent articulated/ B-Double trucks and 10 percent rigid trucks.

Table 4.17: Intersection Level of Service (2035)

Approach	AM Peak LOS		PM Peak LOS	
	Delay (sec/veh)	Level of Service	Delay (sec/veh)	Level of Service
Jenolan Caves Road/Access Road	15	B	15	B
Great Western Highway/Jenolan Caves Road	50	D	47	D

Peak day with the Austen Quarry operating at 1.6 Mtpa that would only be likely to occur on less than 10 days per year

The results in Table 4.15 indicate that the intersections would operate satisfactorily in the longer term, noting that Level of Service D is the upper limit for acceptable Level of Service. At the intersection of the Great Western Highway and Jenolan Caves Road,

the movements with the highest average delay per vehicle would be the right turn out of Jenolan Caves Road during the morning peak, and the left turn out of Jenolan Caves Road during the evening peak. It is noted that the volume turning left during the evening peak hour is only 14 vehicles per hour, thus this delay would be experienced by only a small number of vehicles. A significant proportion of the reported delays is the forecast delay associated with physically negotiating the turn rather than the delay waiting for a gap in the traffic.

4.7 Maximum Product Despatch Levels (300 Truck Loads)

Hy-Tec estimates that an appropriate maximum limit to laden truck despatch from the Quarry would be 300 laden truck loads per day, or 600 daily truck trips. This maximum trip generation would only be likely to occur less than five days per year based on the heavy vehicle arrival patterns from the existing weighbridge data, and therefore it is not considered a reasonable basis for assessment of the typical implications of the proposal, however its implications are broadly assessed below.

4.7.1 Year 2022

The maximum product despatch levels on a weekday would generate an additional 120 truck trips per day on Jenolan Caves Road above that assessed earlier (480 truck trips). It has been assumed that a maximum of 20 Quarry trucks per hour would be generated by the Quarry during the AM and PM peak hours. The resulting Levels of Service experienced along Jenolan Caves Road east of Austen Quarry on a weekday are summarised in Table 4.18.

Table 4.18: PTSF and Levels of Service (Maximum Operations 2022)

Location	AM Peak Hour				PM Peak Hour			
	Hour Starting	pc/hr (2-way)	PTSF	LOS	Hour Starting	pc/hr (2-way)	PTSF	LOS
Weekday								
Jenolan Caves Road North of Quarry Access Road	10am	205	39.5	A	12pm	170	36.9	A
Jenolan Caves Road South of Quarry Access Road	10am	104	32.8	A	2pm	96	32.1	A

The results demonstrate that drivers on Jenolan Caves Road would continue to experience good levels of service on the very busiest days that would only be likely to occur on less than five days per year at the Austen Quarry.

For the purpose of assessing intersection performance, it has been assumed that all Quarry trucks travel to/from east via Great Western Highway, comprising 90 percent articulated/ B-Double trucks and 10 percent rigid trucks. The predicted level of service for the relevant intersections is presented in Table 4.19.

Table 4.19: Intersection Level of Service (Maximum Operations 2022)

Approach	AM Peak LOS		PM Peak LOS	
	Delay (sec/veh)	Level of Service	Delay (sec/veh)	Level of Service
Jenolan Caves Road/ Quarry Access Road	14	A	14	A
Great Western Highway/Jenolan Caves Road	34	C	32	C

Peak day with the Austen Quarry operating at 1.6 Mtpa that would only be likely to occur on less than five days per year

The results demonstrate that the intersection would operate satisfactorily on the busiest days that would only be likely to occur on less than five days per year in 2022.

4.7.2 Year 2035

The maximum product despatch levels on a weekday would generate an additional 120 truck trips per day on Jenolan Caves Road above that assessed for peak operations (Section 4.6). It has been assumed that a maximum of 20 Quarry trucks per hour would be generated by the Quarry. The resulting Levels of Service experienced along Jenolan Caves Road east of Austen Quarry on a weekday in 2035 are summarised in Table 4.20.

Table 4.20: PTSF and Levels of Service (Maximum Operations 2035)

Location	AM Peak Hour				PM Peak Hour			
	Hour Starting	pc/hr (2-way)	PTSF	LOS	Hour Starting	pc/hr (2-way)	PTSF	LOS
Weekday								
Jenolan Caves Road North of Quarry Access Road	10am	235	41.7	B	12pm	193	38.6	A
Jenolan Caves Road South of Quarry Access Road	10am	129	34.7	A	2pm	118	33.9	A

The results demonstrate that drivers on Jenolan Caves Road would continue to experience good levels of service on the very busiest days that would only be likely to occur on less than five days per year at the Austen Quarry in 2035.

The results of the analysis are summarised in Table 4.21. It has been assumed that all Quarry trucks travel to/from east via Great Western Highway, comprising 90 percent articulated/ B-Double trucks and 10 percent rigid trucks.

Table 4.21: Intersection Level of Service (Maximum Operations 2035)

Approach	AM Peak LOS		PM Peak LOS	
	Delay (sec/veh)	Level of Service	Delay (sec/veh)	Level of Service
Jenolan Caves Road/Quarry Access Road	15	B	16	B
Great Western Highway/Jenolan Caves Road	62	E	84	F

Peak day with the Austen Quarry operating at 1.6 Mtpa would only be likely to occur less than five days per year

The results demonstrate that whilst the Quarry Access Road intersection would operate satisfactorily on the busiest days, the Great Western Highway intersection with Jenolan Caves Road is predicted to operate at LoS E to F in 2035 when the Quarry is operating at maximum laden truck despatch levels (that would only likely be occurred less than five days per year). This indicates the intersection would not have sufficient capacity to accommodate the maximum number of Quarry trucks turning right from Jenolan Caves Road into the Great Western Highway during the AM and PM peak hours due to the background traffic growth in 2035.

4.7.3 Sensitivity Testing

A sensitivity test was undertaken to determine what year is predicted to trigger a LoS E at the Great Western Highway intersection with Jenolan Caves Road, given a maximum of 20 Quarry trucks would be generated by the Quarry and travel in the direction of Sydney during the AM and PM peak hours. The truck composition consists of 90 percent articulated/ B-Double trucks and 10 percent rigid trucks. The results of the analysis are summarised in Table 4.22.

Table 4.22: Intersection Level of Service (Sensitivity Test)

Intersection	Year	AM Peak LOS		PM Peak LOS	
		Delay (sec/veh)	Level of Service	Delay (sec/veh)	Level of Service
Great Western Highway/Jenolan Caves Road	2024	46	D	54	D
	2025	47	D	58	E
	2028	53	D	70	E
	2029	57	E	75	F

Peak day with the Austen Quarry operating at 1.6 Mtpa would only be likely to occur on less than five days per year

Table 4.22 shows that by 2025, the intersection performance is predicted to reduce to LoS E at the Great Western Highway intersection with Jenolan Caves Road in the PM peak and 2029 in the AM peak, given the maximum number of Quarry trucks would be

generated by the Quarry and travel in the direction of Sydney during the AM and PM peak hours.

4.8 Intersection Upgrade

The concept design of the Mount Victoria to Lithgow Great Western Highway Upgrade included a grade separated interchange at the Great Western Highway with Jenolan Caves Road (Figure 4.5) to replace the at-grade priority controlled intersection.

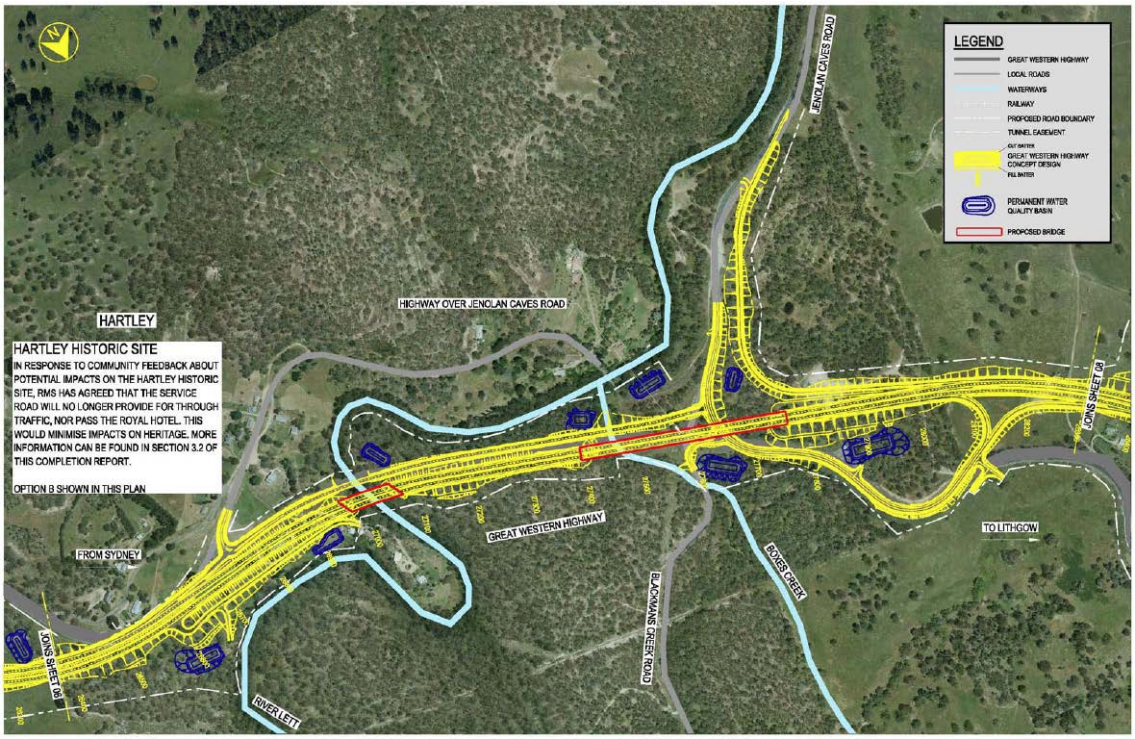
It is acknowledged that the subject intersection was upgraded in 2016 to provide better turning lane and overtaking facilities (Section 3.1.3) as an at-grade priority controlled intersection.

At this stage, the intention for any future upgrade of this intersection is unknown. However, the provision of an underpass would significantly reduce the delay that drivers would experience when travelling from the side road into the Great Western Highway and improve safety with reduced points of conflict.

It is also noted that Austen Quarry will be in discussion with Roads and Maritime as part of the ongoing monitoring of the Quarry and the intersection performance. As such, the truck numbers and traffic growth will be monitored to allow the performance of the intersection to be monitored to ensure the successful operation of the Quarry.

Hy-Tec proposes to retain its commitment to monitoring the performance of the intersection of the Great Western Highway with Jenolan Caves Road for 2022. It should be noted that it is in the interest of Hy-Tec that the ongoing performance of this intersection is retained.

Figure 4.5: Concept Design for Intersection Upgrade



Source: Roads and Maritime Great Western Highway Upgrade Mount Victoria to Lithgow, Concept Design Completion Report, April 2013 – Sheet 7

4.9 Future Pedestrians, Cyclists and Buses

The expected increase in traffic volumes associated with the Quarry is not expected to result in any significant change to the number of pedestrians, cyclists or buses operating in the local region. The number of pedestrians travelling along or across Jenolan Caves Road in proximity to the Quarry would remain negligible, and similarly the demand for cyclist activity is not expected to have a significant increase in the immediate area. The bus operation is expected to remain at similar levels to the existing, with any future increase in demand to be met by additional services operated by the existing service providers.

The number of truck trips generated by the Austen Quarry on a peak day, once spread over the operating hours of the Quarry and taking into account Hy-Tec's management of despatch times (Section 3.9), would have a negligible effect on the delays experienced by pedestrians crossing the Great Western Highway through the villages of the Blue Mountains, nor on exposure between cyclists and trucks. Hy-Tec's management of despatch times also minimises the potential interaction between Quarry traffic and school buses.

4.10 Impacts on Road Safety

The Proposal would result in the continuance of truck movements along the Great Western Highway, predominantly through the Blue Mountains to and from east of Jenolan Caves Road. This is the most appropriate route for such vehicles, being the major arterial route and an approved B Double route between Sydney and western NSW. The ongoing upgrading program for the Great Western Highway is progressively improving the route to meet the current and future road transport demands, with the various upgrades aiming to improve traffic flow and road safety. Construction traffic management along the Great Western Highway would have considered specific needs of heavy vehicles, such as their slower acceleration and braking capabilities.

Hy-Tec's Road Truck Traffic Management Plan aims to maximise the safety of road users both inside the Quarry and on public roads, and continued compliance with that Plan will reduce the risk of incidents associated with the Quarry trucks.

5 Mitigation Measures

The assessment demonstrates that the levels of service experienced along Jenolan Caves Road are expected to remain acceptable in the short term with the combined effects of background growth and peak day activity at the Austen Quarry.

Hy-Tec proposes to retain the commitment to monitor the operation of the Great Western Highway intersection with Jenolan Caves Road once every two years from 2022 onwards. The monitoring will review the delays and safety of vehicles exiting Jenolan Caves Road into the Great Western Highway, and to what extent the Austen Quarry traffic contributes to the demand for this movement.

The modelling results documented in this report will be updated to reflect the ongoing changes based on the surveyed traffic volumes in the future and validate the need to limit Quarry truck levels to maintain service. It is in the interest of Hy-Tec to ensure that product delivery is occurring efficiently. The results of the intersection performance monitoring would be presented in the annual reporting for the Quarry.

Furthermore, the concept design as shown in Figure 4.5 indicates a possible grade separation for the Great Western Highway intersection with Jenolan Caves Road. This layout has been designed as part of the Mount Victoria to Lithgow Great Western Highway Upgrade. The monitoring results recorded by Hy-Tec will be provided to Roads and Maritime Services.

The Hy-Tec driver and vehicle check system standard, Hy-Tec Chain of Responsibility – Driver/Vehicle Checks, should continue to apply to all people involved in the various activities consigning; loading; driving; operating a business which controls the use of a commercial vehicle and receiving goods or freight.

The establishment and maintenance of this system has been demonstrated to reduce the number of truck drivers who do not comply with fatigue laws, reducing the risk of incidents on the transport route. The continuance of this system, together with the Road Truck Traffic Management Plan (Section 2.2), is therefore commended as a means to mitigate potential impacts of the proposal, particularly with regard to heavy vehicle driver behaviour.

Heavy vehicles do not appear to contribute to the history of crashes along the route. No additional measures are therefore considered to be warranted along Jenolan Caves Road to accommodate the Proposal.

6 Summary and Conclusions

6.1 Summary

- Hy-Tec Industries is seeking approval to increase the annual limit on Quarry product despatch from 1.1 to 1.6 Mtpa, by increasing the heavy vehicle deliveries from the Quarry site per day. In addition, it is proposed to start the operation one hour earlier from 4.00am (instead of the existing 5.00am) on weekdays.
- Analysis of traffic surveys conducted during February 2017, indicates that the key intersections are operating satisfactorily at LOS B or better during the peak hours.
- The existing weighbridge data indicates the Quarry is currently operating below its existing production limit (maximum 250 laden truck loads) with approximately 130 truckloads per day.
- A review of the history of crashes on the surrounding road network indicates that the most common crash type involved rear end collisions in the Great Western Highway and single vehicles losing control in Jenolan Caves Road. Heavy vehicles do not appear to be a contributing factor to road crashes. Great Western Highway is progressively being upgraded in various sections to improve traffic flow and road safety. An upgrade of the Great Western Highway intersection with Jenolan Caves Road completed in late 2016.
- For peak Quarry operations (240 truckloads per day):
  - An assessment of the traffic implications of the intensified operation of the Quarry indicates that levels of service at the key intersections would remain acceptable in year 2022 and 2035.
  - Quarry truck trips would be spread across the day from 4.00am to 10.00pm on weekdays, with more truck trips occurring in early morning (between 4.00am and 7.00am) but less during the AM and PM peak hours, to take advantage of available capacity at the intersection during the off-peak period and consistent with customer demands.
  - Mid-block sections in Great Western Highway and Jenolan Caves Road are expected to operate at LOS C or better in both 2022 and 2035.
  - The proposed increase to daily trucks in the Great Western Highway is approximately one percent of the total daily traffic volume.
- For maximum Quarry operations (300 truckloads per day):
  - An assessment of the traffic implications of the intensified operation of the Quarry indicates that levels of service at the key intersections would remain acceptable until year 2024 in the PM peak and 2028 in the AM peak.

- Quarry truck trips would be spread across the day from 4.00am to 10.00pm on weekdays, with 20 truckloads occurring in the AM and PM peak hours.

- Hy-Tec proposes to retain the commitment to monitor the operation of the Great Western Highway intersection with Jenolan Caves Road once every two years from 2022 onwards. The monitoring will review the delays and safety of vehicles exiting Jenolan Caves Road onto the Great Western Highway, and to what extent the Austen Quarry contributes to the demand for this movement.

- The modelling results documented in this report will be updated over time and will be used to validate the need to limit Quarry truck levels to maintain service. It is in the interest of Hy-Tec to ensure that product delivery is occurring efficiently. The results of the intersection performance monitoring would be presented in the annual reporting for the Quarry.

- The possible future grade separation of the Great Western Highway intersection with Jenolan Caves Road under the Great Western Highway Upgrade program would improve the driving experience from Jenolan Caves Road onto the Great Western Highway via an underpass.

6.2 Conclusions

- Additional traffic associated with peak Quarry operations (240 truckloads per day) would be accommodated on the surrounding road network with acceptable impacts on the capacity, efficiency and safety of the road network.

- Additional traffic in relation to maximum Quarry operations (300 trucks per day) would trigger an unacceptable Level of Service E at the Great Western Highway intersection with Jenolan Caves Road that would only be likely to occur on less than five days per year, due to the background traffic growth in 2025.

- It is recommended that the Great Western Highway intersection with Jenolan Caves Road be monitored after 2022 for its ongoing operation and safety performance.

- It is also noted that the potential future grade separation of the Great Western Highway intersection with Jenolan Caves Road as proposed by Roads and Maritime Services would provide benefits for vehicles travelling from Jenolan Caves Road onto the Great Western Highway

7 References

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Roads and Maritime Services (2014) Hartley Valley to Forty Bends - Start of Work

Roads and Maritime Services (2013) Great Western Highway Upgrade Forty Bends Review of Environmental Factors Submissions Report

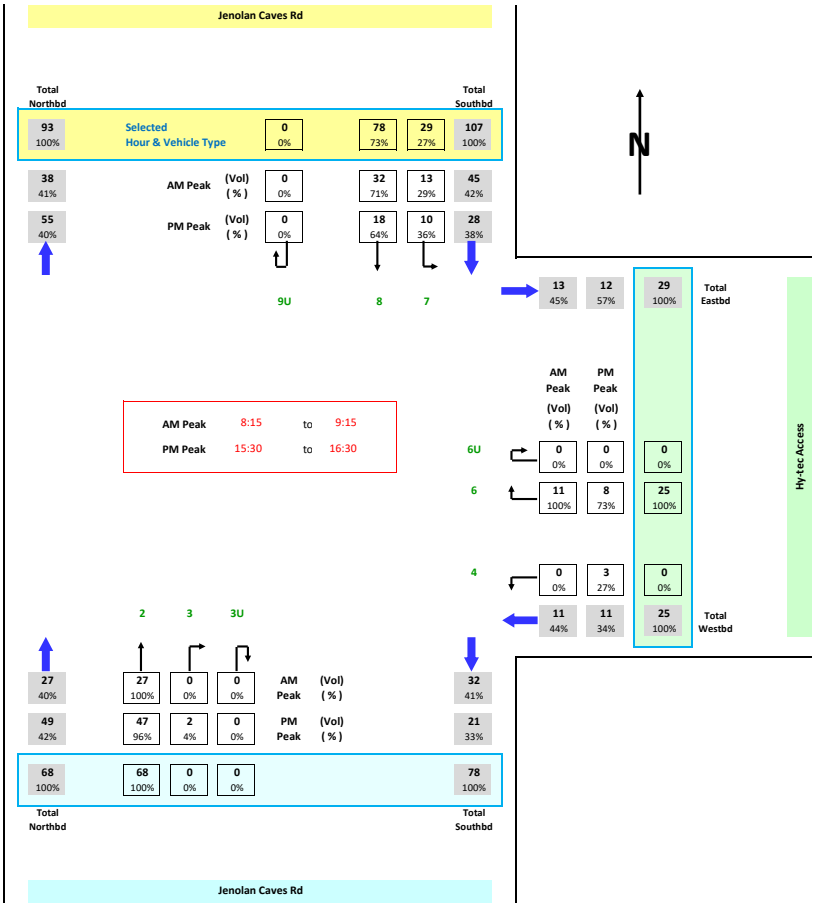
Appendix A

Traffic Surveys

Job No. : N3001
Client : TTPP
Suburb : Jenolan Caves Road
Location : 2. Jenolan Caves Rd / Hy-tec Access

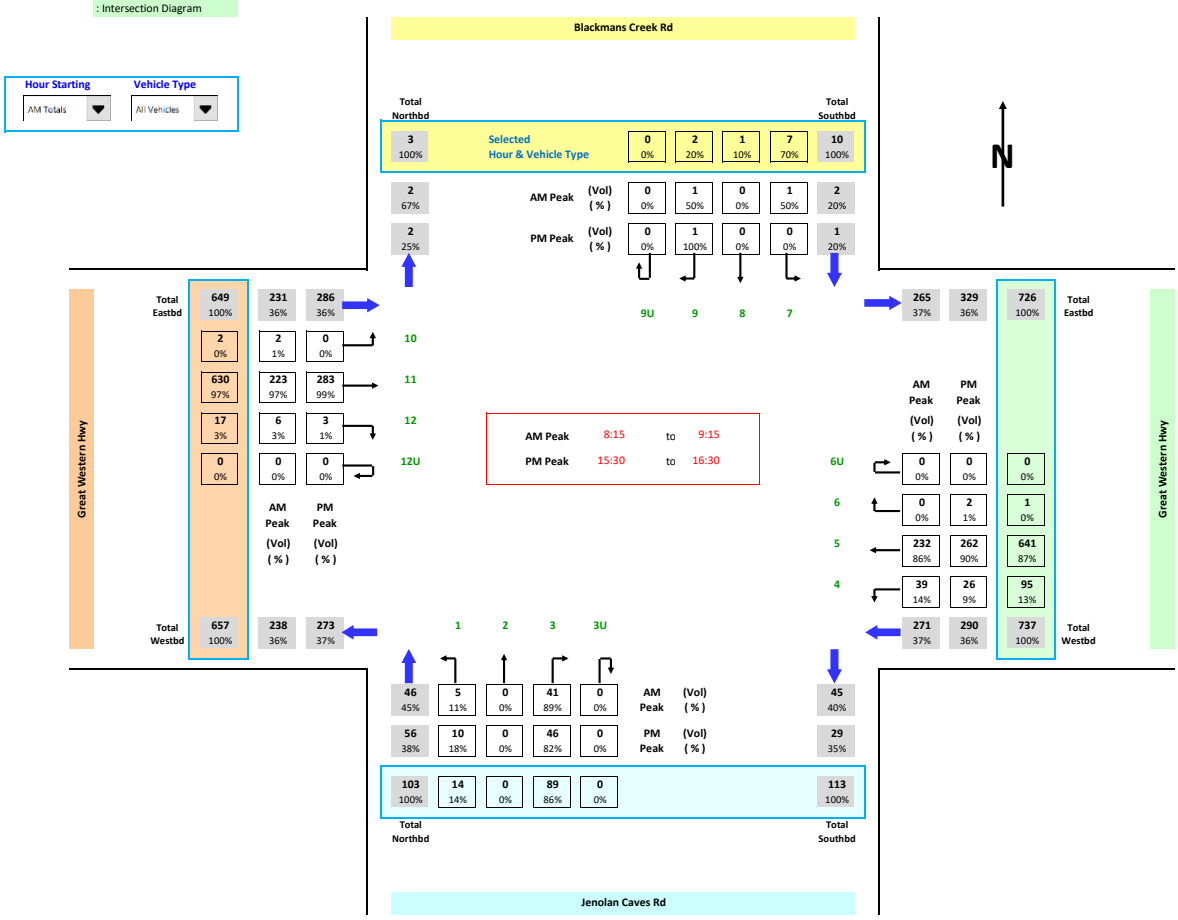
Day/Date : Thu, 16th Feb 2017
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

Hour Starting	Vehicle Type
AM Totals	All Vehicles



Job No. : N3001
Client : TTPP
Suburb : Jenolan Caves Road
Location : 1. Great Western Hwy / Jenolan Caves Rd / Blackmans Creek Rd

Day/Date : Thu, 16th Feb 2017
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram



Job No	N3001
Client	TTPP
Site	Jenolan Caves Rd - north of Hytec Access (Week 1)
Location	South Bowenfels
Site No	1
Start Date	16-Feb-17
Day	Weekday Ave
Description	Class Summary
Classification	AustRoads94

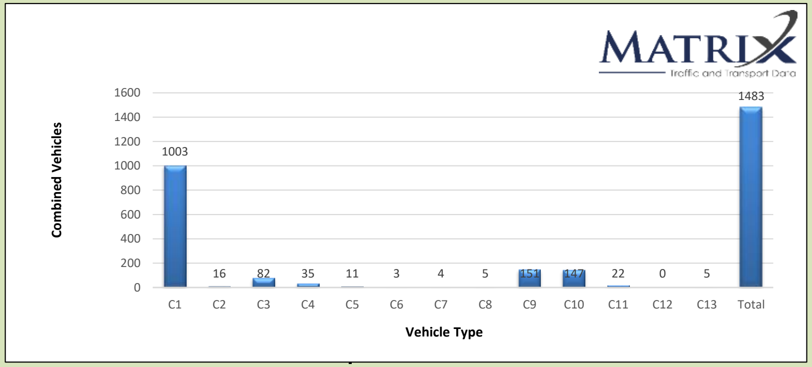
Select Site

1. Jenolan Caves Rd - north of Hytec Access (Week 1)

Select Day

Weekday Ave

Class Summary		C	NB	SB
Light	C1	**68%**	64%	71%
	C2	**1%**	1%	1%
Medium	C3	**6%**	6%	5%
	C4	**2%**	3%	2%
	C5	**1%**	0%	1%
Heavy	C6	**0%**	0%	0%
	C7	**0%**	0%	0%
	C8	**0%**	0%	0%
	C9	**10%**	12%	8%
	C10	**10%**	10%	9%
	C11	**1%**	3%	0%
	C12	**0%**	0%	0%
Unclassified	C13	**0%**	0%	0%



NB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	**Total**
0:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**2**
1:00	1	0	0	0	0	0	0	0	1	1	0	0	0	**3**
2:00	2	0	0	0	0	0	0	0	3	0	0	0	0	**6**
3:00	3	1	0	0	0	0	0	0	4	1	0	0	0	**10**
4:00	10	0	0	0	0	0	0	0	2	1	0	0	0	**14**
5:00	19	0	1	0	0	0	0	0	3	4	4	0	0	**31**
6:00	22	0	2	0	0	0	0	0	4	6	3	0	0	**37**
7:00	30	0	3	1	0	0	0	0	6	6	1	0	0	**47**
8:00	29	1	2	2	1	0	0	0	8	5	2	0	0	**49**
9:00	36	0	2	1	0	1	0	0	6	6	1	0	0	**54**
10:00	33	0	3	2	0	0	0	0	8	9	1	0	0	**58**
11:00	34	1	3	1	0	0	0	0	6	7	0	0	0	**53**
12:00	24	1	1	2	0	0	0	0	7	5	1	0	0	**42**
13:00	28	1	3	2	0	0	0	0	8	7	1	0	0	**50**
14:00	38	1	4	2	0	0	0	0	7	6	1	0	0	**60**
15:00	42	1	4	1	0	0	0	0	2	5	1	0	0	**56**
16:00	43	1	5	1	0	0	0	0	5	4	1	0	0	**61**
17:00	38	0	5	0	0	0	0	0	5	2	1	0	0	**52**
18:00	21	0	3	1	0	0	0	1	3	1	0	0	0	**31**
19:00	15	0	1	0	0	0	0	0	2	1	0	0	0	**20**
20:00	8	0	0	0	0	0	0	0	1	1	1	0	0	**12**
21:00	5	0	1	0	0	0	0	0	0	0	0	0	0	**7**
22:00	4	0	0	0	0	0	0	0	0	0	0	0	0	**4**
23:00	2	0	0	0	0	0	0	0	0	0	0	0	0	**3**
Total	487	9	43	19	2	2	2	2	93	79	21	0	1	**758**

SB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	**Total**
0:00	2	0	0	0	0	0	0	0	1	1	0	0	0	**4**
1:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
2:00	1	0	0	0	0	0	0	0	1	0	0	0	0	**3**
3:00	3	0	0	0	0	0	0	0	1	0	0	0	0	**4**
4:00	11	0	2	0	0	0	0	0	2	3	0	0	0	**18**
5:00	21	0	2	0	0	0	0	0	4	6	0	0	0	**35**
6:00	21	0	2	1	0	0	1	0	1	6	0	0	0	**32**
7:00	29	0	2	1	1	0	0	0	4	4	0	0	0	**42**
8:00	35	0	1	2	1	0	0	1	5	6	0	0	0	**50**
9:00	47	1	2	1	1	0	0	0	5	5	0	0	0	**63**
10:00	48	0	4	1	1	0	0	0	4	7	0	0	0	**66**
11:00	43	1	3	2	0	0	0	0	6	6	0	0	0	**62**
12:00	36	0	3	1	1	0	0	1	6	7	0	0	0	**55**
13:00	30	2	2	1	0	0	0	0	5	5	0	0	0	**46**
14:00	29	1	1	1	1	0	0	0	2	4	0	0	0	**39**
15:00	32	0	1	2	2	0	0	0	3	2	0	0	1	**43**
16:00	30	0	3	1	0	0	0	0	1	3	0	0	1	**39**
17:00	27	0	3	1	0	0	0	0	2	1	0	0	0	**35**
18:00	23	0	3	1	0	0	0	0	1	1	0	0	0	**29**
19:00	16	0	2	0	0	0	0	0	2	1	0	0	0	**21**
20:00	11	0	2	0	0	0	0	0	1	0	0	0	0	**15**
21:00	9	0	0	0	0	0	0	0	1	0	0	0	0	**10**
22:00	6	0	1	0	0	0	0	0	0	0	0	0	0	**7**
23:00	3	0	0	0	0	0	0	0	1	0	0	0	0	**5**
Total	516	7	39	16	9	1	2	3	58	68	1	0	4	**724**

COMBINED

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	**Total**
0:00	3	0	0	0	0	0	0	0	1	1	0	0	0	**6**
1:00	2	0	0	0	0	0	0	0	2	1	0	0	0	**4**
2:00	4	0	0	0	0	0	0	0	4	0	0	0	0	**9**
3:00	6	1	0	0	0	0	0	0	5	2	0	0	0	**14**
4:00	21	0	2	1	0	0	0	0	4	4	0	0	0	**32**
5:00	40	0	3	0	0	0	0	1	7	10	5	0	0	**66**
6:00	43	0	3	1	0	0	1	0	6	11	3	0	0	**69**
7:00	59	0	6	2	1	0	0	0	9	10	2	0	0	**90**
8:00	64	1	3	3	1	0	0	1	13	11	2	0	0	**99**
9:00	83	1	4	3	1	1	0	0	12	11	1	0	0	**117**
10:00	81	0	7	3	1	0	0	0	12	16	1	0	0	**124**
11:00	77	1	7	3	0	0	0	0	12	14	0	0	0	**115**
12:00	60	1	4	3	1	0	0	1	13	12	1	0	0	**96**
13:00	58	2	5	3	1	0	0	0	13	12	1	0	0	**96**
14:00	67	2	5	3	1	0	0	0	9	10	1	0	0	**99**
15:00	74	1	5	3	2	1	0	0	5	7	1	0	1	**99**
16:00	73	2	8	2	0	0	0	0	7	6	1	0	1	**100**
17:00	66	1	7	2	1	0	0	0	6	3	1	0	0	**87**
18:00	44	0	6	2	0	0	0	1	4	2	0	0	0	**60**
19:00	31	0	3	0	0	0	0	0	4	1	0	0	1	**40**
20:00	18	1	2	0	1	0	0	0	1	1	1	0	0	**26**
21:00	14	0	1	0	0	0	0	0	1	0	0	0	0	**17**
22:00	10	0	1	0	0	0	0	0	0	0	0	0	0	**11**
23:00	5	0	0	0	0	0	0	0	1	1	0	0	0	**7**
Total	1003	16	82	35	11	3	4	5	151	147	22	0	5	**1483**

Job No	N3001
Client	TTPP
Site	Jenolan Caves Rd - north of Hytec Access (Week 2)
Location	South Bowenfels
Site No	1
Start Date	23-Feb-17
Day	Weekday Ave
Description	Class Summary
Classification	AustRoads94

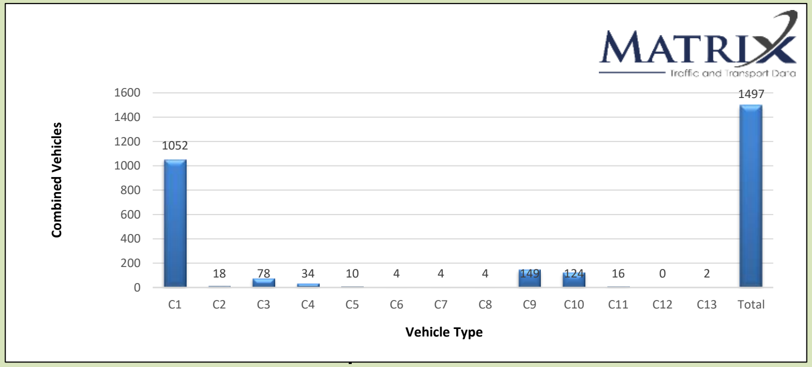
Select Site

1. Jenolan Caves Rd - north of Hytec Access (Week 2)

Select Day

Weekday Ave

Class Summary		C	NB	SB
Light	C1	**70%**	66%	75%
	C2	**1%**	1%	1%
Medium	C3	**5%**	6%	5%
	C4	**2%**	2%	2%
	C5	**1%**	0%	1%
Heavy	C6	**0%**	0%	0%
	C7	**0%**	0%	0%
	C8	**0%**	0%	0%
	C9	**10%**	12%	8%
	C10	**8%**	10%	7%
	C11	**1%**	2%	0%
	C12	**0%**	0%	0%
Unclassified	C13	**0%**	0%	0%



NB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	**Total**
0:00	1	0	0	0	0	0	0	0	1	0	0	0	0	**3**
1:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**2**
2:00	2	0	0	0	0	0	0	0	2	0	0	0	0	**5**
3:00	2	0	0	0	0	0	0	0	3	1	1	0	0	**7**
4:00	11	0	0	0	0	0	0	0	1	2	0	0	0	**16**
5:00	28	0	1	0	0	0	0	0	3	4	2	0	0	**38**
6:00	26	0	1	0	0	0	0	0	4	4	5	0	0	**40**
7:00	30	0	2	1	0	0	0	0	6	4	2	0	0	**47**
8:00	37	1	3	2	0	0	0	0	9	5	1	0	0	**58**
9:00	36	1	2	2	0	0	0	0	8	6	1	0	0	**56**
10:00	40	1	4	2	0	0	0	1	7	7	1	0	0	**62**
11:00	33	1	3	1	0	0	1	0	9	7	0	0	0	**55**
12:00	29	0	3	2	0	0	0	0	8	6	0	0	0	**48**
13:00	30	0	3	2	0	0	0	0	9	8	0	0	0	**53**
14:00	39	1	6	2	0	0	0	0	6	6	1	0	0	**61**
15:00	33	1	4	1	0	0	0	0	6	5	0	0	0	**50**
16:00	44	1	4	2	0	0	0	0	4	3	0	0	0	**59**
17:00	35	1	3	0	0	0	0	0	3	4	0	0	0	**46**
18:00	20	0	3	0	0	0	0	0	2	1	0	0	0	**26**
19:00	13	0	1	0	0	0	0	0	1	1	0	0	0	**17**
20:00	6	0	0	0	0	0	0	0	1	0	0	0	0	**8**
21:00	4	0	1	0	0	0	0	0	1	1	0	0	0	**7**
22:00	2	0	0	0	0	0	0	0	0	0	0	0	0	**3**
23:00	2	0	0	0	0	0	0	0	0	0	0	0	0	**2**
Total	505	9	44	18	1	3	3	2	94	74	15	0	0	**769**

SB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	**Total**
0:00	2	0	0	0	0	0	0	0	0	0	0	0	0	**2**
1:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**2**
2:00	2	0	0	0	0	0	0	0	0	0	0	0	0	**2**
3:00	3	0	0	0	0	0	0	0	0	0	0	0	0	**3**
4:00	12	0	0	0	0	0	0	0	1	5	0	0	0	**19**
5:00	32	1	2	0	0	0	0	0	3	3	0	0	0	**42**
6:00	24	0	3	0	0	0	0	0	2	2	0	0	0	**32**
7:00	29	0	2	2	1	0	0	0	4	2	0	0	0	**40**
8:00	41	0	3	1	1	0	0	0	5	4	0	0	0	**55**
9:00	44	1	2	1	0	0	0	0	3	3	0	0	0	**56**
10:00	57	1	3	1	2	0	0	0	6	7	0	0	0	**77**
11:00	45	1	3	2	1	0	0	0	6	5	0	0	0	**64**
12:00	42	0	2	1	1	0	0	0	5	4	0	0	0	**55**
13:00	32	0	3	1	0	0	0	0	6	4	0	0	0	**47**
14:00	29	1	1	1	0	0	0	0	3	4	0	0	1	**40**
15:00	32	0	3	1	1	0	0	0	3	3	0	0	0	**44**
16:00	28	0	1	0	0	0	0	0	1	3	0	0	0	**36**
17:00	28	1	1	1	0	0	0	0	1	0	0	0	0	**32**
18:00	23	1	2	1	0	0	0	0	2	0	0	0	0	**28**
19:00	17	1	1	1	0	0	0	0	1	1	0	0	0	**23**
20:00	11	0	1	1	0	0	0	0	0	0	0	0	0	**14**
21:00	7	0	1	0	0	0	0	0	0	0	0	0	0	**9**
22:00	3	0	1	0	0	0	0	0	0	0	0	0	0	**4**
23:00	3	0	0	0	0	0	0	0	1	0	0	0	0	**5**
Total	548	8	34	16	9	2	1	1	55	51	1	0	2	**728**

COMBINED

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	**Total**
0:00	3	0	0	0	0	0	0	0	1	0	0	0	0	**5**
1:00	3	0	0	0	0	0	0	0	1	0	0	0	0	**4**
2:00	4	0	0	0	0	0	0	0	3	0	0	0	0	**7**
3:00	5	0	0	0	0	0	0	0	3	1	1	0	0	**10**
4:00	23	0	1	0	0	0	0	0	2	7	0	0	0	**34**
5:00	60	1	3	0	0	0	0	0	6	7	2	0	0	**80**
6:00	51	1	3	1	0	0	0	0	6	6	5	0	0	**72**
7:00	59	0	4	3	1	0	0	0	10	6	2	0	0	**87**
8:00	78	1	6	2	1	0	0	0	13	8	1	0	0	**113**
9:00	81	2	4	3	0	0	0	0	11	9	1	0	0	**112**
10:00	97	1	7	3	2	0	0	1	13	14	1	0	0	**139**
11:00	78	2	6	3	2	0	1	1	15	12	0	0	0	**119**
12:00	71	0	5	3	1	0	0	1	13	10	0	0	0	**103**
13:00	62	1	6	3	0	1	0	0	15	11	0	0	0	**99**
14:00	68	1	7	3	0	0	0	0	9	10	1	0	1	**101**
15:00	65	1	7	2	1	0	0	0	9	8	1	0	0	**94**
16:00	72	1	6	2	0	1	0	0	6	7	0	0	0	**95**
17:00	63	2	3	1	0	0	0	0	4	4	0	0	0	**78**
18:00	43	1	4	1	0	0	0	0	3	1	0	0	0	**54**
19:00	30	2	2	1	0	0	0	0	2	2	0	0	0	**40**
20:00	16	1	1	1	0	0	0	0	2	1	0	0	0	**22**
21:00	11	0	2	0	0	0	0	0	1	1	0	0	0	**16**
22:00	5	0	1	0	0	0	0	0	0	0	0	0	0	**7**
23:00	5	0	0	0	0	0	0	0	1	0	0	0	0	**7**
Total	1052	18	78	34	10	4	4	4	149	124	16	0	2	**1497**

Job No	N3001
Client	TTPP
Site	Jenolan caves Rd - south of Hytec Access (Week 1)
Location	South Bowenfels
Site No	2
Start Date	16-Feb-17
Day	Weekday Ave
Description	Class Summary
Classification	AustRoads94

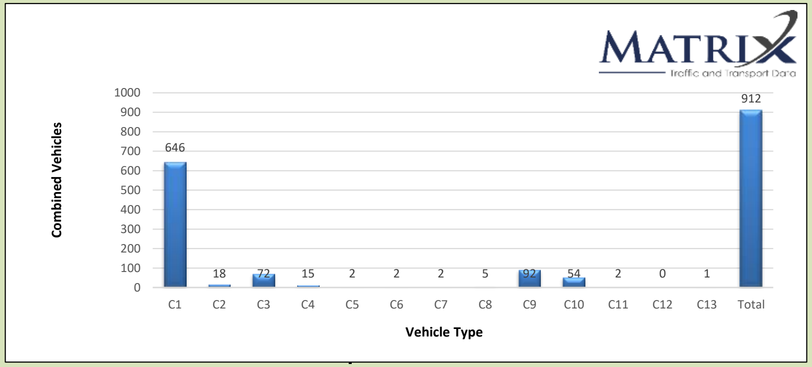
Select Site

2. Jenolan caves Rd - south of Hytec Access (Week 1)

Select Day

Weekday Ave

Class Summary		C	NB	SB
Light	C1	**71%**	67%	74%
	C2	**2%**	2%	2%
Medium	C3	**8%**	9%	6%
	C4	**2%**	2%	2%
	C5	**0%**	0%	0%
Heavy	C6	**0%**	0%	0%
	C7	**0%**	0%	0%
	C8	**1%**	0%	1%
	C9	**10%**	10%	10%
	C10	**6%**	7%	5%
	C11	**0%**	0%	0%
	C12	**0%**	0%	0%
Unclassified	C13	**0%**	0%	0%



NB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	0	0	0	0	0	0	0	0	1	0	0	0	0	**1**
1:00	0	0	0	0	0	0	0	0	2	0	0	0	0	**3**
2:00	0	0	0	0	0	0	0	0	3	1	0	0	0	**4**
3:00	1	1	0	0	0	0	0	0	4	1	1	0	0	**8**
4:00	2	0	0	0	0	0	0	0	2	1	0	0	0	**6**
5:00	10	0	1	0	0	0	0	0	1	1	0	0	0	**14**
6:00	13	0	2	0	0	0	0	0	2	1	0	0	0	**18**
7:00	17	0	3	0	0	0	0	0	4	2	0	0	0	**25**
8:00	16	1	2	0	0	0	0	0	5	2	0	0	0	**26**
9:00	17	0	1	1	0	0	0	0	2	1	0	0	0	**25**
10:00	15	1	3	1	0	0	0	0	2	4	0	0	0	**26**
11:00	18	1	3	1	0	0	0	0	2	2	0	0	0	**26**
12:00	15	1	1	1	0	0	0	0	2	2	0	0	0	**23**
13:00	23	1	4	0	0	0	0	0	3	3	0	0	0	**34**
14:00	27	1	4	1	0	0	0	0	3	3	0	0	0	**40**
15:00	29	1	4	0	0	0	0	0	1	3	0	0	0	**38**
16:00	33	1	5	0	0	0	0	0	1	2	0	0	0	**43**
17:00	28	0	3	0	0	0	0	0	2	1	0	0	0	**35**
18:00	17	0	3	0	0	0	0	1	1	0	0	0	0	**23**
19:00	9	0	1	0	0	0	0	0	1	1	0	0	0	**11**
20:00	5	0	0	0	0	0	0	0	0	0	0	0	0	**7**
21:00	3	0	1	0	0	0	0	0	0	0	0	0	0	**5**
22:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**2**
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
Total	301	9	42	8	1	1	1	2	47	32	2	0	1	**446**

SB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	1	0	0	0	0	0	0	0	2	0	0	0	0	**3**
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
2:00	1	0	0	0	0	0	0	0	1	0	0	0	0	**2**
3:00	2	0	0	0	0	0	0	0	1	0	0	0	0	**3**
4:00	2	0	0	0	0	0	0	0	1	1	0	0	0	**4**
5:00	4	0	0	0	0	0	0	0	2	2	0	0	0	**8**
6:00	10	0	2	1	0	0	0	0	0	1	0	0	0	**14**
7:00	14	0	2	1	0	0	0	0	2	2	0	0	0	**22**
8:00	22	0	2	0	0	0	0	1	3	3	0	0	0	**30**
9:00	28	1	2	1	0	0	0	0	5	2	0	0	0	**40**
10:00	30	0	4	1	0	0	0	0	6	3	0	0	0	**45**
11:00	26	1	4	0	0	0	0	0	6	2	0	0	0	**39**
12:00	27	0	2	1	0	0	0	1	4	1	0	0	0	**36**
13:00	26	1	2	1	0	0	0	0	2	1	0	0	0	**32**
14:00	22	1	1	1	0	0	0	0	2	0	0	0	0	**28**
15:00	23	1	2	1	0	0	0	0	1	1	0	0	0	**28**
16:00	24	1	1	0	0	0	0	0	1	0	0	0	0	**28**
17:00	26	0	1	0	0	0	0	0	1	1	0	0	0	**30**
18:00	22	0	1	0	0	0	0	0	1	0	0	0	0	**25**
19:00	12	0	1	0	0	0	0	0	1	0	0	0	0	**15**
20:00	11	0	1	0	0	0	0	0	0	0	0	0	0	**13**
21:00	7	0	0	0	0	0	0	0	1	0	0	0	0	**9**
22:00	5	0	0	0	0	0	0	0	0	0	0	0	0	**6**
23:00	3	0	0	0	0	0	0	0	2	0	0	0	0	**4**
Total	346	9	30	7	1	1	1	3	45	22	0	0	0	**466**

COMBINED

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	1	0	0	0	0	0	0	0	2	0	0	0	0	**4**
1:00	1	0	0	0	0	0	0	0	2	0	0	0	0	**3**
2:00	1	0	0	0	0	0	0	0	4	1	0	0	0	**6**
3:00	3	1	0	0	0	0	0	0	5	1	1	0	0	**12**
4:00	4	0	0	0	0	0	0	0	3	2	0	0	0	**10**
5:00	14	0	1	0	0	0	0	0	4	3	0	0	0	**22**
6:00	23	0	4	1	0	0	0	0	2	2	0	0	0	**33**
7:00	31	0	5	1	0	0	0	0	5	4	0	0	0	**47**
8:00	38	1	4	1	0	0	0	1	8	4	0	0	0	**57**
9:00	46	2	4	2	0	0	0	0	7	4	0	0	0	**65**
10:00	45	1	7	2	0	0	0	0	8	7	0	0	0	**72**
11:00	44	2	7	1	0	0	0	0	8	4	0	0	0	**66**
12:00	42	1	3	2	0	0	0	1	6	3	0	0	0	**59**
13:00	48	2	5	1	0	0	0	0	5	4	0	0	0	**66**
14:00	49	2	5	2	0	0	0	0	5	3	0	0	0	**68**
15:00	51	1	6	1	0	0	0	0	2	3	0	0	0	**65**
16:00	57	2	6	1	0	0	0	0	2	2	0	0	0	**71**
17:00	54	1	4	1	0	0	0	0	4	2	0	0	0	**65**
18:00	38	0	5	0	0	0	0	1	2	1	0	0	0	**47**
19:00	20	0	2	0	0	0	0	0	2	1	0	0	0	**26**
20:00	16	1	1	0	0	0	0	0	1	1	0	0	0	**20**
21:00	11	1	1	0	0	0	0	0	1	0	0	0	0	**14**
22:00	6	0	0	0	0	0	0	0	1	1	0	0	0	**8**
23:00	3	0	0	0	0	0	0	0	2	1	0	0	0	**6**
Total	646	18	72	15	2	2	2	5	92	54	2	0	1	**912**

Job No	N3001
Client	TTPP
Site	Jenolan caves Rd - south of Hytec Access (Week 2)
Location	South Bowenfels
Site No	2
Start Date	23-Feb-17
Day	Weekday Ave
Description	Class Summary
Classification	AustRoads94

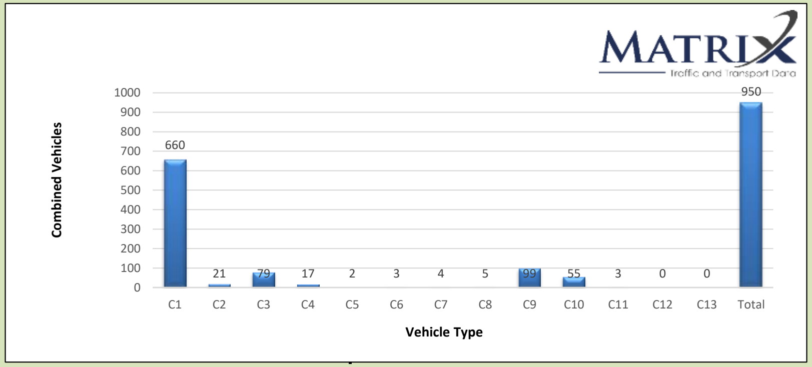
Select Site

2. Jenolan caves Rd - south of Hytec Access (Week 2)

Select Day

Weekday Ave

Class Summary		C	NB	SB
Light	C1	**69%**	65%	73%
	C2	**2%**	2%	2%
Medium	C3	**8%**	11%	5%
	C4	**2%**	2%	2%
	C5	**0%**	0%	0%
Heavy	C6	**0%**	1%	0%
	C7	**0%**	0%	0%
	C8	**1%**	0%	1%
	C9	**10%**	10%	11%
	C10	**6%**	7%	5%
	C11	**0%**	1%	0%
	C12	**0%**	0%	0%
Unclassified	C13	**0%**	0%	0%



NB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	0	0	0	0	0	0	0	0	1	0	0	0	0	**2**
1:00	0	0	0	0	0	0	0	0	1	0	0	0	0	**1**
2:00	0	0	0	0	0	0	0	0	2	0	0	0	0	**3**
3:00	2	0	0	0	0	0	0	0	3	1	0	0	0	**7**
4:00	2	0	1	0	0	0	0	0	2	2	0	0	0	**7**
5:00	10	0	3	0	0	0	0	0	2	0	0	0	0	**16**
6:00	10	0	2	0	0	0	0	0	2	1	0	0	0	**15**
7:00	15	0	2	1	0	0	0	0	4	2	0	0	0	**24**
8:00	20	1	4	1	0	0	0	0	4	3	0	0	0	**34**
9:00	19	1	2	1	0	0	0	0	4	2	0	0	0	**29**
10:00	19	1	3	1	1	0	0	1	3	2	0	0	0	**30**
11:00	18	1	3	1	0	0	1	0	3	2	0	0	0	**28**
12:00	20	0	4	1	0	0	0	0	3	3	0	0	0	**31**
13:00	19	0	3	1	0	0	0	0	3	5	1	0	0	**33**
14:00	31	1	6	1	0	0	0	0	3	3	0	0	0	**46**
15:00	23	0	4	1	0	0	0	0	1	2	0	0	0	**32**
16:00	35	1	5	1	0	0	0	0	1	1	0	0	0	**45**
17:00	26	1	4	0	0	0	0	0	2	2	0	0	0	**35**
18:00	17	0	4	0	0	0	0	0	1	0	0	0	0	**22**
19:00	7	0	2	0	0	0	0	0	1	0	0	0	0	**10**
20:00	5	0	0	0	0	0	0	0	1	0	0	0	0	**7**
21:00	3	0	0	0	0	0	0	0	0	1	0	0	0	**5**
22:00	2	0	0	0	0	0	0	0	0	0	0	0	0	**2**
23:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**2**
Total	305	9	53	10	1	2	2	2	47	33	2	0	0	**467**

SB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
1:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
2:00	1	0	0	0	0	0	0	0	1	0	0	0	0	**2**
3:00	3	0	0	0	0	0	0	0	0	0	0	0	0	**3**
4:00	1	0	0	0	0	0	0	0	1	2	0	0	0	**4**
5:00	5	1	0	0	0	0	0	0	3	0	0	0	0	**9**
6:00	10	1	2	0	0	0	0	0	2	1	0	0	0	**16**
7:00	14	0	2	0	0	0	0	0	3	1	0	0	0	**21**
8:00	20	0	3	0	0	0	0	0	5	2	0	0	0	**31**
9:00	27	1	1	0	0	0	0	0	4	2	0	0	0	**36**
10:00	33	1	2	1	0	0	0	0	7	5	0	0	0	**48**
11:00	28	1	4	1	0	0	0	0	5	3	0	0	0	**43**
12:00	31	0	1	1	0	0	0	1	4	2	0	0	0	**41**
13:00	22	1	2	0	0	0	0	0	4	2	0	0	0	**30**
14:00	25	2	1	1	0	0	0	0	2	0	0	0	0	**31**
15:00	25	0	2	1	0	0	0	0	3	1	0	0	0	**32**
16:00	22	0	2	0	0	0	0	0	2	1	0	0	0	**28**
17:00	27	1	0	0	0	0	0	0	1	0	0	0	0	**31**
18:00	22	1	1	0	0	0	0	0	1	0	0	0	0	**26**
19:00	12	2	1	0	0	0	0	0	2	0	0	0	0	**18**
20:00	11	1	1	0	0	0	0	0	0	0	0	0	0	**14**
21:00	9	0	0	0	0	0	0	0	0	0	0	0	0	**10**
22:00	4	0	0	0	0	0	0	0	0	0	0	0	0	**4**
23:00	2	0	0	0	0	0	0	0	1	0	0	0	0	**4**
Total	355	12	26	7	1	1	2	3	52	22	1	0	0	**483**

COMBINED

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	1	0	0	0	0	0	0	0	1	0	0	0	0	**3**
1:00	1	0	0	0	0	0	0	0	1	0	0	0	0	**2**
2:00	2	0	0	0	0	0	0	0	3	0	0	0	0	**5**
3:00	4	0	0	0	0	0	0	0	4	1	0	0	0	**10**
4:00	3	0	1	0	0	0	0	0	3	3	0	0	0	**12**
5:00	15	1	4	0	0	0	0	0	5	1	0	0	0	**26**
6:00	20	1	4	0	0	0	0	0	4	1	0	0	0	**31**
7:00	29	1	4	1	0	0	0	0	7	3	0	0	0	**45**
8:00	40	1	7	1	0	0	0	0	9	5	0	0	0	**65**
9:00	46	2	3	1	0	0	1	0	7	4	0	0	0	**65**
10:00	51	1	6	2	1	0	0	1	10	6	0	0	0	**78**
11:00	45	2	6	2	0	0	1	0	8	6	0	0	0	**71**
12:00	51	0	5	2	0	0	0	1	6	4	0	0	0	**72**
13:00	41	1	5	1	0	0	0	0	7	7	1	0	0	**63**
14:00	56	2	7	2	0	0	0	0	5	4	0	0	0	**77**
15:00	48	1	7	2	0	0	0	0	4	2	0	0	0	**64**
16:00	57	1	7	1	0	0	0	0	3	2	0	0	0	**72**
17:00	54	2	4	0	0	0	0	1	3	2	0	0	0	**66**
18:00	39	1	5	0	0	0	0	0	2	0	0	0	0	**48**
19:00	19	2	3	0	0	0	0	0	3	1	0	0	0	**28**
20:00	16	1	1	0	0	0	0	0	1	0	0	0	0	**21**
21:00	12	0	0	0	0	0	0	0	1	1	0	0	0	**14**
22:00	6	0	0	0	0	0	0	0	0	0	0	0	0	**7**
23:00	3	0	1	0	0	0	0	0	2	0	0	0	0	**6**
Total	660	21	79	17	2	3	4	5	99	55	3	0	0	**950**

Job No	N3001
Client	TTPP
Site	Hytec Access Rd - south of Jenolan Caves Rd (Week 1)
Location	South Bowenfels
Site No	3
Start Date	16-Feb-17
Day	Weekday Ave
Description	Class Summary
Classification	AustRoads94

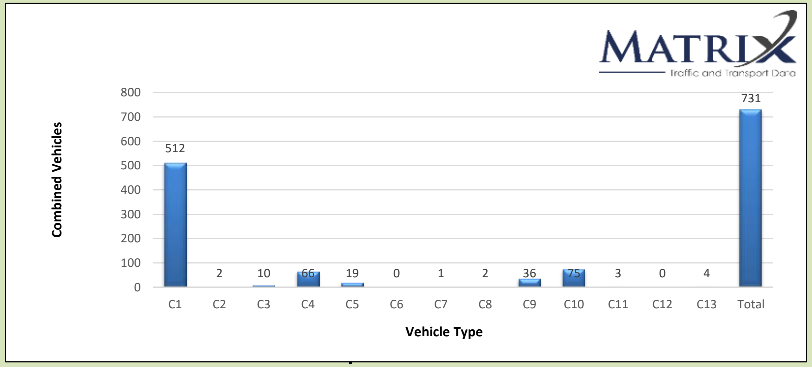
Select Site

3. Hytec Access Rd - south of Jenolan Caves Rd (Week 1)

Select Day

Weekday Ave

Class Summary		C	NB	SB
Light	C1	**70%**	63%	78%
	C2	**0%**	0%	0%
Medium	C3	**1%**	2%	1%
	C4	**9%**	14%	3%
	C5	**3%**	4%	1%
Heavy	C6	**0%**	0%	0%
	C7	**0%**	0%	0%
	C8	**0%**	0%	0%
	C9	**5%**	5%	5%
	C10	**10%**	10%	11%
	C11	**0%**	1%	0%
	C12	**0%**	0%	0%
Unclassified	C13	**1%**	1%	0%



NB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
2:00	2	0	0	0	0	0	0	0	0	0	0	0	0	**2**
3:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
4:00	7	0	0	0	0	0	0	0	0	0	0	0	0	**7**
5:00	22	0	0	3	1	0	0	0	2	5	0	0	0	**33**
6:00	24	0	0	3	1	0	0	0	2	2	0	0	0	**33**
7:00	22	0	0	5	1	0	0	0	1	2	0	0	0	**32**
8:00	20	0	0	4	1	0	0	0	1	2	0	0	0	**30**
9:00	21	0	1	4	1	0	0	0	2	3	0	0	0	**32**
10:00	19	0	0	4	2	0	0	0	1	4	0	0	1	**33**
11:00	15	0	1	5	2	0	0	0	1	4	0	0	0	**28**
12:00	14	0	0	7	2	0	0	0	2	3	0	0	0	**27**
13:00	9	0	0	5	2	0	0	0	2	4	0	0	0	**23**
14:00	10	0	0	3	1	0	0	0	3	3	0	0	0	**21**
15:00	16	0	1	2	0	0	0	0	1	2	0	0	0	**22**
16:00	12	0	0	4	1	0	0	0	1	2	0	0	0	**21**
17:00	16	0	2	2	1	0	0	0	1	1	0	0	0	**22**
18:00	5	0	0	3	0	0	0	0	0	0	0	0	0	**9**
19:00	7	0	0	1	1	0	0	0	0	0	0	0	0	**9**
20:00	3	0	0	1	0	0	0	0	0	1	0	0	0	**5**
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
22:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	248	1	7	56	16	0	0	1	20	38	2	0	3	**393**

SB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
3:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
4:00	9	0	1	0	0	0	0	0	1	3	0	0	0	**13**
5:00	33	0	1	0	0	0	0	0	1	3	0	0	0	**38**
6:00	25	0	0	1	0	0	0	0	0	2	1	0	0	**30**
7:00	24	0	0	0	0	0	0	0	1	2	0	0	0	**29**
8:00	24	0	0	1	0	0	0	0	1	2	0	0	0	**28**
9:00	23	0	0	0	0	0	0	0	1	3	0	0	0	**28**
10:00	21	0	0	1	0	0	0	0	1	4	0	0	0	**27**
11:00	17	0	0	1	0	0	0	0	2	3	0	0	0	**23**
12:00	16	0	0	1	0	0	0	0	3	3	0	0	0	**24**
13:00	10	0	0	1	0	0	0	0	2	3	0	0	0	**18**
14:00	9	0	0	1	0	0	0	0	1	3	0	0	0	**14**
15:00	14	0	0	2	0	0	0	0	1	2	0	0	0	**20**
16:00	11	0	0	1	0	0	0	0	1	2	0	0	0	**15**
17:00	10	0	0	1	0	0	0	0	0	1	0	0	0	**12**
18:00	5	0	0	0	0	0	0	0	1	1	0	0	0	**6**
19:00	8	0	0	0	0	0	0	0	0	0	0	0	0	**9**
20:00	2	0	0	0	0	0	0	0	0	0	0	0	0	**2**
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	264	1	3	10	3	0	0	1	16	37	1	0	1	**338**

COMBINED

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
2:00	2	0	0	0	0	0	0	0	0	0	0	0	0	**2**
3:00	2	0	0	0	0	0	0	0	0	0	0	0	0	**2**
4:00	16	0	1	0	0	0	0	0	1	3	0	0	0	**20**
5:00	55	0	1	3	1	0	0	0	3	8	0	0	1	**71**
6:00	49	0	1	4	2	0	0	0	2	4	1	0	0	**63**
7:00	46	0	0	5	1	0	0	0	2	5	1	0	0	**60**
8:00	44	0	0	5	1	0	0	0	2	5	0	0	0	**58**
9:00	45	0	1	5	1	0	0	0	3	6	0	0	0	**60**
10:00	40	0	1	5	3	0	0	0	2	8	0	0	1	**61**
11:00	32	0	1	6	2	0	0	0	2	7	0	0	0	**51**
12:00	30	0	0	8	2	0	0	0	5	6	0	0	0	**51**
13:00	19	1	0	6	2	0	0	0	5	7	0	0	0	**41**
14:00	19	0	0	4	1	0	0	0	4	6	0	0	0	**34**
15:00	30	0	1	4	1	0	0	0	2	3	0	0	0	**42**
16:00	24	1	0	4	1	0	0	0	2	3	0	0	0	**35**
17:00	26	0	2	2	1	0	0	0	1	2	0	0	0	**34**
18:00	10	0	1	3	0	0	0	0	1	1	0	0	0	**16**
19:00	15	0	0	1	1	0	0	0	0	1	0	0	0	**18**
20:00	5	0	0	1	0	0	0	0	0	1	0	0	0	**8**
21:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
22:00	2	0	0	0	0	0	0	0	0	0	0	0	0	**2**
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	512	2	10	66	19	0	1	2	36	75	3	0	4	**731**

Job No	N3001
Client	TTPP
Site	Hytec Access Rd - south of Jenolan Caves Rd (Week 2)
Location	South Bowenfels
Site No	3
Start Date	23-Feb-17
Day	Weekday Ave
Description	Class Summary
Classification	AustRoads94

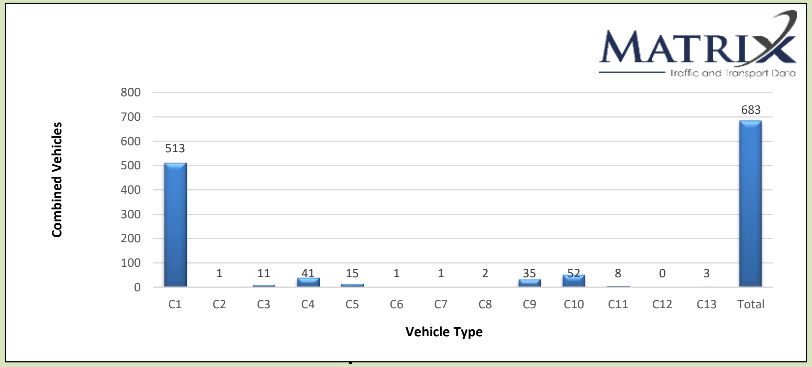
Select Site

3. Hytec Access Rd - south of Jenolan Caves Rd (Week 2)

Select Day

Weekday Ave

Class Summary		C	NB	SB
Light	C1	**75%**	72%	78%
	C2	**0%**	0%	0%
Medium	C3	**2%**	2%	1%
	C4	**6%**	8%	4%
	C5	**2%**	3%	1%
Heavy	C6	**0%**	0%	0%
	C7	**0%**	0%	0%
	C8	**0%**	0%	1%
	C9	**5%**	4%	7%
	C10	**8%**	7%	8%
	C11	**1%**	2%	0%
	C12	**0%**	0%	0%
Unclassified	C13	**0%**	1%	0%



NB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
2:00	2	0	0	0	0	0	0	0	0	0	0	0	0	**2**
3:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
4:00	7	0	0	0	0	0	0	0	0	0	0	0	0	**7**
5:00	24	0	0	1	0	0	0	0	1	3	2	0	0	**30**
6:00	24	0	1	3	2	0	0	0	1	1	1	0	0	**32**
7:00	22	0	0	1	0	0	0	0	1	1	0	0	0	**26**
8:00	24	0	0	2	0	0	0	0	0	1	1	0	0	**29**
9:00	17	0	1	2	1	0	0	0	1	2	2	0	0	**26**
10:00	24	0	1	2	0	0	0	0	1	3	1	0	0	**32**
11:00	22	0	1	2	1	0	0	0	1	3	0	0	0	**31**
12:00	12	0	0	2	2	0	0	0	2	1	0	0	0	**21**
13:00	13	0	1	4	1	0	0	0	1	2	0	0	0	**23**
14:00	15	0	1	3	1	0	0	0	2	1	0	0	0	**23**
15:00	16	0	0	3	1	0	0	0	1	3	0	0	0	**25**
16:00	13	0	0	2	0	0	0	0	1	3	0	0	0	**19**
17:00	10	0	1	1	1	0	0	0	1	1	0	0	0	**15**
18:00	4	0	0	0	0	0	0	0	0	0	0	0	0	**5**
19:00	4	0	0	0	0	0	0	0	0	0	0	0	0	**5**
20:00	1	0	1	0	0	0	0	0	0	0	0	0	0	**2**
21:00	2	0	1	0	0	0	0	0	0	0	0	0	0	**3**
22:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	259	0	9	28	12	1	1	0	13	26	7	0	2	**357**

SB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
3:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
4:00	8	0	0	1	0	0	0	0	2	1	0	0	0	**13**
5:00	31	0	0	2	0	0	0	0	1	4	0	0	0	**39**
6:00	23	0	0	0	0	0	0	1	1	1	0	0	0	**27**
7:00	21	0	0	1	1	0	0	0	2	1	0	0	0	**26**
8:00	25	0	0	1	0	0	0	0	2	3	0	0	0	**32**
9:00	17	0	0	0	0	0	0	0	1	2	0	0	0	**21**
10:00	24	0	0	1	0	0	0	0	1	3	0	0	0	**30**
11:00	22	0	0	1	0	0	0	0	2	1	0	0	0	**27**
12:00	14	0	0	2	0	0	0	0	2	2	0	0	0	**21**
13:00	13	0	0	1	0	0	0	0	4	2	0	0	0	**21**
14:00	14	0	0	0	0	0	0	0	2	2	0	0	0	**18**
15:00	15	0	0	1	0	0	0	0	0	2	0	0	0	**19**
16:00	10	0	0	0	0	0	0	0	1	1	0	0	0	**14**
17:00	5	0	0	0	0	0	0	0	0	0	0	0	0	**6**
18:00	4	0	0	0	0	0	0	0	0	0	0	0	0	**4**
19:00	3	0	0	0	0	0	0	0	1	0	0	0	0	**4**
20:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
21:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
23:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
Total	254	1	2	13	3	0	0	2	22	26	1	0	1	**326**

COMBINED

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
2:00	2	0	0	0	0	0	0	0	0	0	0	0	0	**2**
3:00	2	0	0	0	0	0	0	0	0	0	0	0	0	**2**
4:00	15	0	0	1	0	0	0	0	2	1	0	0	0	**20**
5:00	55	0	0	3	0	0	0	0	2	6	2	0	1	**69**
6:00	48	0	1	3	2	0	0	1	2	2	1	0	0	**59**
7:00	44	0	0	2	1	0	0	0	2	2	1	0	0	**52**
8:00	49	0	0	4	0	0	0	0	2	4	1	0	0	**61**
9:00	34	0	1	2	1	0	0	0	2	5	2	0	0	**47**
10:00	47	0	1	3	1	0	0	0	3	6	1	0	0	**63**
11:00	44	0	1	3	2	0	0	0	3	4	0	0	0	**58**
12:00	27	0	0	4	2	0	0	0	4	3	0	0	1	**42**
13:00	26	0	1	5	2	0	0	0	6	4	0	0	0	**43**
14:00	29	0	1	3	1	0	0	0	3	3	0	0	0	**41**
15:00	31	0	0	4	2	0	0	0	1	5	0	0	0	**44**
16:00	23	0	0	2	1	0	0	0	2	4	0	0	0	**33**
17:00	15	0	1	1	1	0	0	0	1	1	0	0	0	**21**
18:00	8	0	0	0	0	0	0	0	0	0	0	0	0	**9**
19:00	7	0	0	0	0	0	0	0	1	1	0	0	0	**9**
20:00	2	0	1	0	0	0	0	0	0	0	0	0	0	**3**
21:00	3	0	1	0	0	0	0	0	0	0	0	0	0	**4**
22:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
23:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
Total	513	1	11	41	15	1	1	2	35	52	8	0	3	**683**

Job No	N3001
Client	TTPP
Site	Jenolan Caves Rd - north of Hytec Access (Week 1)
Location	South Bowenfels
Site No	1
Start Date	16-Feb-17
Day	Saturday
Description	Class Summary
Classification	AustRoads94

Select Site

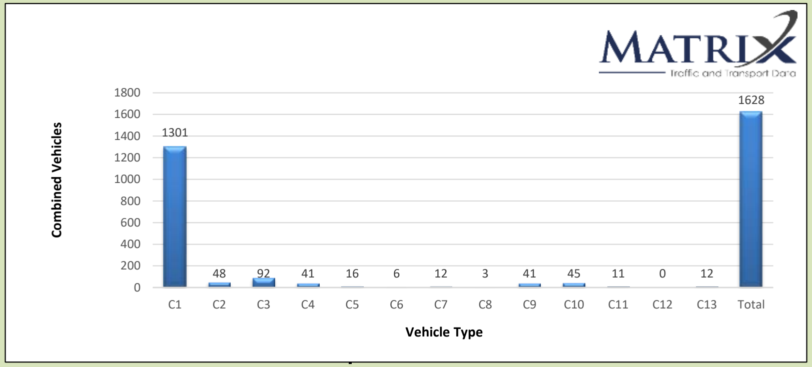
1. Jenolan Caves Rd - north of Hytec Access (Week 1)

Select Day

Saturday

Class Summary

		C	NB	SB
Light	C1	80%	80%	80%
	C2	3%	4%	2%
Medium	C3	6%	6%	5%
	C4	3%	1%	4%
	C5	1%	0%	2%
Heavy	C6	0%	0%	0%
	C7	1%	1%	1%
	C8	0%	0%	0%
	C9	3%	3%	2%
	C10	3%	3%	3%
	C11	1%	1%	0%
	C12	0%	0%	0%
Unclassified	C13	1%	0%	1%



NB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	0	0	1	0	1	0	0	0	0	0	0	0	0	2
1:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	1	1	0	0	0	0	0	2
4:00	12	0	0	0	0	0	0	0	0	0	1	0	0	13
5:00	21	1	0	0	0	0	0	0	5	1	2	0	0	30
6:00	21	0	1	0	0	0	0	0	2	4	3	0	0	31
7:00	12	2	1	1	0	0	0	0	3	2	0	0	0	21
8:00	26	1	0	0	0	0	0	0	1	2	0	0	0	30
9:00	30	1	0	0	0	0	0	0	5	4	0	0	0	40
10:00	43	1	3	4	0	0	1	0	2	3	1	0	0	58
11:00	28	0	2	1	0	0	0	0	5	4	3	0	0	43
12:00	34	1	2	1	0	0	0	0	2	2	0	0	0	42
13:00	27	3	3	0	0	2	0	0	0	0	0	0	0	35
14:00	53	1	9	0	1	0	1	0	0	0	0	0	0	65
15:00	56	5	3	0	0	0	0	0	0	0	0	0	0	64
16:00	71	4	5	0	0	1	0	0	0	0	0	0	0	81
17:00	40	1	4	0	0	0	0	0	0	0	0	0	0	45
18:00	52	2	4	0	0	0	1	0	1	0	0	0	0	60
19:00	26	2	0	0	0	0	2	0	0	0	0	0	0	30
20:00	9	0	1	0	0	0	0	0	0	0	1	0	0	11
21:00	16	0	3	0	0	0	0	0	0	0	0	0	0	19
22:00	9	1	1	0	0	0	0	1	0	0	0	0	0	12
23:00	8	1	1	0	0	0	0	0	0	0	0	0	0	10
Total	594	27	45	7	2	3	6	2	26	22	11	0	0	745

SB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	2	0	0	0	0	0	0	0	0	0	0	0	0	2
1:00	3	0	0	0	0	0	0	0	0	0	0	0	0	3
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4:00	18	0	1	1	0	0	0	0	3	2	0	0	0	25
5:00	30	0	1	0	0	1	0	0	0	3	0	0	0	35
6:00	27	2	1	1	0	0	0	0	1	3	0	0	3	38
7:00	37	3	5	3	3	0	1	0	0	2	0	0	0	54
8:00	67	3	6	1	1	1	2	0	1	1	0	0	0	83
9:00	89	1	4	7	2	0	0	0	4	2	0	0	3	112
10:00	75	1	2	4	1	1	1	0	2	7	0	0	1	95
11:00	76	1	4	6	4	0	0	0	1	2	0	0	1	95
12:00	56	0	3	2	0	0	0	1	1	1	0	0	1	65
13:00	78	0	4	1	1	0	0	0	0	0	0	0	1	85
14:00	37	3	4	1	1	0	0	0	2	0	0	0	1	49
15:00	37	1	2	4	0	0	0	0	0	0	0	0	0	44
16:00	10	2	0	1	0	0	0	0	0	0	0	0	0	13
17:00	28	2	4	1	1	0	1	0	0	0	0	0	0	37
18:00	13	2	0	0	0	0	1	0	0	0	0	0	0	16
19:00	7	0	1	0	0	0	0	0	0	0	0	0	1	9
20:00	5	0	0	0	0	0	0	0	0	0	0	0	0	5
21:00	5	0	2	0	0	0	0	0	0	0	0	0	0	7
22:00	5	0	1	0	0	0	0	0	0	0	0	0	0	6
23:00	1	0	2	1	0	0	0	0	0	0	0	0	0	4
Total	707	21	47	34	14	3	6	1	15	23	0	0	12	883

COMBINED

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	2	0	1	0	1	0	0	0	0	0	0	0	0	4
1:00	3	0	1	0	0	0	0	0	0	0	0	0	0	4
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	1	0	0	0	0	0	1	1	0	0	0	0	0	3
4:00	30	0	1	1	0	0	0	0	3	2	1	0	0	38
5:00	51	1	1	0	0	1	0	0	5	4	2	0	0	65
6:00	48	2	2	1	0	0	0	0	3	7	3	0	3	69
7:00	49	5	6	4	3	0	1	0	3	4	0	0	0	75
8:00	93	4	6	1	1	1	2	0	2	3	0	0	0	113
9:00	119	2	4	7	2	0	0	0	9	6	0	0	3	152
10:00	118	2	5	8	1	1	2	0	4	10	1	0	1	153
11:00	104	1	6	7	4	0	0	0	6	6	3	0	1	138
12:00	90	1	5	3	0	0	0	1	3	3	0	0	1	107
13:00	105	3	7	1	1	2	0	0	0	0	0	0	1	120
14:00	90	4	13	1	2	0	1	0	2	0	0	0	1	114
15:00	93	6	5	4	0	0	0	0	0	0	0	0	0	108
16:00	81	6	5	1	0	1	0	0	0	0	0	0	0	94
17:00	68	3	8	1	1	0	1	0	0	0	0	0	0	82
18:00	65	4	4	0	0	0	2	0	1	0	0	0	0	76
19:00	33	2	1	0	0	0	2	0	0	0	0	0	1	39
20:00	14	0	1	0	0	0	0	0	0	0	1	0	0	16
21:00	21	0	5	0	0	0	0	0	0	0	0	0	0	26
22:00	14	1	2	0	0	0	0	1	0	0	0	0	0	18
23:00	9	1	3	1	0	0	0	0	0	0	0	0	0	14
Total	1301	48	92	41	16	6	12	3	41	45	11	0	12	1628

Job No	N3001
Client	TTPP
Site	Jenolan Caves Rd - north of Hytec Access (Week 2)
Location	South Bowenfels
Site No	1
Start Date	23-Feb-17
Day	Saturday
Description	Class Summary
Classification	AustRoads94

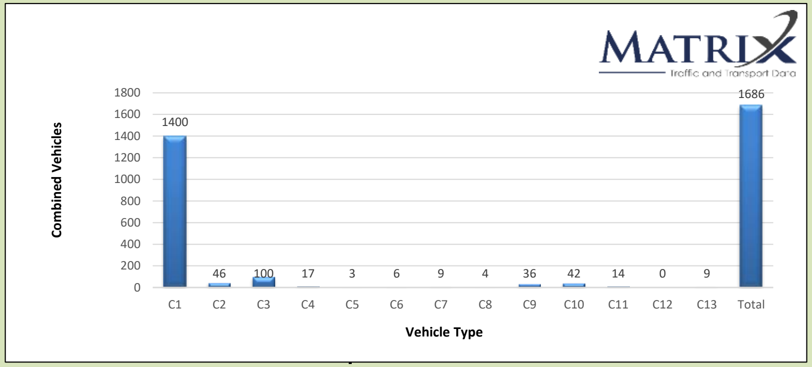
Select Site

1. Jenolan Caves Rd - north of Hytec Access (Week 2)

Select Day

Saturday

Class Summary		C	NB	SB
Light	C1	83%	81%	85%
	C2	3%	3%	2%
Medium	C3	6%	6%	6%
	C4	1%	0%	2%
	C5	0%	0%	0%
Heavy	C6	0%	0%	0%
	C7	1%	1%	0%
	C8	0%	0%	0%
	C9	2%	3%	2%
	C10	2%	3%	2%
	C11	1%	2%	0%
	C12	0%	0%	0%
Unclassified	C13	1%	0%	1%



NB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	4	0	0	1	0	0	0	0	0	0	0	0	1	6
3:00	2	0	0	0	0	0	0	0	0	1	0	0	0	3
4:00	12	0	0	0	0	0	0	0	1	1	0	0	0	14
5:00	6	3	1	0	0	0	0	0	2	9	2	0	0	23
6:00	18	0	1	1	0	0	0	0	1	1	1	0	0	23
7:00	17	1	2	0	0	0	0	0	5	0	1	0	0	26
8:00	33	1	1	0	0	0	0	0	0	5	0	0	0	40
9:00	45	2	5	0	0	1	0	0	3	1	3	0	0	60
10:00	38	0	2	0	1	0	0	0	4	4	1	0	0	50
11:00	45	1	2	0	0	0	0	0	4	2	3	0	0	57
12:00	31	1	1	0	0	0	0	0	1	1	2	0	0	37
13:00	40	1	3	0	0	0	0	0	0	0	0	0	0	44
14:00	64	5	4	0	0	1	1	0	0	0	0	0	0	75
15:00	57	1	3	0	0	0	2	0	0	0	0	0	0	63
16:00	77	3	7	0	0	0	1	0	0	0	0	0	0	88
17:00	56	2	4	0	0	0	0	0	1	0	0	0	0	63
18:00	55	3	4	0	0	0	0	0	0	0	0	0	0	62
19:00	29	1	3	0	0	0	0	0	0	0	0	0	0	33
20:00	19	1	5	0	0	0	2	0	0	0	0	0	0	27
21:00	8	1	2	0	0	0	0	2	1	0	0	0	0	14
22:00	12	0	0	0	0	0	0	0	0	0	0	0	0	12
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	668	27	50	2	1	2	6	2	23	25	13	0	1	820

SB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	1	0	1	0	0	0	0	0	0	0	0	0	0	2
1:00	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2:00	2	0	0	0	0	0	0	0	0	0	0	0	0	2
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	13	0	1	0	0	0	0	0	0	3	0	0	0	17
5:00	9	0	1	0	0	0	0	0	2	5	0	0	0	17
6:00	22	0	1	2	0	0	0	0	2	2	0	0	0	29
7:00	27	3	6	0	0	0	0	1	1	0	1	0	0	39
8:00	47	3	5	2	0	0	0	0	0	3	0	0	2	62
9:00	81	1	8	1	0	0	0	0	0	2	0	0	3	96
10:00	61	2	5	3	0	0	0	0	2	0	0	0	1	74
11:00	98	3	4	4	0	0	0	0	5	1	0	0	0	115
12:00	62	1	5	2	0	1	0	0	1	1	0	0	1	74
13:00	55	0	4	0	0	0	0	0	0	0	0	0	0	59
14:00	47	1	2	1	0	0	0	0	0	0	0	0	0	51
15:00	66	1	1	0	2	0	0	0	0	0	0	0	1	71
16:00	41	1	3	0	0	2	1	0	0	0	0	0	0	48
17:00	38	0	1	0	0	1	1	0	0	0	0	0	0	41
18:00	19	1	1	0	0	0	0	0	0	0	0	0	0	21
19:00	11	0	1	0	0	0	0	0	0	0	0	0	0	12
20:00	9	0	0	0	0	0	0	0	0	0	0	0	0	9
21:00	7	1	0	0	0	0	1	0	0	0	0	0	0	9
22:00	9	1	0	0	0	0	0	0	0	0	0	0	0	10
23:00	6	0	0	0	0	0	0	1	0	0	0	0	0	7
Total	732	19	50	15	2	4	3	2	13	17	1	0	8	866

COMBINED

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	1	0	1	0	0	0	0	0	0	0	0	0	0	2
1:00	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2:00	6	0	0	1	0	0	0	0	0	0	0	0	1	8
3:00	2	0	0	0	0	0	0	0	0	1	0	0	0	3
4:00	25	0	1	0	0	0	0	0	1	4	0	0	0	31
5:00	15	3	2	0	0	0	0	0	4	14	2	0	0	40
6:00	40	0	2	3	0	0	0	0	3	3	1	0	0	52
7:00	44	4	8	0	0	0	0	1	6	0	2	0	0	65
8:00	80	4	6	2	0	0	0	0	0	8	0	0	2	102
9:00	126	3	13	1	0	1	0	0	3	3	3	0	3	156
10:00	99	2	7	3	1	0	0	0	6	4	1	0	1	124
11:00	143	4	6	4	0	0	0	0	9	3	3	0	0	172
12:00	93	2	6	2	0	1	0	0	2	2	2	0	1	111
13:00	95	1	7	0	0	0	0	0	0	0	0	0	0	103
14:00	111	6	6	1	0	1	1	0	0	0	0	0	0	126
15:00	123	2	4	0	2	0	2	0	0	0	0	0	1	134
16:00	118	4	10	0	0	2	2	0	0	0	0	0	0	136
17:00	94	2	5	0	0	1	1	0	1	0	0	0	0	104
18:00	74	4	5	0	0	0	0	0	0	0	0	0	0	83
19:00	40	1	4	0	0	0	0	0	0	0	0	0	0	45
20:00	28	1	5	0	0	0	2	0	0	0	0	0	0	36
21:00	15	2	2	0	0	0	1	2	1	0	0	0	0	23
22:00	21	1	0	0	0	0	0	0	0	0	0	0	0	22
23:00	6	0	0	0	0	0	0	1	0	0	0	0	0	7
Total	1400	46	100	17	3	6	9	4	36	42	14	0	9	1686

Job No	N3001
Client	TTPP
Site	Jenolan caves Rd - south of Hytec Access (Week 1)
Location	South Bowenfels
Site No	2
Start Date	16-Feb-17
Day	Saturday
Description	Class Summary
Classification	AustRoads94

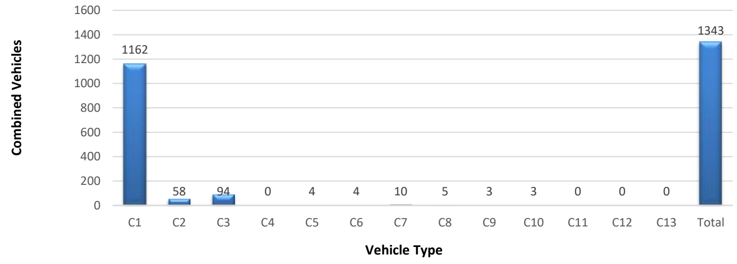
Select Site

2. Jenolan caves Rd - south of Hytec Access (Week 1)

Select Day

Saturday

Class Summary		C	NB	SB
Light	C1	87%	84%	89%
	C2	4%	5%	4%
Medium	C3	7%	9%	6%
	C4	0%	0%	0%
	C5	0%	0%	0%
Heavy	C6	0%	0%	0%
	C7	1%	1%	1%
	C8	0%	0%	0%
	C9	0%	0%	0%
	C10	0%	0%	0%
	C11	0%	0%	0%
	C12	0%	0%	0%
Unclassified	C13	0%	0%	0%



NB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	0	0	1	0	1	0	0	0	0	0	0	0	0	2
1:00	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	1	0	0	0	0	0	1	1	0	0	0	0	0	3
4:00	1	0	0	0	0	0	0	0	1	0	0	0	0	2
5:00	4	1	1	0	0	0	0	0	0	0	0	0	0	6
6:00	5	0	2	0	0	0	0	0	0	0	0	0	0	7
7:00	8	2	2	0	0	0	0	0	0	1	0	0	0	13
8:00	19	1	0	0	0	0	0	0	0	0	0	0	0	20
9:00	13	1	1	0	0	0	0	0	0	0	0	0	0	15
10:00	33	1	3	0	0	0	1	0	1	0	0	0	0	39
11:00	20	0	1	0	0	0	0	0	0	0	0	0	0	21
12:00	28	1	1	0	0	0	0	0	0	0	0	0	0	30
13:00	28	3	3	0	0	1	1	0	0	0	0	0	0	36
14:00	55	1	8	0	1	0	0	0	0	0	0	0	0	65
15:00	55	5	5	0	0	0	0	0	0	0	0	0	0	65
16:00	70	5	5	0	0	0	0	0	0	0	0	0	0	80
17:00	39	1	4	0	0	0	1	0	0	0	0	0	0	45
18:00	52	2	4	0	0	0	0	0	0	0	0	0	0	58
19:00	24	2	2	0	0	0	2	0	0	0	0	0	0	30
20:00	9	0	1	0	0	0	0	0	0	1	0	0	0	11
21:00	13	0	6	0	0	0	0	0	0	0	0	0	0	19
22:00	9	1	1	0	0	0	0	1	0	0	0	0	0	12
23:00	8	1	1	0	0	0	0	0	0	0	0	0	0	10
Total	495	28	52	0	2	1	6	2	2	2	0	0	0	590

SB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	2	0	0	0	0	0	0	0	0	0	0	0	0	2
1:00	3	0	0	0	0	0	0	0	0	0	0	0	0	3
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4:00	3	0	1	0	0	0	0	0	0	0	0	0	0	4
5:00	2	0	0	0	0	1	0	1	0	1	0	0	0	5
6:00	16	4	6	0	0	0	0	0	0	0	0	0	0	26
7:00	38	3	4	0	0	0	1	0	0	0	0	0	0	46
8:00	64	4	3	0	0	0	1	1	0	0	0	0	0	73
9:00	84	2	4	0	1	0	0	0	1	0	0	0	0	92
10:00	68	3	4	0	0	0	0	0	0	0	0	0	0	75
11:00	71	1	8	0	0	1	0	0	0	0	0	0	0	81
12:00	63	2	1	0	1	0	0	0	0	0	0	0	0	67
13:00	82	0	3	0	0	0	0	0	0	0	0	0	0	85
14:00	44	4	4	0	0	0	0	1	0	0	0	0	0	53
15:00	40	1	0	0	0	0	1	0	0	0	0	0	0	42
16:00	12	2	0	0	0	0	0	0	0	0	0	0	0	14
17:00	33	1	1	0	0	1	1	0	0	0	0	0	0	37
18:00	14	3	0	0	0	0	0	0	0	0	0	0	0	17
19:00	8	0	0	0	0	0	0	0	0	0	0	0	0	8
20:00	5	0	0	0	0	0	0	0	0	0	0	0	0	5
21:00	6	0	1	0	0	0	0	0	0	0	0	0	0	7
22:00	5	0	1	0	0	0	0	0	0	0	0	0	0	6
23:00	3	0	1	0	0	0	0	0	0	0	0	0	0	4
Total	667	30	42	0	2	3	4	3	1	1	0	0	0	753

COMBINED

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	2	0	1	0	1	0	0	0	0	0	0	0	0	4
1:00	4	0	0	0	0	0	0	0	0	0	0	0	0	4
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	2	0	0	0	0	0	1	1	0	0	0	0	0	4
4:00	4	0	1	0	0	0	0	0	1	0	0	0	0	6
5:00	6	1	1	0	0	1	0	1	0	1	0	0	0	11
6:00	21	4	8	0	0	0	0	0	0	0	0	0	0	33
7:00	46	5	6	0	0	0	1	0	0	1	0	0	0	59
8:00	83	5	3	0	0	0	1	1	0	0	0	0	0	93
9:00	97	3	5	0	1	0	0	0	1	0	0	0	0	107
10:00	101	4	7	0	0	0	1	0	1	0	0	0	0	114
11:00	91	1	9	0	0	1	0	0	0	0	0	0	0	102
12:00	91	3	2	0	1	0	0	0	0	0	0	0	0	97
13:00	110	3	6	0	0	1	1	0	0	0	0	0	0	121
14:00	99	5	12	0	1	0	0	1	0	0	0	0	0	118
15:00	95	6	5	0	0	0	1	0	0	0	0	0	0	107
16:00	82	7	5	0	0	0	0	0	0	0	0	0	0	94
17:00	72	2	5	0	0	1	2	0	0	0	0	0	0	82
18:00	66	5	4	0	0	0	0	0	0	0	0	0	0	75
19:00	32	2	2	0	0	0	2	0	0	0	0	0	0	38
20:00	14	0	1	0	0	0	0	0	0	1	0	0	0	16
21:00	19	0	7	0	0	0	0	0	0	0	0	0	0	26
22:00	14	1	2	0	0	0	0	1	0	0	0	0	0	18
23:00	11	1	2	0	0	0	0	0	0	0	0	0	0	14
Total	1162	58	94	0	4	4	10	5	3	3	0	0	0	1343

Job No	N3001
Client	TTPP
Site	Jenolan caves Rd - south of Hytec Access (Week 2)
Location	South Bowenfels
Site No	2
Start Date	23-Feb-17
Day	Saturday
Description	Class Summary
Classification	AustRoads94

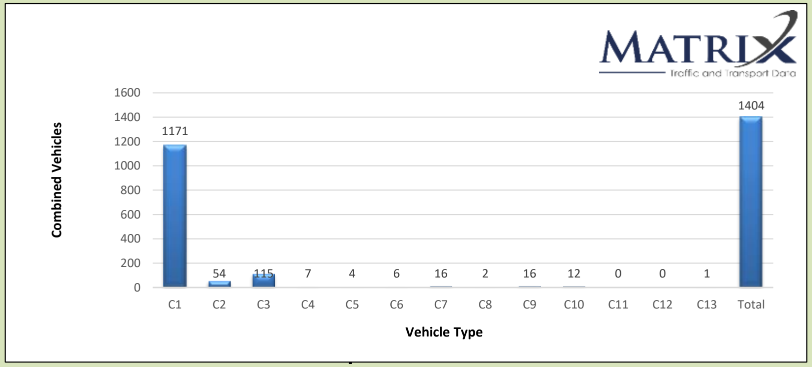
Select Site

2. Jenolan caves Rd - south of Hytec Access (Week 2)

Select Day

Saturday

Class Summary		C	NB	SB
Light	C1	**83%**	79%	87%
	C2	**4%**	3%	4%
Medium	C3	**8%**	12%	5%
	C4	**0%**	1%	0%
	C5	**0%**	0%	0%
Heavy	C6	**0%**	1%	0%
	C7	**1%**	2%	1%
	C8	**0%**	0%	0%
	C9	**1%**	1%	1%
	C10	**1%**	1%	1%
	C11	**0%**	0%	0%
	C12	**0%**	0%	0%
Unclassified	C13	**0%**	0%	0%



NB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
2:00	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**
3:00	3	0	0	0	0	0	0	0	0	1	0	0	0	**4**
4:00	3	0	0	0	0	0	0	0	1	1	0	0	0	**5**
5:00	5	2	2	0	0	1	0	0	2	0	0	0	0	**12**
6:00	6	0	2	1	0	0	0	0	0	1	0	0	0	**10**
7:00	9	1	2	0	0	0	0	0	3	1	0	0	0	**16**
8:00	19	0	3	1	0	1	0	0	0	0	0	0	0	**24**
9:00	18	0	6	0	0	2	1	0	1	0	0	0	0	**28**
10:00	27	0	3	0	1	0	0	0	0	0	0	0	0	**31**
11:00	20	1	2	0	0	0	1	0	0	3	0	0	0	**27**
12:00	20	1	2	2	0	0	0	0	0	0	0	0	0	**25**
13:00	35	0	5	0	0	0	1	0	0	0	0	0	0	**41**
14:00	57	4	7	0	0	1	3	0	0	0	0	0	0	**72**
15:00	51	0	6	0	0	1	2	0	0	0	0	0	0	**60**
16:00	70	3	10	0	0	0	1	0	0	0	0	0	0	**84**
17:00	52	2	7	0	0	0	0	0	1	0	0	0	0	**62**
18:00	51	3	6	0	0	0	0	0	0	0	0	0	0	**60**
19:00	29	1	3	0	0	0	0	0	0	0	0	0	0	**33**
20:00	16	1	6	0	0	0	2	0	0	0	0	0	0	**25**
21:00	6	1	3	0	0	0	0	2	1	0	0	0	0	**13**
22:00	11	0	1	0	0	0	0	0	0	0	0	0	0	**12**
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	508	20	76	5	1	6	11	2	9	7	0	0	0	**645**

SB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	1	0	1	0	0	0	0	0	0	0	0	0	0	**2**
1:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
2:00	5	0	0	0	0	0	0	0	0	0	0	0	0	**5**
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
5:00	4	0	0	0	0	0	0	0	2	0	0	0	0	**6**
6:00	11	1	2	0	0	0	0	0	1	2	0	0	0	**17**
7:00	20	3	4	0	0	0	1	0	1	0	0	0	0	**29**
8:00	40	3	5	0	1	0	0	0	0	2	0	0	1	**52**
9:00	67	2	5	0	0	0	0	0	1	0	0	0	0	**75**
10:00	58	2	4	0	0	0	0	0	0	1	0	0	0	**65**
11:00	83	4	3	0	0	0	2	0	0	0	0	0	0	**92**
12:00	69	4	3	1	0	0	0	0	0	0	0	0	0	**77**
13:00	54	0	5	1	0	0	0	0	0	0	0	0	0	**60**
14:00	46	2	2	0	0	0	0	0	0	0	0	0	0	**50**
15:00	63	2	2	0	2	0	0	0	2	0	0	0	0	**71**
16:00	39	5	2	0	0	0	1	0	0	0	0	0	0	**47**
17:00	38	2	0	0	0	0	0	0	0	0	0	0	0	**40**
18:00	20	1	0	0	0	0	0	0	0	0	0	0	0	**21**
19:00	13	0	0	0	0	0	0	0	0	0	0	0	0	**13**
20:00	8	0	1	0	0	0	0	0	0	0	0	0	0	**9**
21:00	7	1	0	0	0	0	1	0	0	0	0	0	0	**9**
22:00	9	1	0	0	0	0	0	0	0	0	0	0	0	**10**
23:00	6	1	0	0	0	0	0	0	0	0	0	0	0	**7**
Total	663	34	39	2	3	0	5	0	7	5	0	0	1	**759**

COMBINED

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	1	0	1	0	0	0	0	0	0	0	0	0	0	**2**
1:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
2:00	5	0	0	1	0	0	0	0	0	0	0	0	0	**6**
3:00	3	0	0	0	0	0	0	0	0	1	0	0	0	**4**
4:00	4	0	0	0	0	0	0	0	1	1	0	0	0	**6**
5:00	9	2	2	0	0	1	0	0	4	0	0	0	0	**18**
6:00	17	1	4	1	0	0	0	0	1	3	0	0	0	**27**
7:00	29	4	6	0	0	0	1	0	4	1	0	0	0	**45**
8:00	59	3	8	1	1	1	0	0	0	2	0	0	1	**76**
9:00	85	2	11	0	0	2	1	0	2	0	0	0	0	**103**
10:00	85	2	7	0	1	0	0	0	0	1	0	0	0	**96**
11:00	103	5	5	0	0	0	3	0	0	3	0	0	0	**119**
12:00	89	5	5	3	0	0	0	0	0	0	0	0	0	**102**
13:00	89	0	10	1	0	0	1	0	0	0	0	0	0	**101**
14:00	103	6	9	0	0	1	3	0	0	0	0	0	0	**122**
15:00	114	2	8	0	2	1	2	0	2	0	0	0	0	**131**
16:00	109	8	12	0	0	0	2	0	0	0	0	0	0	**131**
17:00	90	4	7	0	0	0	0	0	1	0	0	0	0	**102**
18:00	71	4	6	0	0	0	0	0	0	0	0	0	0	**81**
19:00	42	1	3	0	0	0	0	0	0	0	0	0	0	**46**
20:00	24	1	7	0	0	0	2	0	0	0	0	0	0	**34**
21:00	13	2	3	0	0	0	1	2	1	0	0	0	0	**22**
22:00	20	1	1	0	0	0	0	0	0	0	0	0	0	**22**
23:00	6	1	0	0	0	0	0	0	0	0	0	0	0	**7**
Total	1171	54	115	7	4	6	16	2	16	12	0	0	1	**1404**

Job No	N3001
Client	TTPP
Site	Hytec Access Rd - south of Jenolan Caves Rd (Week 1)
Location	South Bowenfels
Site No	3
Start Date	16-Feb-17
Day	Saturday
Description	Class Summary
Classification	AustRoads94

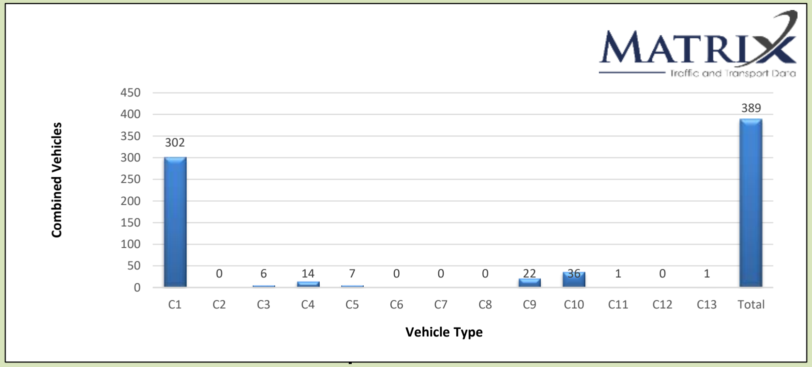
Select Site

3. Hytec Access Rd - south of Jenolan Caves Rd (Week 1)

Select Day

Saturday

Class Summary		C	NB	SB
Light	C1	**78%**	75%	80%
	C2	**0%**	0%	0%
Medium	C3	**2%**	3%	1%
	C4	**4%**	7%	1%
	C5	**2%**	2%	2%
Heavy	C6	**0%**	0%	0%
	C7	**0%**	0%	0%
	C8	**0%**	0%	0%
	C9	**6%**	8%	4%
	C10	**9%**	7%	12%
	C11	**0%**	0%	1%
	C12	**0%**	0%	0%
Unclassified	C13	**0%**	0%	1%



NB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	15	0	0	0	0	0	0	0	0	0	0	0	0	15
5:00	19	0	0	1	2	0	0	0	5	3	0	0	0	30
6:00	20	0	1	2	2	0	0	0	1	0	0	0	0	26
7:00	6	0	0	2	0	0	0	0	0	3	0	0	0	11
8:00	16	0	0	1	0	0	0	0	0	0	0	0	0	17
9:00	18	0	0	0	0	0	0	0	2	2	0	0	0	22
10:00	18	0	1	2	0	0	0	0	3	2	0	0	0	26
11:00	19	0	0	4	0	0	0	0	2	2	0	0	0	27
12:00	14	0	1	1	0	0	0	0	2	1	0	0	0	19
13:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
14:00	1	0	1	0	0	0	0	0	0	0	0	0	0	2
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	2	0	0	0	0	0	0	0	0	0	0	0	0	2
17:00	1	0	0	0	0	0	0	0	0	0	0	0	0	1
18:00	1	0	0	0	0	0	0	0	0	0	0	0	0	1
19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	150	0	5	13	4	0	0	0	15	13	0	0	0	200

SB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4:00	19	0	0	0	0	0	0	0	1	2	1	0	0	23
5:00	28	0	0	0	0	0	0	0	0	2	0	0	1	31
6:00	24	0	0	0	0	0	0	0	1	1	0	0	0	26
7:00	7	0	0	0	0	0	0	0	1	1	0	0	0	9
8:00	14	0	0	0	0	0	0	0	0	1	0	0	0	15
9:00	18	0	0	1	2	0	0	0	0	5	0	0	0	26
10:00	15	0	0	0	1	0	0	0	3	6	0	0	0	25
11:00	17	0	0	0	0	0	0	0	1	4	0	0	0	22
12:00	6	0	0	0	0	0	0	0	0	1	0	0	0	7
13:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00	1	0	0	0	0	0	0	0	0	0	0	0	0	1
16:00	1	0	0	0	0	0	0	0	0	0	0	0	0	1
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00	1	0	0	0	0	0	0	0	0	0	0	0	0	1
19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	152	0	1	1	3	0	0	0	7	23	1	0	1	189

COMBINED

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4:00	34	0	0	0	0	0	0	0	1	2	1	0	0	38
5:00	47	0	0	1	2	0	0	0	5	5	0	0	1	61
6:00	44	0	1	2	2	0	0	0	2	1	0	0	0	52
7:00	13	0	0	2	0	0	0	0	1	4	0	0	0	20
8:00	30	0	0	1	0	0	0	0	0	1	0	0	0	32
9:00	36	0	0	1	2	0	0	0	2	7	0	0	0	48
10:00	33	0	1	2	1	0	0	0	6	8	0	0	0	51
11:00	36	0	0	4	0	0	0	0	3	6	0	0	0	49
12:00	20	0	1	1	0	0	0	0	2	2	0	0	0	26
13:00	0	0	2	0	0	0	0	0	0	0	0	0	0	2
14:00	1	0	1	0	0	0	0	0	0	0	0	0	0	2
15:00	1	0	0	0	0	0	0	0	0	0	0	0	0	1
16:00	3	0	0	0	0	0	0	0	0	0	0	0	0	3
17:00	1	0	0	0	0	0	0	0	0	0	0	0	0	1
18:00	2	0	0	0	0	0	0	0	0	0	0	0	0	2
19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	302	0	6	14	7	0	0	0	22	36	1	0	1	389

Job No	N3001
Client	TTPP
Site	Hytec Access Rd - south of Jenolan Caves Rd (Week 2)
Location	South Bowenfels
Site No	3
Start Date	23-Feb-17
Day	Saturday
Description	Class Summary
Classification	AustRoads94

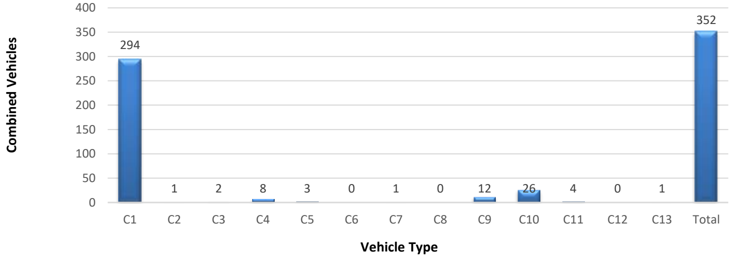
Select Site

3. Hytec Access Rd - south of Jenolan Caves Rd (Week 2)

Select Day

Saturday

Class Summary		C	NB	SB
Light	C1	**84%**	81%	86%
	C2	**0%**	0%	1%
Medium	C3	**1%**	1%	1%
	C4	**2%**	3%	2%
	C5	**1%**	2%	0%
Heavy	C6	**0%**	0%	0%
	C7	**0%**	1%	0%
	C8	**0%**	0%	0%
	C9	**3%**	3%	4%
	C10	**7%**	7%	7%
	C11	**1%**	2%	0%
	C12	**0%**	0%	0%
Unclassified	C13	**0%**	1%	0%



NB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
2:00	7	0	0	0	1	0	0	0	0	0	0	0	0	**8**
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:00	14	0	0	0	0	0	0	0	0	0	0	0	0	**14**
5:00	17	0	0	0	0	0	0	0	2	5	0	0	0	**24**
6:00	13	0	0	0	0	0	0	0	0	1	0	0	0	**14**
7:00	18	0	0	0	0	0	0	0	0	0	0	0	0	**18**
8:00	14	0	0	0	0	0	0	0	1	1	0	0	0	**16**
9:00	22	0	0	2	1	0	0	0	1	1	0	0	0	**27**
10:00	8	0	0	2	1	0	0	0	0	2	3	0	1	**17**
11:00	25	0	0	0	0	0	0	0	2	2	0	0	0	**29**
12:00	12	0	1	1	0	0	0	0	0	2	1	0	0	**17**
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
15:00	2	0	0	0	0	0	1	0	0	0	0	0	0	**3**
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
20:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	153	0	1	5	3	0	1	0	6	14	4	0	1	**188**

SB

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
2:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
3:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
4:00	15	0	0	0	0	0	0	0	0	2	0	0	0	**17**
5:00	20	0	1	2	0	0	0	0	0	0	0	0	0	**23**
6:00	12	0	0	0	0	0	0	0	0	1	0	0	0	**13**
7:00	17	0	0	0	0	0	0	0	0	2	0	0	0	**19**
8:00	12	0	0	1	0	0	0	0	2	1	0	0	0	**16**
9:00	23	0	0	0	0	0	0	0	1	1	0	0	0	**25**
10:00	9	0	0	0	0	0	0	0	1	2	0	0	0	**12**
11:00	23	0	0	0	0	0	0	0	2	3	0	0	0	**28**
12:00	7	0	0	0	0	0	0	0	0	0	0	0	0	**7**
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
14:00	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
20:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	141	1	1	3	0	0	0	0	6	12	0	0	0	**164**

COMBINED

Hour Starting	C1 Short	C2 Short Towing	C3 2 axle Truck or bus	C4 3 Axle Truck or Bus	C5 4 or 5 Axle Truck	C6 3 axle Articulated	C7 4 Axle Articulated	C8 5 Axle Articulated	C9 6 Axle Articulated	C10 B Double	C11 Double Road Train	C12 Triple Road Train	C13 Unclassifiable	Total
0:00	2	0	0	0	0	0	0	0	0	0	0	0	0	**2**
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
2:00	8	0	0	0	1	0	0	0	0	0	0	0	0	**9**
3:00	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
4:00	29	0	0	0	0	0	0	0	0	2	0	0	0	**31**
5:00	37	0	1	2	0	0	0	0	2	5	0	0	0	**47**
6:00	25	0	0	0	0	0	0	0	0	2	0	0	0	**27**
7:00	35	0	0	0	0	0	0	0	0	2	0	0	0	**37**
8:00	26	0	0	1	0	0	0	0	3	2	0	0	0	**32**
9:00	45	0	0	2	1	0	0	0	2	2	0	0	0	**52**
10:00	17	0	0	2	1	0	0	0	1	4	3	0	1	**29**
11:00	48	0	0	0	0	0	0	0	4	5	0	0	0	**57**
12:00	19	0	1	1	0	0	0	0	0	2	1	0	0	**24**
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
14:00	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
15:00	2	0	0	0	0	0	1	0	0	0	0	0	0	**3**
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
20:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	294	1	2	8	3	0	1	0	12	26	4	0	1	**352**

Appendix B

Crash Data

Summary Crash Report

Transport for NSW — Centre for Road Safety

# Crash Type		
Car Crash	969	85.8%
Light Truck Crash	205	18.1%
Rigid Truck Crash	56	5.0%
Articulated Truck Crash	95	8.4%
'Heavy Truck Crash	*(150)*	*(13.3%)*
Bus Crash	10	0.9%
"Heavy Vehicle Crash	*(157)*	*(13.9%)*
Emergency Vehicle Crash	6	0.5%
Motorcycle Crash	61	5.4%
Pedal Cycle Crash	20	1.8%
Pedestrian Crash	18	1.6%

' Rigid or Artic. Truck " Heavy Truck or Heavy Bus
These categories are NOT mutually exclusive

Location Type		
*Intersection	373	33.0%
Non intersection	757	67.0%

* Up to 10 metres from an intersection

Collision Type		
Single Vehicle	461	40.8%
Multi Vehicle	669	59.2%

Road Classification		
Freeway/Motorway	2	0.2%
State Highway	1,102	97.5%
Other Classified Road	20	1.8%
Unclassified Road	6	0.5%

Contributing Factors		
Speeding	408	36.1%
Fatigue	96	8.5%

Weather		
Fine	639	56.5%
Rain	326	28.8%
Overcast	120	10.6%
Fog or mist	30	2.7%
Other	6	0.5%

Road Surface Condition		
Wet	428	37.9%
Dry	695	61.6%
Snow or ice	5	0.4%

Natural Lighting		
Dawn	39	3.5%
Daylight	761	67.3%
Dusk	54	4.8%
Darkness	276	24.4%

Crash Movement		
Intersection, adjacent approaches	88	7.8%
Head-on (not overtaking)	71	6.3%
Opposing vehicles; turning	48	4.2%
U-turn	6	0.5%
Rear-end	310	27.4%
Lane change	57	5.0%
Parallel lanes; turning	1	0.1%
Vehicle leaving driveway	7	0.6%
Overtaking; same direction	0	0.0%
Hit parked vehicle	2	0.2%
Hit railway train	0	0.0%
Hit pedestrian	14	1.2%
Permanent obstruction on road	0	0.0%
Hit animal	6	0.5%
Off road, on straight	8	0.7%
Off road on straight, hit object	73	6.5%
Out of control on straight	5	0.4%
Off road, on curve	32	2.8%
Off road on curve, hit object	317	28.1%
Out of control on curve	21	1.9%
Other crash type	64	5.7%

Speed Limit					
40 km/h or less	34	3.0%	80 km/h zone	540	47.8%
50 km/h zone	28	2.5%	90 km/h zone	29	2.6%
60 km/h zone	348	30.8%	100 km/h zone	4	0.4%
70 km/h zone	147	13.0%	110 km/h zone	0	0.0%

~ 07:30-09:30 or 14:30-17:00 on school days	~ 40km/h or less	9	4.6%	~ School Travel Time Involvement	197	17.4%

Day of the Week												
Monday	149	13.2%	Wednesday	152	13.5%	Friday	200	17.7%	Sunday	163	14.4%	WEEKEND	322	28.5%
Tuesday	153	13.5%	Thursday	154	13.6%	Saturday	159	14.1%	WEEKDAY	808	71.5%			

CRASHES	1,130	
Fatal	10	0.9%
Serious inj.	162	14.3%
Moderate inj.	290	25.7%
Minor/Other inj.	106	9.4%
Uncategorised inj.	41	3.6%
Non-casualty	521	46.1%

Self Reported Crash	111	9.82%

Time Group		% of Day	
00:01 - 02:59	49	4.3%	12.5%
03:00 - 04:59	26	2.3%	8.3%
05:00 - 05:59	26	2.3%	4.2%
06:00 - 06:59	39	3.5%	4.2%
07:00 - 07:59	57	5.0%	4.2%
08:00 - 08:59	52	4.6%	4.2%
09:00 - 09:59	53	4.7%	4.2%
10:00 - 10:59	59	5.2%	4.2%
11:00 - 11:59	68	6.0%	4.2%
12:00 - 12:59	73	6.5%	4.2%
13:00 - 13:59	93	8.2%	4.2%
14:00 - 14:59	65	5.8%	4.2%
15:00 - 15:59	95	8.4%	4.2%
16:00 - 16:59	86	7.6%	4.2%
17:00 - 17:59	76	6.7%	4.2%
18:00 - 18:59	67	5.9%	4.2%
19:00 - 19:59	33	2.9%	4.2%
20:00 - 21:59	62	5.5%	8.3%
22:00 - 24:00	51	4.5%	8.3%

Street Lighting Off/Nil		% of Dark
112	of 276	in Dark 40.6%

CASUALTIES	818	
Killed	11	1.3%
Seriously inj.	193	23.6%
Moderately inj.	379	46.3%
Minor/Other inj.	185	22.6%
Uncategorised inj.	50	6.1%
^ Unrestrained	13	1.6%

^ Belt fitted but not worn, No restraint fitted to position OR No helmet worn

Crashes		Casualties
74	2016	50
140	2015	117
238	2014	158
244	2013	171
289	2012	213
145	2011	109

McLean Periods		% Week	
A	153	13.5%	17.9%
B	47	4.2%	7.1%
C	289	25.6%	17.9%
D	64	5.7%	3.5%
E	58	5.1%	3.6%
F	145	12.8%	10.7%
G	129	11.4%	7.1%
H	113	10.0%	7.1%
I	65	5.8%	12.5%
J	67	5.9%	10.7%

#Holiday Periods																		
New Year	3	0.3%	Easter	17	1.5%	Queen's BD	22	1.9%	Christmas	25	2.2%	Easter SH	48	4.2%	Sept./Oct. SH	41	3.6%	
Aust. Day	8	0.7%	Anzac Day	6	0.5%	Labour Day	11	1.0%	January SH	79	7.0%	June/July SH	53	4.7%	December SH	32	2.8%	

Crashid dataset 7131 - Blue Mountains crash data - 1 Jul 2011 to 30 Jun 2016

Note: *Data for the 9 month period prior to the generated date of this report are incomplete and are subject to change.*
Crash self reporting, including self reported injuries began Oct 2014. Trends from 2014 are expected to vary from previous yrs. More unknowns are expected in self reported data.
Reporting yrs 1996-2004 and 2016 onwards contain uncategorised inj crashes.

Percentages are percentages of all crashes. Unknown values for each category are not shown on this report.

Appendix C

SIDRA Modelling Results

MOVEMENT SUMMARY

Site: 102 [GWH-Jenolan Cave 2017 AM Base]

GWH-Jenolan Cave Rd 2035 AM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Jenolan Cave Rd (S)											
1	L2	5	20.0	0.211	24.2	LOS B	0.9	10.2	0.75	0.79	47.5
2	T1	1	0.0	0.211	13.7	LOS A	0.9	10.2	0.75	0.79	50.7
3	R2	43	51.2	0.211	24.6	LOS B	0.9	10.2	0.75	0.79	41.3
Approach		49	46.8	0.211	24.4	NA	0.9	10.2	0.75	0.79	42.1
East: GWH (E)											
4	L2	41	48.7	0.035	8.3	LOS A	0.1	1.8	0.05	0.58	51.7
5	T1	244	19.8	0.141	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
6	R2	1	0.0	0.001	7.4	LOS A	0.0	0.0	0.34	0.55	63.8
Approach		286	23.9	0.141	1.2	LOS A	0.1	1.8	0.01	0.08	74.0
North: Blackmans Creek Rd (N)											
7	L2	1	0.0	0.005	9.8	LOS A	0.0	0.1	0.49	0.82	60.2
8	T1	1	0.0	0.005	14.0	LOS A	0.0	0.1	0.49	0.82	60.4
9	R2	1	0.0	0.005	14.6	LOS B	0.0	0.1	0.49	0.82	60.3
Approach		3	0.0	0.005	12.8	LOS A	0.0	0.1	0.49	0.82	60.3
West: GWH (W)											
10	L2	2	0.0	0.001	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
11	T1	235	21.5	0.137	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	6	50.0	0.006	9.0	LOS A	0.0	0.3	0.39	0.59	50.4
Approach		243	22.1	0.137	0.3	NA	0.0	0.3	0.01	0.02	78.6
All Vehicles		582	25.0	0.211	2.9	NA	0.9	10.2	0.07	0.12	71.0

MOVEMENT SUMMARY

Site: 102 [GWH-Jenolan Cave 2017 PM Base]

GWH-Jenolan Cave Rd 2035 PM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Jenolan Cave Rd (S)											
1	L2	11	90.9	0.194	21.1	LOS B	0.8	7.7	0.73	0.81	44.7
2	T1	1	0.0	0.194	14.7	LOS B	0.8	7.7	0.73	0.81	53.3
3	R2	48	21.7	0.194	20.3	LOS B	0.8	7.7	0.73	0.81	48.5
Approach		60	26.3	0.194	20.4	NA	0.8	7.7	0.73	0.81	47.8
East: GWH (E)											
4	L2	27	19.2	0.020	7.7	LOS A	0.1	0.8	0.04	0.59	59.1
5	T1	278	14.1	0.154	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
6	R2	2	0.0	0.002	7.6	LOS A	0.0	0.0	0.39	0.57	63.6
Approach		305	14.5	0.154	0.8	LOS A	0.1	0.8	0.01	0.06	77.3
North: Blackmans Creek Rd (N)											
7	L2	1	0.0	0.006	10.1	LOS A	0.0	0.2	0.55	0.83	59.2
8	T1	1	0.0	0.006	15.3	LOS B	0.0	0.2	0.55	0.83	59.4
9	R2	1	0.0	0.006	16.4	LOS B	0.0	0.2	0.55	0.83	59.3
Approach		3	0.0	0.006	13.9	LOS A	0.0	0.2	0.55	0.83	59.3
West: GWH (W)											
10	L2	1	0.0	0.001	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
11	T1	298	18.0	0.171	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	3	100.0	0.004	9.9	LOS A	0.0	0.2	0.45	0.60	50.0
Approach		302	18.8	0.171	0.1	NA	0.0	0.2	0.00	0.01	79.4
All Vehicles		671	17.4	0.194	2.3	NA	0.8	7.7	0.07	0.11	74.0

MOVEMENT SUMMARY

Site: 102 [GWH-Jenolan Cave 2022 AM (Peak Day)]

GWH-Jenolan Cave Rd 2035 AM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Jenolan Cave Rd (S)											
1	L2	7	42.9	0.325	32.7	LOS C	1.5	18.7	0.82	0.86	39.9
2	T1	1	0.0	0.325	17.4	LOS B	1.5	18.7	0.82	0.86	45.6
3	R2	54	54.9	0.325	32.8	LOS C	1.5	18.7	0.82	0.86	37.4
Approach		62	52.5	0.325	32.5	NA	1.5	18.7	0.82	0.86	37.8
East: GWH (E)											
4	L2	49	55.3	0.044	8.5	LOS A	0.2	2.4	0.07	0.57	50.3
5	T1	269	19.9	0.156	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
6	R2	1	0.0	0.001	7.4	LOS A	0.0	0.0	0.36	0.55	63.7
Approach		320	25.3	0.156	1.3	LOS A	0.2	2.4	0.01	0.09	73.1
North: Blackmans Creek Rd (N)											
7	L2	1	0.0	0.006	9.9	LOS A	0.0	0.1	0.52	0.83	59.6
8	T1	1	0.0	0.006	14.8	LOS B	0.0	0.1	0.52	0.83	59.8
9	R2	1	0.0	0.006	15.7	LOS B	0.0	0.1	0.52	0.83	59.7
Approach		3	0.0	0.006	13.5	LOS A	0.0	0.1	0.52	0.83	59.7
West: GWH (W)											
10	L2	2	0.0	0.001	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
11	T1	299	21.5	0.151	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	8	62.5	0.010	10.2	LOS A	0.0	0.6	0.45	0.62	46.8
Approach		269	22.7	0.151	0.4	NA	0.0	0.6	0.01	0.02	78.1
All Vehicles		655	26.7	0.325	4.0	NA	1.5	18.7	0.09	0.14	68.7

MOVEMENT SUMMARY

Site: 102 [GWH-Jenolan Cave 2022 PM (Peak Day)]

GWH-Jenolan Cave Rd 2035 PM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Jenolan Cave Rd (S)											
1	L2	13	58.3	0.321	29.8	LOS C	1.5	15.8	0.82	0.88	39.4
2	T1	1	0.0	0.321	18.6	LOS B	1.5	15.8	0.82	0.88	47.5
3	R2	60	29.8	0.321	29.0	LOS C	1.5	15.8	0.82	0.88	42.2
Approach		74	34.3	0.321	29.0	NA	1.5	15.8	0.82	0.88	41.8
East: GWH (E)											
4	L2	35	27.3	0.027	7.9	LOS A	0.1	1.2	0.05	0.58	56.8
5	T1	304	14.2	0.170	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
6	R2	2	0.0	0.002	7.7	LOS A	0.0	0.0	0.41	0.57	63.6
Approach		341	15.4	0.170	0.9	LOS A	0.1	1.2	0.01	0.06	76.6
North: Blackmans Creek Rd (N)											
7	L2	1	0.0	0.007	10.3	LOS A	0.0	0.2	0.57	0.84	58.4
8	T1	1	0.0	0.007	16.4	LOS B	0.0	0.2	0.57	0.84	58.6
9	R2	1	0.0	0.007	17.8	LOS B	0.0	0.2	0.57	0.84	58.5
Approach		3	0.0	0.007	14.8	LOS B	0.0	0.2	0.57	0.84	58.5
West: GWH (W)											
10	L2	1	0.0	0.001	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
11	T1	327	18.0	0.188	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	4	100.0	0.006	10.8	LOS A	0.0	0.4	0.49	0.62	48.9
Approach		333	19.0	0.188	0.2	NA	0.0	0.4	0.01	0.01	79.2
All Vehicles		751	18.8	0.321	3.4	NA	1.5	15.8	0.09	0.12	71.7

MOVEMENT SUMMARY

Site: 102 [GWH-Jenolan Cave 2035 AM (Peak Day)]

GWH-Jenolan Cave Rd 2035 AM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Jenolan Cave Rd (S)											
1	L2	8	37.5	0.502	49.7	LOS D	2.4	29.3	0.91	0.92	34.1
2	T1	1	0.0	0.502	27.6	LOS B	2.4	29.3	0.91	0.92	37.6
3	R2	61	51.7	0.502	50.0	LOS D	2.4	29.3	0.91	0.92	32.1
Approach		71	49.3	0.502	49.6	NA	2.4	29.3	0.91	0.92	32.4
East: GWH (E)											
4	L2	57	51.9	0.049	8.4	LOS A	0.2	2.6	0.08	0.57	51.0
5	T1	333	19.9	0.193	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
6	R2	1	0.0	0.001	7.7	LOS A	0.0	0.0	0.41	0.56	63.6
Approach		391	24.5	0.193	1.3	LOS A	0.2	2.6	0.01	0.08	73.7
North: Blackmans Creek Rd (N)											
7	L2	1	0.0	0.007	10.3	LOS A	0.0	0.2	0.58	0.84	58.0
8	T1	1	0.0	0.007	17.1	LOS B	0.0	0.2	0.58	0.84	58.1
9	R2	1	0.0	0.007	18.7	LOS B	0.0	0.2	0.58	0.84	58.0
Approach		3	0.0	0.007	15.4	LOS B	0.0	0.2	0.58	0.84	58.0
West: GWH (W)											
10	L2	3	0.0	0.002	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
11	T1	319	21.5	0.186	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	11	60.0	0.014	10.6	LOS A	0.1	0.7	0.49	0.65	47.1
Approach		333	22.5	0.186	0.4	NA	0.1	0.7	0.02	0.03	78.0
All Vehicles		797	25.8	0.502	5.2	NA	2.4	29.3	0.10	0.14	67.5

MOVEMENT SUMMARY

Site: 102 [GWH-Jenolan Cave 2035 PM (Peak Day)]

GWH-Jenolan Cave Rd 2035 PM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Jenolan Cave Rd (S)											
1	L2	15	57.1	0.519	46.8	LOS D	2.6	26.7	0.92	0.96	33.4
2	T1	1	0.0	0.519	30.1	LOS C	2.6	26.7	0.92	0.96	38.9
3	R2	69	27.3	0.519	46.1	LOS D	2.6	26.7	0.92	0.96	35.6
Approach		85	32.1	0.519	46.0	NA	2.6	26.7	0.92	0.96	35.2
East: GWH (E)											
4	L2	40	23.7	0.030	7.8	LOS A	0.1	1.3	0.05	0.58	57.8
5	T1	375	14.0	0.210	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
6	R2	3	0.0	0.003	8.1	LOS A	0.0	0.1	0.46	0.59	63.4
Approach		418	14.9	0.210	0.8	LOS A	0.1	1.3	0.01	0.06	76.9
North: Blackmans Creek Rd (N)											
7	L2	1	0.0	0.009	10.8	LOS A	0.0	0.2	0.66	0.87	56.1
8	T1	1	0.0	0.009	19.7	LOS B	0.0	0.2	0.66	0.87	56.2
9	R2	1	0.0	0.009	22.4	LOS B	0.0	0.2	0.66	0.87	56.1
Approach		3	0.0	0.009	17.6	LOS B	0.0	0.2	0.66	0.87	56.2
West: GWH (W)											
10	L2	1	0.0	0.001	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
11	T1	405	17.9	0.232	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	5	100.0	0.009	11.7	LOS A	0.0	0.6	0.54	0.66	48.4
Approach		412	18.9	0.232	0.2	NA	0.0	0.6	0.01	0.01	79.2
All Vehicles		918	18.2	0.519	4.8	NA	2.6	26.7	0.09	0.12	70.0

MOVEMENT SUMMARY

Site: 102 [GWH-Jenolan Cave 2022 AM (Ultimate Local Peak)]

GWH-Jenolan Cave Rd 2035 AM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Jenolan Cave Rd (S)											
1	L2	5	20.0	0.360	34.7	LOS C	1.6	20.5	0.83	0.87	41.8
2	T1	1	0.0	0.360	18.4	LOS B	1.6	20.5	0.83	0.87	44.3
3	R2	57	57.4	0.360	35.3	LOS C	1.6	20.5	0.83	0.87	36.2
Approach		63	53.3	0.360	34.9	NA	1.6	20.5	0.83	0.87	36.7
East: GWH (E)											
4	L2	53	58.0	0.040	8.5	LOS A	0.2	2.7	0.06	0.57	49.7
5	T1	269	19.9	0.156	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
6	R2	1	0.0	0.001	7.4	LOS A	0.0	0.0	0.36	0.55	63.7
Approach		323	26.1	0.156	1.4	LOS A	0.2	2.7	0.01	0.10	72.6
North: Blackmans Creek Rd (N)											
7	L2	1	0.0	0.006	9.9	LOS A	0.0	0.1	0.52	0.83	59.7
8	T1	1	0.0	0.006	14.8	LOS B	0.0	0.1	0.52	0.83	59.8
9	R2	1	0.0	0.006	15.6	LOS B	0.0	0.1	0.52	0.83	59.7
Approach		3	0.0	0.006	13.4	LOS A	0.0	0.1	0.52	0.83	59.7
West: GWH (W)											
10	L2	2	0.0	0.001	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
11	T1	259	21.5	0.151	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	6	50.0	0.006	9.2	LOS A	0.0	0.3	0.41	0.60	50.3
Approach		267	22.0	0.151	0.3	NA	0.0	0.3	0.01	0.02	78.7
All Vehicles		657	26.9	0.360	4.2	NA	1.6	20.5	0.09	0.14	68.2

MOVEMENT SUMMARY

Site: 102 [GWH-Jenolan Cave 2022 PM (Ultimate Local Peak)]

GWH-Jenolan Cave Rd 2035 PM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Jenolan Cave Rd (S)											
1	L2	13	50.0	0.451	39.5	LOS C	2.3	26.0	0.88	0.92	36.4
2	T1	1	0.0	0.451	22.8	LOS B	2.3	26.0	0.88	0.92	42.1
3	R2	68	40.0	0.451	39.1	LOS C	2.3	26.0	0.88	0.92	36.7
Approach		82	41.0	0.451	39.0	NA	2.3	26.0	0.88	0.92	36.7
East: GWH (E)											
4	L2	46	45.5	0.041	8.3	LOS A	0.2	2.2	0.04	0.58	52.2
5	T1	304	14.2	0.170	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
6	R2	2	0.0	0.002	7.7	LOS A	0.0	0.0	0.41	0.57	63.6
Approach		353	18.2	0.170	1.2	LOS A	0.2	2.2	0.01	0.08	74.6
North: Blackmans Creek Rd (N)											
7	L2	1	0.0	0.007	10.3	LOS A	0.0	0.2	0.57	0.84	58.5
8	T1	1	0.0	0.007	16.3	LOS B	0.0	0.2	0.57	0.84	58.6
9	R2	1	0.0	0.007	17.8	LOS B	0.0	0.2	0.57	0.84	58.5
Approach		3	0.0	0.007	14.8	LOS B	0.0	0.2	0.57	0.84	58.5
West: GWH (W)											
10	L2	1	0.0	0.001	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
11	T1	327	18.0	0.188	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	3	100.0	0.004	10.2	LOS A	0.0	0.2	0.40	0.61	49.8
Approach		332	18.7	0.188	0.1	NA	0.0	0.2	0.00	0.01	79.4
All Vehicles		769	20.8	0.451	4.8	NA	2.3	26.0	0.10	0.14	68.7

MOVEMENT SUMMARY

Site: 102 [GWH-Jenolan Cave 2024 AM (Ultimate Local Peak)-Before Trigger]

GWH-Jenolan Cave Rd 2035 AM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Jenolan Cave Rd (S)											
1	L2	8	16.7	0.471	44.8	LOS D	2.2	27.4	0.89	0.90	37.9
2	T1	1	0.0	0.471	24.4	LOS B	2.2	27.4	0.89	0.90	39.5
3	R2	62	55.9	0.471	45.5	LOS D	2.2	27.4	0.89	0.90	33.1
Approach		69	51.5	0.471	45.1	NA	2.2	27.4	0.89	0.90	33.5
East: GWH (E)											
4	L2	57	55.6	0.051	8.5	LOS A	0.2	2.8	0.06	0.57	50.2
5	T1	306	19.9	0.177	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
6	R2	1	0.0	0.001	7.6	LOS A	0.0	0.0	0.39	0.56	63.6
Approach		364	25.4	0.177	1.4	LOS A	0.2	2.8	0.01	0.09	73.1
North: Blackmans Creek Rd (N)											
7	L2	1	0.0	0.007	10.1	LOS A	0.0	0.2	0.56	0.84	58.6
8	T1	1	0.0	0.007	16.0	LOS B	0.0	0.2	0.56	0.84	58.9
9	R2	1	0.0	0.007	17.2	LOS B	0.0	0.2	0.56	0.84	58.8
Approach		3	0.0	0.007	14.4	LOS A	0.0	0.2	0.56	0.84	58.8
West: GWH (W)											
10	L2	3	0.0	0.002	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
11	T1	294	21.5	0.172	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	7	57.1	0.008	9.7	LOS A	0.0	0.3	0.45	0.61	48.7
Approach		304	22.1	0.172	0.3	NA	0.0	0.3	0.01	0.02	78.5
All Vehicles		741	26.4	0.471	5.1	NA	2.2	27.4	0.10	0.14	67.4

MOVEMENT SUMMARY

Site: 102 [GWH-Jenolan Cave 2024 PM (Ultimate Local Peak)-Before Trigger]

GWH-Jenolan Cave Rd 2035 PM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Jenolan Cave Rd (S)											
1	L2	13	50.0	0.591	54.3	LOS D	3.1	34.9	0.93	0.98	31.7
2	T1	1	0.0	0.591	33.0	LOS C	3.1	34.9	0.93	0.98	36.0
3	R2	73	37.7	0.591	54.0	LOS D	3.1	34.9	0.93	0.98	32.1
Approach		86	39.0	0.591	53.8	NA	3.1	34.9	0.93	0.98	32.1
East: GWH (E)											
4	L2	49	42.6	0.043	8.3	LOS A	0.2	2.3	0.05	0.58	52.9
5	T1	345	14.0	0.193	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
6	R2	3	0.0	0.003	7.9	LOS A	0.0	0.1	0.44	0.59	63.4
Approach		398	17.5	0.193	1.1	LOS A	0.2	2.3	0.01	0.08	75.0
North: Blackmans Creek Rd (N)											
7	L2	1	0.0	0.008	10.6	LOS A	0.0	0.2	0.62	0.85	57.2
8	T1	1	0.0	0.008	18.2	LOS B	0.0	0.2	0.62	0.85	57.3
9	R2	1	0.0	0.008	20.2	LOS B	0.0	0.2	0.62	0.85	57.2
Approach		3	0.0	0.008	16.3	LOS B	0.0	0.2	0.62	0.85	57.2
West: GWH (W)											
10	L2	1	0.0	0.001	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
11	T1	374	18.0	0.214	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	4	100.0	0.006	10.7	LOS A	0.0	0.3	0.51	0.63	49.4
Approach		379	18.9	0.214	0.2	NA	0.0	0.3	0.01	0.01	79.3
All Vehicles		866	20.2	0.591	6.0	NA	3.1	34.9	0.10	0.14	67.5

MOVEMENT SUMMARY

Site: 102 [GWH-Jenolan Cave 2025 AM (Ultimate Local Peak)-Trigger]

GWH-Jenolan Cave Rd 2035 AM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Jenolan Cave Rd (S)											
1	L2	6	16.7	0.489	46.4	LOS D	2.3	28.4	0.89	0.91	37.3
2	T1	1	0.0	0.489	25.5	LOS B	2.3	28.4	0.89	0.91	38.8
3	R2	63	55.0	0.489	47.0	LOS D	2.3	28.4	0.89	0.91	32.7
Approach		71	50.7	0.489	46.6	NA	2.3	28.4	0.89	0.91	33.1
East: GWH (E)											
4	L2	57	55.6	0.051	8.5	LOS A	0.2	2.8	0.07	0.57	50.2
5	T1	312	19.9	0.180	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
6	R2	1	0.0	0.001	7.6	LOS A	0.0	0.0	0.39	0.56	63.6
Approach		369	25.4	0.180	1.3	LOS A	0.2	2.8	0.01	0.09	73.1
North: Blackmans Creek Rd (N)											
7	L2	1	0.0	0.007	10.2	LOS A	0.0	0.2	0.56	0.84	58.6
8	T1	1	0.0	0.007	18.2	LOS B	0.0	0.2	0.56	0.84	58.8
9	R2	1	0.0	0.007	17.5	LOS B	0.0	0.2	0.56	0.84	58.7
Approach		3	0.0	0.007	14.6	LOS B	0.0	0.2	0.56	0.84	58.7
West: GWH (W)											
10	L2	3	0.0	0.002	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
11	T1	299	21.5	0.175	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	8	50.0	0.009	9.5	LOS A	0.0	0.4	0.45	0.62	50.2
Approach		311	22.0	0.175	0.3	NA	0.0	0.4	0.01	0.02	78.5
All Vehicles		754	26.3	0.489	5.2	NA	2.3	28.4	0.10	0.14	67.3

MOVEMENT SUMMARY

Site: 102 [GWH-Jenolan Cave 2025 PM (Ultimate Local Peak)-Trigger]

GWH-Jenolan Cave Rd 2035 PM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Jenolan Cave Rd (S)											
1	L2	13	50.0	0.613	57.5	LOS E	3.2	36.5	0.94	0.99	30.9
2	T1	1	0.0	0.613	35.2	LOS C	3.2	36.5	0.94	0.99	34.9
3	R2	73	37.7	0.613	57.2	LOS E	3.2	36.5	0.94	0.99	31.3
Approach		88	39.0	0.613	57.0	NA	3.2	36.5	0.94	0.99	31.3
East: GWH (E)											
4	L2	51	41.7	0.043	8.2	LOS A	0.2	2.3	0.05	0.58	53.1
5	T1	352	14.1	0.197	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
6	R2	3	0.0	0.003	8.0	LOS A	0.0	0.1	0.44	0.59	63.4
Approach		405	17.4	0.197	1.1	LOS A	0.2	2.3	0.01	0.08	75.0
North: Blackmans Creek Rd (N)											
7	L2	1	0.0	0.008	10.6	LOS A	0.0	0.2	0.63	0.86	57.0
8	T1	1	0.0	0.008	18.5	LOS B	0.0	0.2	0.63	0.86	57.1
9	R2	1	0.0	0.008	20.6	LOS B	0.0	0.2	0.63	0.86	57.0
Approach		3	0.0	0.008	16.6	LOS B	0.0	0.2	0.63	0.86	57.0
West: GWH (W)											
10	L2	1	0.0	0.001	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
11	T1	380	18.0	0.218	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	4	100.0	0.006	10.8	LOS A	0.0	0.3	0.51	0.63	49.4
Approach		385	18.9	0.218	0.2	NA	0.0	0.3	0.01	0.01	79.3
All Vehicles		880	20.1	0.613	6.2	NA	3.2	36.5	0.10	0.14	67.2

MOVEMENT SUMMARY

Site: 102 [GWH-Jenolan Cave 2028 AM (Ultimate Local Peak)-Before AM Trigger]

GWH-Jenolan Cave Rd 2035 AM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Jenolan Cave Rd (S)											
1	L2	6	16.7	0.542	52.7	LOS D	2.6	31.7	0.91	0.93	35.0
2	T1	1	0.0	0.542	29.5	LOS C	2.6	31.7	0.91	0.93	36.3
3	R2	64	54.1	0.542	53.4	LOS D	2.6	31.7	0.91	0.93	31.0
Approach		72	50.0	0.542	53.0	NA	2.6	31.7	0.91	0.93	31.4
East: GWH (E)											
4	L2	59	55.4	0.052	8.5	LOS A	0.2	2.9	0.07	0.57	50.3
5	T1	328	19.9	0.190	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
6	R2	1	0.0	0.001	7.7	LOS A	0.0	0.0	0.40	0.56	63.6
Approach		388	25.2	0.190	1.3	LOS A	0.2	2.9	0.01	0.09	73.2
North: Blackmans Creek Rd (N)											
7	L2	1	0.0	0.007	10.3	LOS A	0.0	0.2	0.58	0.84	58.2
8	T1	1	0.0	0.007	16.9	LOS B	0.0	0.2	0.58	0.84	58.3
9	R2	1	0.0	0.007	18.3	LOS B	0.0	0.2	0.58	0.84	58.2
Approach		3	0.0	0.007	15.1	LOS B	0.0	0.2	0.58	0.84	58.2
West: GWH (W)											
10	L2	3	0.0	0.002	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
11	T1	315	21.4	0.184	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	8	50.0	0.009	9.7	LOS A	0.0	0.4	0.46	0.62	50.1
Approach		326	21.9	0.184	0.3	NA	0.0	0.4	0.01	0.02	78.5
All Vehicles		789	26.0	0.542	5.7	NA	2.6	31.7	0.10	0.14	66.9

MOVEMENT SUMMARY

Site: 102 [GWH-Jenolan Cave 2028 PM (Ultimate Local Peak)-Before AM Trigger]

GWH-Jenolan Cave Rd 2035 PM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Jenolan Cave Rd (S)											
1	L2	15	50.0	0.686	69.5	LOS E	3.8	43.3	0.96	1.01	28.1
2	T1	1	0.0	0.686	44.1	LOS D	3.8	43.3	0.96	1.01	31.3
3	R2	73	37.7	0.686	69.2	LOS E	3.8	43.3	0.96	1.01	28.4
Approach		88	39.3	0.686	69.0	NA	3.8	43.3	0.96	1.01	28.4
East: GWH (E)											
4	L2	52	40.8	0.044	8.2	LOS A	0.2	2.3	0.05	0.58	53.3
5	T1	371	14.2	0.208	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
6	R2	3	0.0	0.003	8.1	LOS A	0.0	0.1	0.45	0.59	63.4
Approach		425	17.3	0.208	1.1	LOS A	0.2	2.3	0.01	0.07	75.2
North: Blackmans Creek Rd (N)											
7	L2	1	0.0	0.009	10.8	LOS A	0.0	0.2	0.65	0.86	56.3
8	T1	1	0.0	0.009	19.4	LOS B	0.0	0.2	0.65	0.86	56.5
9	R2	1	0.0	0.009	21.9	LOS B	0.0	0.2	0.65	0.86	56.4
Approach		3	0.0	0.009	17.4	LOS B	0.0	0.2	0.65	0.86	56.4
West: GWH (W)											
10	L2	1	0.0	0.001	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
11	T1	399	17.9	0.228	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	4	100.0	0.006	11.0	LOS A	0.0	0.3	0.52	0.64	49.2
Approach		404	18.8	0.228	0.2	NA	0.0	0.3	0.01	0.01	79.3
All Vehicles		921	20.0	0.686	7.2	NA	3.8	43.3	0.10	0.14	66.1

MOVEMENT SUMMARY

Site: 102 [GWH-Jenolan Cave 2029 AM (Ultimate Local Peak)-AM Trigger]

GWH-Jenolan Cave Rd 2035 AM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Jenolan Cave Rd (S)											
1	L2	6	16.7	0.570	56.1	LOS D	2.7	33.8	0.92	0.94	33.9
2	T1	1	0.0	0.570	31.8	LOS C	2.7	33.8	0.92	0.94	35.2
3	R2	65	54.8	0.570	56.8	LOS E	2.7	33.8	0.92	0.94	30.1
Approach		73	50.7	0.570	56.4	NA	2.7	33.8	0.92	0.94	30.5
East: GWH (E)											
4	L2	60	54.4	0.053	8.4	LOS A	0.2	2.9	0.07	0.57	50.5
5	T1	334	19.9	0.193	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
6	R2	1	0.0	0.001	7.7	LOS A	0.0	0.0	0.41	0.56	63.6
Approach		395	25.1	0.193	1.3	LOS A	0.2	2.9	0.01	0.09	73.3
North: Blackmans Creek Rd (N)											
7	L2	1	0.0	0.007	10.3	LOS A	0.0	0.2	0.58	0.84	58.0
8	T1	1	0.0	0.007	17.1	LOS B	0.0	0.2	0.58	0.84	58.2
9	R2	1	0.0	0.007	18.6	LOS B	0.0	0.2	0.58	0.84	58.1
Approach		3	0.0	0.007	15.3	LOS B	0.0	0.2	0.58	0.84	58.1
West: GWH (W)											
10	L2	3	0.0	0.002	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
11	T1	320	21.4	0.187	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	8	50.0	0.009	9.7	LOS A	0.0	0.4	0.46	0.62	50.1
Approach		332	21.9	0.187	0.3	NA	0.0	0.4	0.01	0.02	78.6
All Vehicles		802	26.0	0.570	6.0	NA	2.7	33.8	0.10	0.14	66.5

MOVEMENT SUMMARY

Site: 102 [GWH-Jenolan Cave 2029 PM (Ultimate Local Peak)-AM Trigger]

GWH-Jenolan Cave Rd 2035 PM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Jenolan Cave Rd (S)											
1	L2	15	50.0	0.712	74.6	LOS F	4.1	45.8	0.96	1.02	27.0
2	T1	1	0.0	0.712	48.2	LOS D	4.1	45.8	0.96	1.02	30.0
3	R2	73	37.7	0.712	74.4	LOS F	4.1	45.8	0.96	1.02	27.3
Approach		88	39.3	0.712	74.2	NA	4.1	45.8	0.96	1.02	27.3
East: GWH (E)											
4	L2	52	40.8	0.044	8.2	LOS A	0.2	2.3	0.05	0.58	53.3
5	T1	376	14.0	0.210	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
6	R2	3	0.0	0.003	8.1	LOS A	0.0	0.1	0.46	0.59	63.4
Approach		431	17.1	0.210	1.1	LOS A	0.2	2.3	0.01	0.07	75.2
North: Blackmans Creek Rd (N)											
7	L2	1	0.0	0.009	10.8	LOS A	0.0	0.2	0.66	0.87	56.1
8	T1	1	0.0	0.009	19.7	LOS B	0.0	0.2	0.66	0.87	56.2
9	R2	1	0.0	0.009	22.4	LOS B	0.0	0.2	0.66	0.87	56.1
Approach		3	0.0	0.009	17.6	LOS B	0.0	0.2	0.66	0.87	56.1
West: GWH (W)											
10	L2	1	0.0	0.001	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
11	T1	406	18.1	0.233	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	4	100.0	0.006	11.1	LOS A	0.0	0.3	0.53	0.64	49.2
Approach		412	18.9	0.233	0.2	NA	0.0	0.3	0.01	0.01	79.3
All Vehicles		934	20.0	0.712	7.6	NA	4.1	45.8	0.10	0.14	65.6

MOVEMENT SUMMARY

Site: 102 [GWH-Jenolan Cave 2035 AM (Ultimate Local Peak)]

GWH-Jenolan Cave Rd 2035 AM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Jenolan Cave Rd (S)											
1	L2	6	16.7	0.602	61.1	LOS E	2.9	36.4	0.93	0.96	32.4
2	T1	1	0.0	0.602	34.6	LOS C	2.9	36.4	0.93	0.96	33.6
3	R2	65	54.8	0.602	61.8	LOS E	2.9	36.4	0.93	0.96	28.9
Approach		73	50.7	0.602	61.3	NA	2.9	36.4	0.93	0.96	29.3
East: GWH (E)											
4	L2	60	54.4	0.054	8.4	LOS A	0.2	2.9	0.07	0.57	50.5
5	T1	333	19.9	0.193	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
6	R2	1	0.0	0.001	7.7	LOS A	0.0	0.0	0.41	0.56	63.6
Approach		394	25.1	0.193	1.3	LOS A	0.2	2.9	0.01	0.09	73.3
North: Blackmans Creek Rd (N)											
7	L2	1	0.0	0.007	10.3	LOS A	0.0	0.2	0.58	0.84	58.0
8	T1	1	0.0	0.007	17.0	LOS B	0.0	0.2	0.58	0.84	58.2
9	R2	1	0.0	0.007	18.5	LOS B	0.0	0.2	0.58	0.84	58.1
Approach		3	0.0	0.007	15.3	LOS B	0.0	0.2	0.58	0.84	58.1
West: GWH (W)											
10	L2	3	0.0	0.002	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
11	T1	319	21.5	0.186	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	8	50.0	0.009	9.7	LOS A	0.0	0.4	0.46	0.62	50.1
Approach		331	22.0	0.186	0.3	NA	0.0	0.4	0.01	0.02	78.6
All Vehicles		800	26.1	0.602	6.4	NA	2.9	36.4	0.10	0.14	66.0

MOVEMENT SUMMARY

Site: 102 [GWH-Jenolan Cave 2035 PM (Ultimate Local Peak)]

GWH-Jenolan Cave Rd 2035 PM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Jenolan Cave Rd (S)											
1	L2	15	50.0	0.778	84.2	LOS F	4.8	53.1	0.98	1.08	29.2
2	T1	1	0.0	0.778	57.0	LOS E	4.8	53.1	0.98	1.08	27.8
3	R2	79	36.0	0.778	83.9	LOS F	4.8	53.1	0.98	1.08	25.6
Approach		95	37.8	0.778	83.7	NA	4.8	53.1	0.98	1.08	25.5
East: GWH (E)											
4	L2	52	40.8	0.045	8.2	LOS A	0.2	2.4	0.05	0.58	53.3
5	T1	375	14.0	0.210	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
6	R2	3	0.0	0.003	8.1	LOS A	0.0	0.1	0.46	0.59	63.4
Approach		429	17.2	0.210	1.1	LOS A	0.2	2.4	0.01	0.07	75.2
North: Blackmans Creek Rd (N)											
7	L2	1	0.0	0.009	10.8	LOS A	0.0	0.2	0.66	0.87	56.1
8	T1	1	0.0	0.009	19.7	LOS B	0.0	0.2	0.66	0.87	56.3
9	R2	1	0.0	0.009	22.3	LOS B	0.0	0.2	0.66	0.87	56.2
Approach		3	0.0	0.009	17.6	LOS B	0.0	0.2	0.66	0.87	56.2
West: GWH (W)											
10	L2	1	0.0	0.001	6.9	LOS A	0.0	0.0	0.00	0.63	65.4
11	T1	405	17.9	0.232	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	4	100.0	0.006	11.1	LOS A	0.0	0.3	0.53	0.64	49.2
Approach		411	18.7	0.232	0.2	NA	0.0	0.3	0.01	0.01	79.3
All Vehicles		938	19.9	0.778	9.1	NA	4.8	53.1	0.11	0.15	63.9

MOVEMENT SUMMARY

▽ Site: 101 [EX-AM Jenolan Caves Rd/Access Road]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Jenolan Caves Road											
2	T1	28	33.3	0.018	0.0	LOS A	0.0	0.0	0.00	0.00	80.9
3	R2	1	0.0	0.002	8.0	LOS A	0.0	0.0	0.28	0.57	63.8
Approach		29	32.1	0.018	0.3	NA	0.0	0.0	0.01	0.02	79.3
East: Access Road											
4	L2	1	0.0	0.031	7.9	LOS A	0.1	2.6	0.39	0.63	61.4
6	R2	12	100.0	0.031	12.0	LOS A	0.1	2.6	0.39	0.63	47.9
Approach		13	91.7	0.031	11.7	LOS A	0.1	2.6	0.39	0.63	48.6
North: Jenolan Caves Road											
7	L2	14	84.6	0.017	9.0	LOS A	0.0	0.0	0.00	0.63	43.5
8	T1	34	34.4	0.021	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		47	48.9	0.021	2.6	NA	0.0	0.0	0.00	0.18	64.3
All Vehicles		89	49.4	0.031	3.1	NA	0.1	2.6	0.06	0.19	65.4

MOVEMENT SUMMARY

▽ Site: 101 [EX-PM Jenolan Caves Rd/Access Road]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Jenolan Caves Road											
2	T1	49	21.3	0.029	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
3	R2	2	50.0	0.003	8.8	LOS A	0.0	0.2	0.21	0.58	49.4
Approach		52	22.4	0.029	0.4	NA	0.0	0.2	0.01	0.02	78.0
East: Access Road											
4	L2	3	33.3	0.027	8.3	LOS A	0.1	1.6	0.29	0.61	52.0
6	R2	8	62.5	0.027	12.7	LOS A	0.1	1.6	0.29	0.61	45.6
Approach		12	54.5	0.027	11.5	LOS A	0.1	1.6	0.29	0.61	47.2
North: Jenolan Caves Road											
7	L2	11	50.0	0.010	8.1	LOS A	0.0	0.0	0.00	0.63	50.4
8	T1	19	11.1	0.010	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		29	25.0	0.010	2.9	NA	0.0	0.0	0.00	0.23	66.1
All Vehicles		93	27.3	0.029	2.6	NA	0.1	1.6	0.04	0.16	68.5

MOVEMENT SUMMARY

▽ Site: 101 [2022 AM Jenolan Caves Rd/Access Road (Peak Day)]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Jenolan Caves Road											
2	T1	33	35.5	0.021	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
3	R2	1	0.0	0.002	8.3	LOS A	0.0	0.0	0.31	0.57	63.5
Approach		34	34.4	0.021	0.3	NA	0.0	0.0	0.01	0.02	79.3
East: Access Road											
4	L2	1	0.0	0.056	8.0	LOS A	0.2	4.4	0.44	0.63	60.4
6	R2	20	94.7	0.056	13.9	LOS A	0.2	4.4	0.44	0.63	39.7
Approach		21	90.0	0.056	13.6	LOS A	0.2	4.4	0.44	0.63	40.4
North: Jenolan Caves Road											
7	L2	20	94.7	0.026	9.2	LOS A	0.0	0.0	0.00	0.63	41.9
8	T1	37	34.3	0.023	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		57	55.6	0.026	3.2	NA	0.0	0.0	0.00	0.22	60.6
All Vehicles		112	55.7	0.056	4.3	NA	0.2	4.4	0.09	0.24	59.2

MOVEMENT SUMMARY

▽ Site: 101 [2022 PM Jenolan Caves Rd/Access Road (Peak Day)]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Jenolan Caves Road											
2	T1	55	21.2	0.032	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
3	R2	1	0.0	0.002	7.6	LOS A	0.0	0.0	0.23	0.57	64.5
Approach		56	20.8	0.032	0.1	NA	0.0	0.0	0.00	0.01	79.6
East: Access Road											
4	L2	1	0.0	0.045	7.5	LOS A	0.2	3.2	0.41	0.63	60.4
6	R2	16	80.0	0.045	13.7	LOS A	0.2	3.2	0.41	0.63	41.9
Approach		17	75.0	0.045	13.3	LOS A	0.2	3.2	0.41	0.63	42.7
North: Jenolan Caves Road											
7	L2	12	90.9	0.015	9.1	LOS A	0.0	0.0	0.00	0.63	42.5
8	T1	21	10.0	0.011	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		33	38.7	0.015	3.2	NA	0.0	0.0	0.00	0.22	60.9
All Vehicles		105	35.0	0.045	3.2	NA	0.2	3.2	0.07	0.18	64.5

MOVEMENT SUMMARY

▽ Site: 101 [2035 AM Jenolan Caves Rd/Access Road (Peak Day)]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Jenolan Caves Road											
2	T1	40	36.8	0.025	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
3	R2	1	0.0	0.002	8.6	LOS A	0.0	0.1	0.34	0.57	63.2
Approach		41	35.9	0.025	0.2	NA	0.0	0.1	0.01	0.01	79.4
East: Access Road											
4	L2	1	0.0	0.061	8.3	LOS A	0.2	4.8	0.48	0.65	59.2
6	R2	20	94.7	0.061	15.2	LOS B	0.2	4.8	0.48	0.65	39.2
Approach		21	90.0	0.061	14.9	LOS B	0.2	4.8	0.48	0.65	39.8
North: Jenolan Caves Road											
7	L2	20	94.7	0.026	9.2	LOS A	0.0	0.0	0.00	0.63	41.9
8	T1	46	34.1	0.029	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		66	52.4	0.029	2.8	NA	0.0	0.0	0.00	0.19	62.8
All Vehicles		128	53.3	0.061	3.9	NA	0.2	4.8	0.08	0.21	61.1

MOVEMENT SUMMARY

▽ Site: 101 [2035 PM Jenolan Caves Rd/Access Road (Peak Day)]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Jenolan Caves Road											
2	T1	67	21.9	0.039	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
3	R2	1	0.0	0.002	7.8	LOS A	0.0	0.0	0.25	0.57	64.1
Approach		68	21.5	0.039	0.1	NA	0.0	0.0	0.00	0.01	79.7
East: Access Road											
4	L2	1	0.0	0.049	7.7	LOS A	0.2	3.5	0.46	0.66	59.1
6	R2	16	80.0	0.049	15.1	LOS B	0.2	3.5	0.46	0.66	41.3
Approach		17	75.0	0.049	14.7	LOS B	0.2	3.5	0.46	0.66	42.1
North: Jenolan Caves Road											
7	L2	12	90.9	0.015	9.1	LOS A	0.0	0.0	0.00	0.63	42.5
8	T1	26	12.0	0.015	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		38	36.1	0.015	2.8	NA	0.0	0.0	0.00	0.19	63.0
All Vehicles		123	33.3	0.049	2.9	NA	0.2	3.5	0.07	0.15	66.2

MOVEMENT SUMMARY

▽ Site: 101 [2022 AM Jenolan Caves Rd/Access Road (Ultimate Local Peak)]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Jenolan Caves Road											
2	T1	33	35.5	0.021	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
3	R2	1	0.0	0.002	8.4	LOS A	0.0	0.0	0.31	0.57	63.4
Approach		34	34.4	0.021	0.3	NA	0.0	0.0	0.01	0.02	79.3
East: Access Road											
4	L2	1	0.0	0.062	8.0	LOS A	0.3	5.0	0.44	0.63	60.3
6	R2	22	95.2	0.062	14.0	LOS A	0.3	5.0	0.44	0.63	39.6
Approach		23	90.9	0.062	13.8	LOS A	0.3	5.0	0.44	0.63	40.2
North: Jenolan Caves Road											
7	L2	22	95.2	0.029	9.2	LOS A	0.0	0.0	0.00	0.63	41.8
8	T1	37	34.3	0.023	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		59	57.1	0.029	3.4	NA	0.0	0.0	0.00	0.24	59.6
All Vehicles		116	57.3	0.062	4.6	NA	0.3	5.0	0.09	0.25	58.2

MOVEMENT SUMMARY

▽ Site: 101 [2022 PM Jenolan Caves Rd/Access Road (Ultimate Local Peak)]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Jenolan Caves Road											
2	T1	55	21.2	0.032	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
3	R2	1	0.0	0.002	7.9	LOS A	0.0	0.0	0.26	0.57	64.0
Approach		56	20.8	0.032	0.2	NA	0.0	0.0	0.00	0.01	79.6
East: Access Road											
4	L2	1	0.0	0.070	7.6	LOS A	0.3	5.3	0.45	0.65	59.8
6	R2	24	87.0	0.070	14.4	LOS A	0.3	5.3	0.45	0.65	40.6
Approach		25	83.3	0.070	14.1	LOS A	0.3	5.3	0.45	0.65	41.1
North: Jenolan Caves Road											
7	L2	22	95.2	0.029	9.2	LOS A	0.0	0.0	0.00	0.63	41.8
8	T1	21	10.0	0.011	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		43	53.7	0.029	4.7	NA	0.0	0.0	0.00	0.32	54.5
All Vehicles		124	44.9	0.070	4.6	NA	0.3	5.3	0.09	0.25	58.9

MOVEMENT SUMMARY

▽ Site: 101 [2035 AM Jenolan Caves Rd/Access Road (Ultimate Local Peak)]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Jenolan Caves Road											
2	T1	40	36.8	0.025	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
3	R2	1	0.0	0.002	8.7	LOS A	0.0	0.1	0.34	0.57	63.1
Approach		41	35.9	0.025	0.2	NA	0.0	0.1	0.01	0.01	79.4
East: Access Road											
4	L2	1	0.0	0.067	8.4	LOS A	0.3	5.4	0.49	0.65	59.1
6	R2	22	95.2	0.067	15.4	LOS B	0.3	5.4	0.49	0.65	39.0
Approach		23	90.9	0.067	15.0	LOS B	0.3	5.4	0.49	0.65	39.6
North: Jenolan Caves Road											
7	L2	22	95.2	0.029	9.2	LOS A	0.0	0.0	0.00	0.63	41.8
8	T1	46	34.1	0.029	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		68	53.8	0.029	3.0	NA	0.0	0.0	0.00	0.20	61.8
All Vehicles		133	54.8	0.067	4.2	NA	0.3	5.4	0.09	0.22	60.0

MOVEMENT SUMMARY

▽ Site: 101 [2035 PM Jenolan Caves Rd/Access Road (Ultimate Local Peak)]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Jenolan Caves Road											
2	T1	67	21.9	0.039	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
3	R2	1	0.0	0.002	8.1	LOS A	0.0	0.0	0.28	0.57	63.8
Approach		68	21.5	0.039	0.1	NA	0.0	0.0	0.00	0.01	79.7
East: Access Road											
4	L2	1	0.0	0.077	7.7	LOS A	0.3	5.8	0.49	0.68	58.4
6	R2	24	87.0	0.077	15.9	LOS B	0.3	5.8	0.49	0.68	39.9
Approach		25	83.3	0.077	15.6	LOS B	0.3	5.8	0.49	0.68	40.5
North: Jenolan Caves Road											
7	L2	22	95.2	0.029	9.2	LOS A	0.0	0.0	0.00	0.63	41.8
8	T1	26	12.0	0.015	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		48	50.0	0.029	4.2	NA	0.0	0.0	0.00	0.29	56.4
All Vehicles		142	42.2	0.077	4.3	NA	0.3	5.8	0.09	0.22	60.7

Appendix D

Extracts of Forecast Flows from Roads and Maritime Reports

Transport and Urban Planning (2009) Traffic Study of Proposed Widening of Great Western Highway, Bullaburra (Pages 120-121)

5.3 Future Traffic Volumes in Great Western Highway at Bullaburra

Traffic growth in the Great Western Highway at Bullaburra would be expected to increase by 1.9% - 2.2% per annum between 2007 and 2032. Given the land use changes at Lawson, the higher traffic growth of 2.2% per annum is considered to better reflect the future land use changes.

The daily traffic volume and classification counts undertaken in late November / early December 2007 provided daily (7 day AADT) volumes in the Great Western Highway of:

- 22,552 vpd near Kalinda Road (east)
- 22,312 vpd east of Genevieve Road.

Adopting a linear average traffic growth rate of 2.2% per annum provides the following future traffic volume projections for the Great Western Highway for the years 2008, 2012, 2022 and 2032.

TABLE 5.1

PROJECTED DAILY (7 DAY AADT) TRAFFIC VOLUMES GREAT WESTERN HIGHWAY AT BULLABURRA

Year	Near Kalinda Road (east)	East of Genevieve Road
2007	22,552	22,312
2008	23,048	22,803
2012	25,033	24,766
2022	29,994	29,675
2032	34,956	34,584

Future traffic growth in the local streets in Bullaburra that intersect with the Great Western Highway will be incremental and, based on the future increases in the population and the number of dwellings between 2006 – 2021 in the Bullaburra / Lawson area, could be expected to be up to 14% over the next 10-15 years. The adoption of 2.2% linear growth per year for the future peak hour traffic volumes using the local roads that intersect with the Great Western Highway would provide a conservative or higher rate of traffic growth that would take into account population growth plus other changes such as an increase in the number of drivers in the area, from smaller house sizes and more younger adults.

Roads and Traffic Authority (2006) The Great Western Highway Upgrade Lawson Section 1A Traffic, Transport and Accessibility Report (page 9)

2. Future traffic volume projections

Traffic volumes for five year intervals between 2005 and 2030 were estimated by projection from historical data. Linear and exponential regressions were compared. The linear regression line indicated a growth rate of approximately 2.3% per annum (based on year 2002 traffic volume), which is considered reasonable for this type of road given its location with respect to major population centres and the relatively long 30 year analysis period.

Consequently, the traffic volumes shown in Table 2.1 have been predicted for the Great Western Highway upgrade between Ferguson Avenue and Bass Street.

Table 2.1 Traffic volume projections

Year	AADT** Both Directions (vpd)	AADT* One Direction (vpd)	Peak Hourly Volume One Direction (vpd)
2002	21851	10926	863
2005	23937	11968	945
2010	26406	13203	1043
2015	28875	14437	1141
2020	31344	15672	1238
2025	33813	16906	1336
2030	36282	18141	1433

** Based on a conversion rate of 1.15 axle pairs / vehicle
* Assumes 50/50 directional split

This table indicates, for example, that ten years after the proposed upgrade is complete i.e. 2020, the estimated vehicles per day using the Highway (in both directions) is approximately 31,300 or equivalent to a 31% increase in traffic compared with current (2005) traffic volumes.

GHD (2006) The Great Western Highway Upgrade Wentworth Falls East Review of Environmental Factors Volume 1 – Main Report (pages 114-115)

13.2 Future traffic volume projections

Traffic volumes on the Great Western Highway for 2008, 2018, 2028 and 2038 were estimated by projection from historical data. A growth rate of approximately 556 vpd per annum (based 2002 traffic volumes) is projected, which is considered reasonable for this type of road given its location with respect to major population towns i.e. Sydney. Table 13.3 illustrates the projected weekday traffic volumes.

Table 13.3 Weekday traffic volume projections

Year	AADT Both Directions (vpd)	AADT* One Direction (vpd)	Peak Hourly Volume One Direction (vpd)
2006	25,063	12,532	1,003
2008**	26,175	13,088	1,047
2010	27,287	13,644	1,091
2018	31,735	15,868	1,269
2020	32,847	16,424	1,314
2028	37,295	18,648	1,492
2030	38,407	19,204	1,536
2038	42,855	21,428	1,714

**Assumes 50/50 directional split*

***Assumed completion date.*

Table 13.3 indicates that ten years after the proposed upgrade is complete i.e. 2018, it is estimated that approximately 31,735 vehicles will be using the highway each day (in both directions) is, which is approximately 39% increase in daily traffic from 2002.

GHD (2002) Upgrade of the Great Western Highway – Woodford to Hazelbrook Review of Environmental Factors Volume 1 – Main Report (pages 25-26)

13.2 Future Traffic Volume Projections

Traffic volumes for 2000, 2010, 2020 and 2030 were estimated by projection from historical data. Linear and exponential regressions were compared. The linear regression line indicated a growth rate of approximately 2.4% per annum or 502 vehicles per day per year (based on year 1999 traffic volume), which is considered reasonable for this type of road given its location with respect to major population towns i.e. Sydney and the relatively long 30 year analysis period.

Consequently, the traffic volumes shown in Table 13.7 have been predicted for the Woodford-Hazelbrook section of the Great Western Highway.

This table indicates, for example, that ten years after the proposed upgrade is complete i.e. 2017, the estimated number of vehicles per day using the highway (in both directions) is approximately 29,518 which is equivalent to a 35% increase in traffic volume over year 2002 volumes.

Table 13.7 Traffic Volume Projections

Year	AADT Both Directions (vpd)	AADT One Direction (vpd)	Peak Hourly Volume One Direction (vpd)
1999	20,485	10,242	819
2000	20,986	10,493	839
2001	21,488	10,744	860
2002	21,990	10,995	880
2003	22,492	11,246	900
2004	22,994	11,497	920
2005	23,496	11,748	940
2006	23,998	11,999	960
2007	24,500	12,250	980
2008	25,001	12,501	1,000
2009	25,503	12,752	1,020
2010	26,005	13,003	1,040
2011	26,507	13,254	1,060
2012	27,009	13,504	1,080
2013	27,511	13,755	1,100
2014	28,013	14,006	1,121
2015	28,514	14,257	1,141
2016	29,016	14,508	1,161
2017	29,518	14,759	1,181
2018	30,020	15,010	1,201
2019	30,522	15,261	1,221
2020	31,024	15,512	1,241
2021	31,526	15,763	1,261
2022	32,028	16,014	1,281
2023	32,529	16,265	1,301
2024	33,031	16,516	1,321
2025	33,533	16,767	1,341
2026	34,035	17,018	1,361
2027	34,537	17,268	1,381
2028	35,039	17,519	1,402
2029	35,541	17,770	1,422
2030	36,043	18,021	1,442
2031	36,544	18,272	1,462
2032	37,046	18,523	1,482

* Assumes 50/50 directional split

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