

APPENDIX 12: Traffic Impact Assessment prepared by GHD



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Bulga Coal Management

Blakefield North Modification

Traffic Impact Assessment

August 2012



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- A Traffic Data
- B Overview of Project Components
- C SIDRA Outputs



1. Introduction

1.1 Project Outline

The Bulga Underground Operations (previously known as Beltana Highwall Mining) presently comprises the Blakefield South Underground Mine (Blakefield seam) and the Blakefield North Underground Mine (Blakefield Seam), an approved but yet to be commenced mine. The Bulga Underground Operations form part of the Bulga Coal Complex which is managed by Bulga Coal Management Pty Ltd.

Bulga Coal Management is seeking to modify Development Consent DA 376-8-2003 under Section 75W of the EP&A Act to allow for the following:

- Realignment of the approved longwall layout of the Blakefield North Underground Mine
- Increased pre- and post- gas drainage infrastructure for the Blakefield seam in the Blakefield North Underground Mine
- Modified ventilation for the Blakefield North Underground Mine by providing two ventilation fans at the base of the Whybrow Highwall;
- Changed coal clearance infrastructure utilising truck haulage of development coal which will be replaced by conveyor haulage once longwall mining commences
- Construction of a gas drainage plant at the top of the Whybrow Highwall, including goaf plant, gas compressors, workshop, offices, hardstand areas, buried pipelines and flares
- Construction of a small-scale power generation plant (up to 32MW), and associated buried pipeline, compressors and ancillary infrastructure, to manage the increased methane production from gas drainage included within this modification proposal
- Ongoing exploration activities undertaken during the life of the Blakefield North Underground Mine.

The timing of the Project is to be in accordance with Life of Mine (LOM) planning. The proposal will use the same longwall mining methods, type of equipment and infrastructure already in use by Bulga Underground Operations. No changes are proposed to the pit top workshop areas, the Coal Handling Preparation Plant (CHPP), coal handling techniques, approved operating hours, or mining methods currently in use at the mine. No extension or reduction to the life of the current development consent is proposed, and the proposed modification would not require any additional tailings or coarse rejects storage.

1.2 Purpose of this Report

GHD Pty Ltd (GHD) has been engaged to prepare a Traffic Impact Assessment for the modification to the Blakefield North underground mine approval. The site is located north of Broke in the Hunter Valley and is shown in Figure 1

The purpose of this report is to assess traffic impacts associated with the proposed development, specifically addressing the following:

- Review the existing road environment in the vicinity of the site and the traffic conditions on that road network



- ▶ Examine the proposed traffic operations during the construction period and operation of the proposed facility
- ▶ An examination of the traffic implications of the proposal with respect to the external road network in terms of traffic efficiency and road safety
- ▶ Summarising findings.

Information on traffic conditions has been obtained from detailed traffic surveys and from published Council and RSM (Roads and Maritime Services) information.

2. Existing Conditions

2.1 Site Location

Underground mining and associated infrastructure relevant to traffic generation is indicated as Areas 1, 2 and 3 in Figure 1. Each area represents works areas accessing either Charlton Road or Broke Road. Access points for each area and the broader immediate road network are shown.

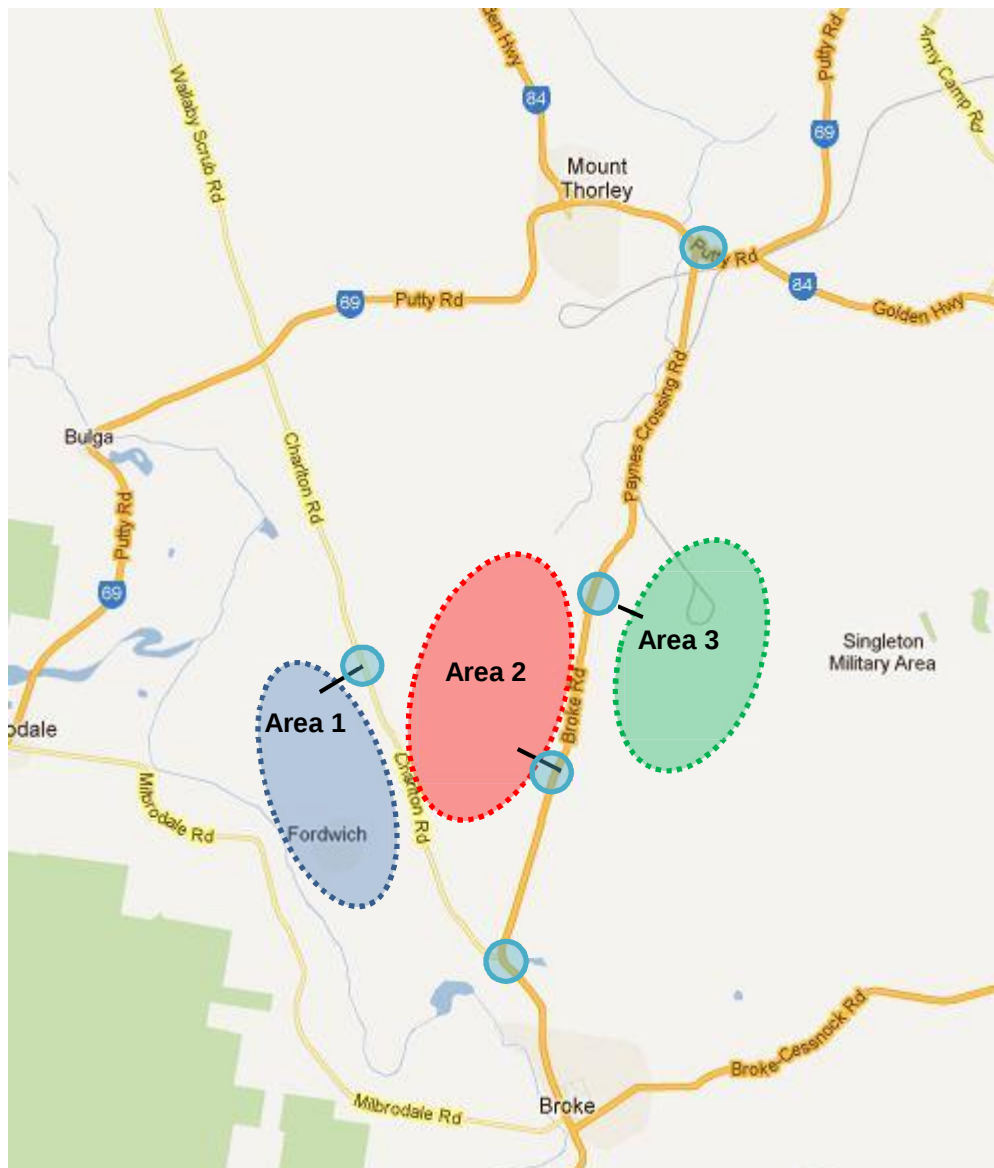


Figure 1 Locality Plan

Refer also to the Overview of Project Components figure in Appendix B that defines the location of the various components comprising the project.



2.2 Land Use

Land use for the area can be described by area in reference to Figure 1.

- ▶ **Area 1** comprises predominantly agricultural land use with grazing, olive and grape production. Land has previously been subject to longwall underground mining and subsidence. Existing mine gas drainage surface infrastructure is in place. This area will have direct access to Charlton Road for the proposed activities.
- ▶ **Area 2** is a modified environment with significant open cut and underground mining activity. Access to/from this area will be via Broke Road, although feasible access could be from Charlton Road.
- ▶ **Area 3** is bounded by Broke Road (west) and the Singleton Army Area in the east. Area 3 is a modified environment with open cut mining and associated infrastructure being coal handling, tailings dams, spoil, and administration and maintenance areas. Access is via Broke Road.

2.3 Road Network and Access

2.3.1 Broke Road

Broke Road provides access from the township of Broke (2006 census data population 540) in a northerly direction for approximately 15 kilometres to Putty Road/Golden Highway. Broke Road provides the main road link between Broke and Singleton. In Broke, the road passes through a residential area with a 60 km/hr speed limit. There is a centreline, a road seal of approximately 10 metres and lane widths of 3.5 metres. The speed limit increases to 100 km/hr as the road passes through rural-zoned area. Approximately 3 kilometres north of Broke, Broke Road crosses Monkey Place Creek at an overbridge. There is a T intersection at Charlton Road, with Broke Road retaining priority. The road continues north providing access for coal mines, coal operations and minor agricultural activities. Broke Road passes under Mt Thorley (rail) Branch Line and terminates at Golden Highway/Putty Road intersection, where it forms the minor arm of a priority controlled T-intersection.

The Blakefield North modification will utilise the following existing access intersections on Broke Road:

- ▶ Area 2 will access Broke Road at the existing auxiliary right turn/left turn (AUR/AUL) intersection at the former Beltana mine infrastructure area access. This access is currently utilised for maintenance activities.
- ▶ Area 3 will access Broke Road at the existing channelized right turn/auxiliary left turn (CHR/AUL) intersection at the Bulga open cut infrastructure area. This intersection currently provides access to the open cut mine and associated infrastructure.

More broadly, the following intersections would be utilised by traffic associated with the proposed Blakefield North modification to gain access to the site:

- ▶ Existing intersection channelised right turn/left turn intersection at Broke Road and the Golden Highway (Putty Road).
- ▶ Existing T-intersection at Broke Road and Charlton Road (see below) may be used for vehicles operating in Area 1.

2.3.2 Charlton Road

Charlton Road provides a connection between Broke Road and Putty Road/Golden Highway. The road is located within a road reserve approximately 30 metres wide and has 3.5 metre wide sealed traffic lanes. The road has unsealed shoulders, unformed drains and grassed verges. There is no centreline and there is direct property access for a number of rural lots. Charlton road terminates at Broke Road at a stop sign controlled intersection.

The intersection is located on Broke Road at an approximate 350 metre radius horizontal curve. The sight distance from the hold line on Charlton Road is 225 metres to the north and 160 metres to the south. The south view, shown in Figure 2, is obscured by the safety barriers on the bridge over Monkey Place Creek.

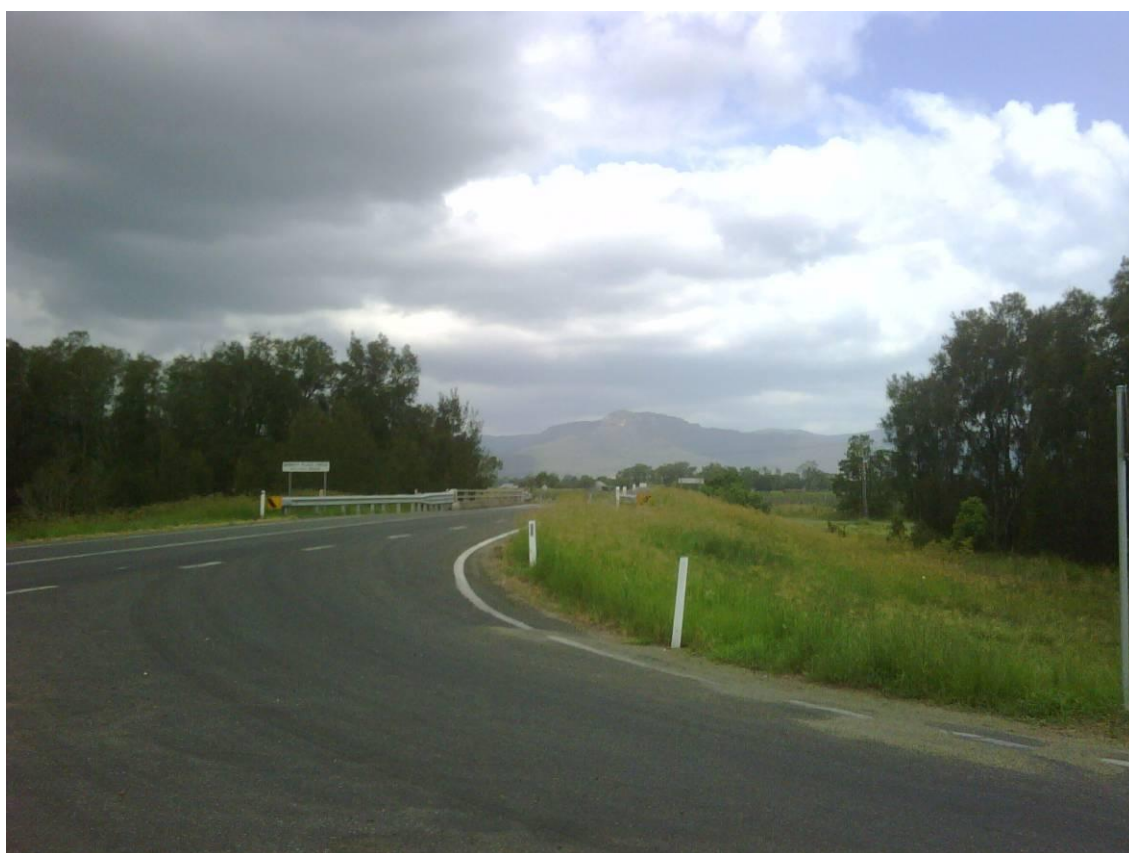


Figure 2 View south from Charlton Road Intersection

The Safe Intersection Sight Distance required by Austroads Part 4A Guide to Road Design Part 4A: Unsignalised and Signalised Intersections are shown in Table 2.1.



Table 2.1 Safe Intersection Sight Distance Requirements

	SISD (m)		
Reaction Time (s)	70 km/hr	80 km/hr	100 km/hr
1.5	141	170	234
2.0	151	181	248
2.5	-	-	262

The existing sight distance at the intersection does not comply with the current sign posted speed limit of 100 km/hr (approximately 160m south and 255m north).

The existing sight distance to the south (160 metres) would be compliant with Austroads requirements if the speed limit was reduced to 70 km/hr.

2.3.3 Golden Highway

The Golden Highway is a 314 kilometre route from the New England Highway, south of Singleton to Dubbo, central western NSW. It is designated State Highway 84 (SH84). In the vicinity of the project, the Golden Highway comprises Mitchell Line of Road, Putty Road and the Golden Highway.

3. Exiting Traffic Conditions

Traffic survey data was obtained from traffic counts undertaken by Northern Transport Planning and Engineering Pty Ltd (NTPE), information provided by Singleton Council and from the NSW Roads and Traffic Authority (now Roads and Maritime Services - RSM). The locations of this data are shown in Figure 3.

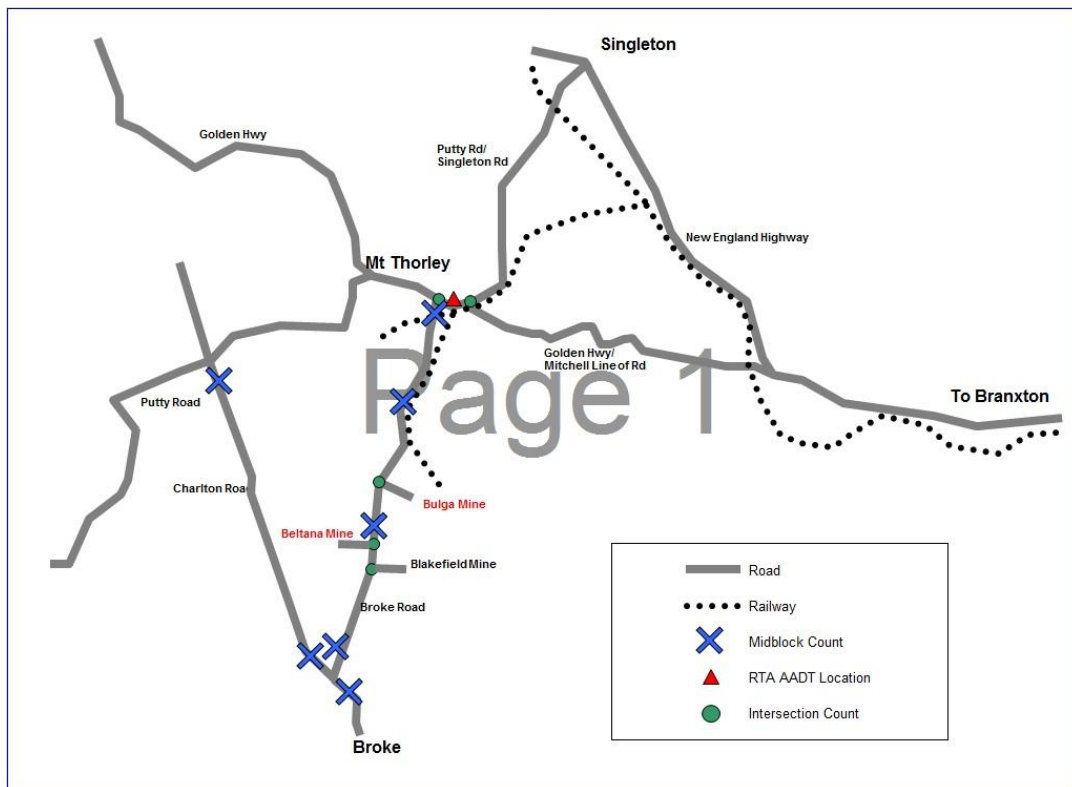


Figure 3 Locations of Traffic Surveys (Not to Scale)



3.1 Midblock Counts

The traffic counts are shown in Table 3.1.

Table 3.1 Two Way Daily Midblock Traffic Averages

Location	Source	Year	Traffic Volume
Broke Road – Between Golden Highway and Mt Thorley Branch line Rail	NTPE	2010	2288
Broke Road – South of CPP and Bridge and Oakbridge Mine intersection	SC	2002	1426
South of Haul-road overbridge and north of Beltana Intersection	SC	1994	971
Broke Road – South of Bulga underground entrance and north of Charlton Road	SC	1994	894
Broke Road – South of Charlton Road. North of Blaxland Street	SC	2000	1815
Golden Highway/Putty Road	RTA 05.638	2007	9401
	RTA	2004	8143
Charlton Road – North of Broke Road Intersection	NTPE	2011	746
Charlton Road – South of Putty Road Intersection	NTPE	2011	710

NTPE – Northern Transport Planning and Engineering

SC – Singleton Council

RTA – Roads and Traffic Authority

This data was not specifically collected for this report. The data provided by NTPE was undertaken for Bulga Coal Management for another study. We have assumed all data is appropriate and available for the purposes of this assessment.

3.1.1 Surrounding Roads and Traffic Volumes

The classification of roads on the existing road network can be used as an indication of the functional role each road plays with respect to the volume of traffic they should appropriately carry. RMS has developed a set of road hierarchy classifications detailed in Table 3.2 indicating typical nominal volumes in terms of average annual daily traffic (AADT) serviced by various classes of road.



Table 3.2 Functional Classification of Roads

Type of Road	Traffic Volume (AADT)	Peak Hour Volume (vph)
Arterial Road	>15,000	1,500 – 5,600
Sub-Arterial Road	5,000 - 20,000	500 – 2,000
Collector Road	2,000 - 10,000	200 – 1,000
Local Road	<2,000	0 - 200

On this basis, the Golden Highway is operating as a sub-arterial, Broke Road as a collector and Charlton Road as a local road.

For the purposes of approval of the proposal:

- The Golden Highway is state road under the jurisdiction of RSM.
- Broke Road and Charlton Road (and intersections) are under Singleton Council control.

3.2 Intersection Operation

3.2.1 Intersection Traffic Volumes

In late 2010 and May 2011, NTPE surveyed the following intersections in both the AM and PM peak periods, providing turning movement counts:

- Broke Road / Charlton Road;
- Broke Road / Beltana Mine Access;
- Broke Road / Bulga Mine Access; and
- Broke Road / Golden Hwy (Putty Road).

The count data is attached in Appendix A.

The Roads and Traffic Authority's Guide to Traffic Generating Developments describes the levels of service for intersection performance. These are summarised in Table 3.3.

Table 3.3 Performance Criteria for Intersections

LOS	Average Delay / Vehicle (secs/veh)	Give-Way and Stop Signs
A	Less than 14	Good operation
B	15 to 28	Acceptable delays and spare capacity
C	29 to 42	Satisfactory, but accident study required
D	43 to 56	Near capacity and accident study required
E	57 to 70	At capacity; requires other control mode

3.2.2 Broke Road / Golden Hwy

An intersection count was undertaken at the Broke Road and Golden Highway/Putty Road in May 2011. The morning and evening peak traffic movements and the corresponding level of service is shown in Figure 4 and Figure 5.

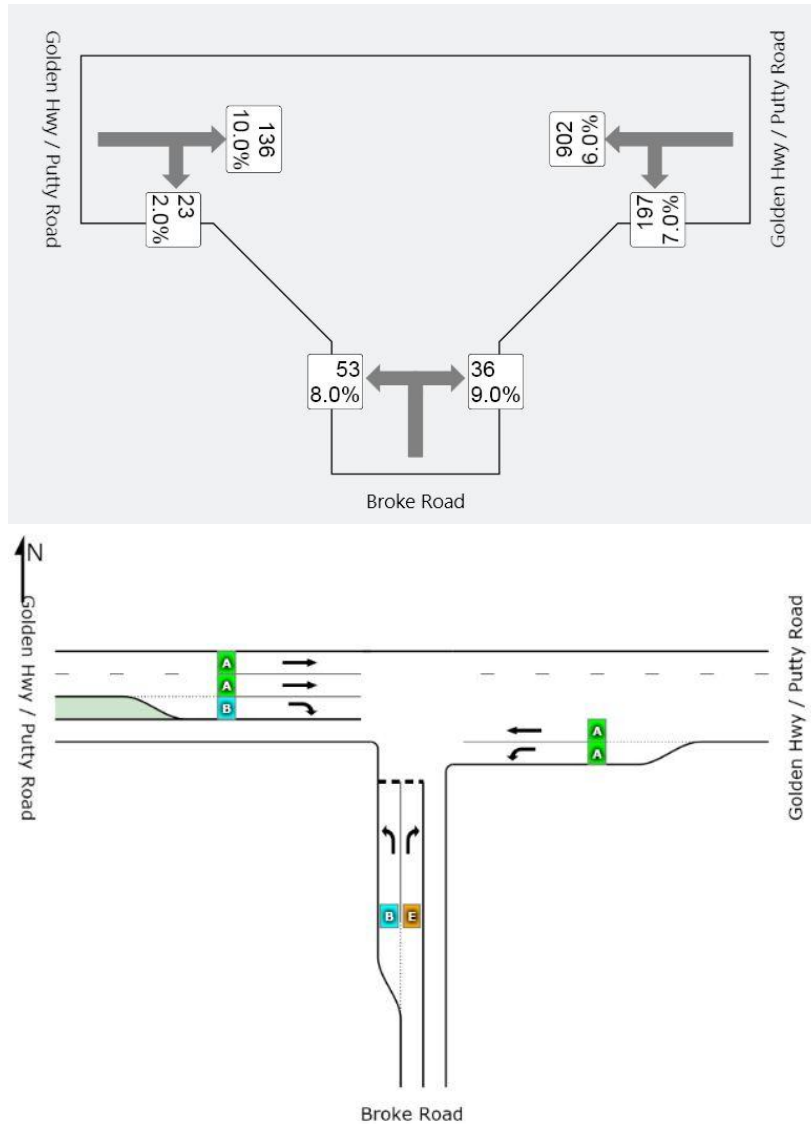


Figure 4 Broke Road at Golden Highway/Putty Road Existing Intersection Volume and Performance AM

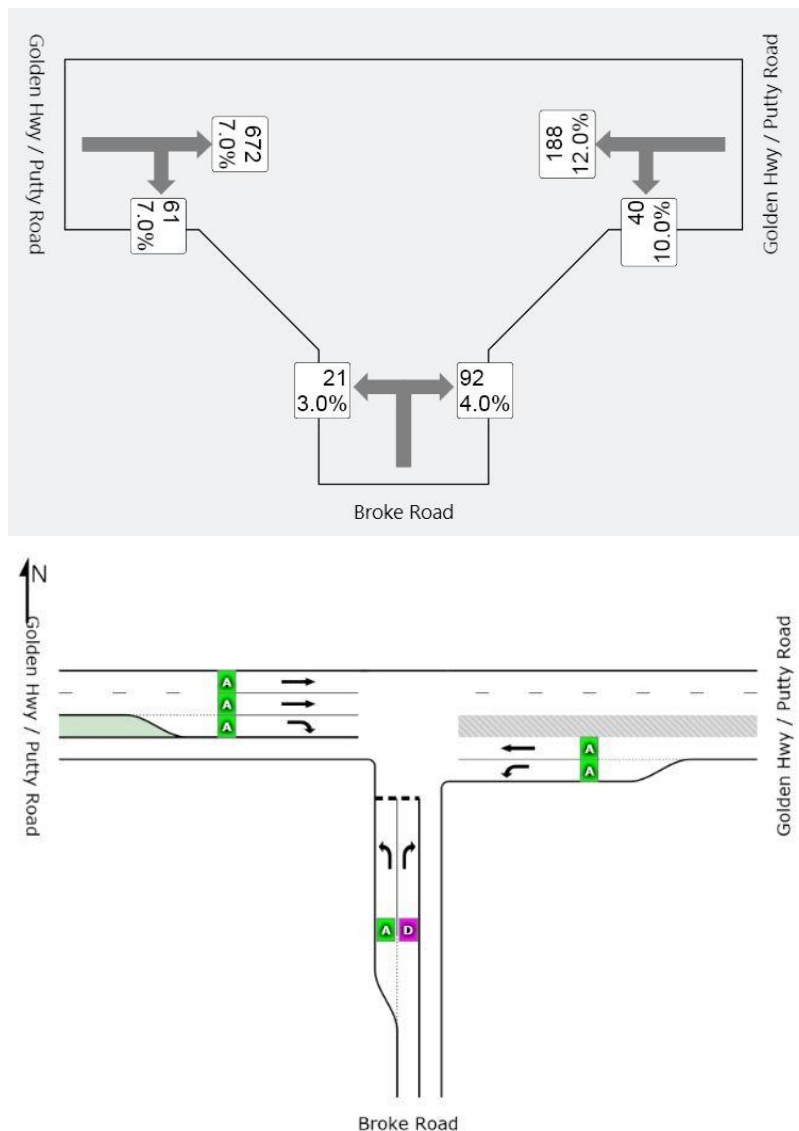


Figure 5 Broke Road at Golden Highway/Putty Road Existing Intersection Volume and Performance PM

From these figures, the existing Broke Road and Golden Highway/Putty Road intersection is currently at capacity.

It is important to note:

- ▶ Traffic analysis undertaken for the Warkworth Extension Project (see also Section 4.6), indicates that the intersection will fail within 4 years when background growth rates are considered. This is without the additional of specific developments.
- ▶ Further, if we apply historical growth rates (see Section 4.2.1), the intersection operates at LoS F by 2012 (without development), the time at which construction of Blakefield North works commences.

3.2.3 Bulga Mine Access / Broke Road

The intersection with Bulga Mine comprises a channelised right turn, with an auxiliary left turn deceleration lane.

An intersection count was undertaken at the Bulga Mine access road in May 2011 and the morning and evening peak traffic movements and the corresponding level of service is shown in Figure 6 and Figure 7.

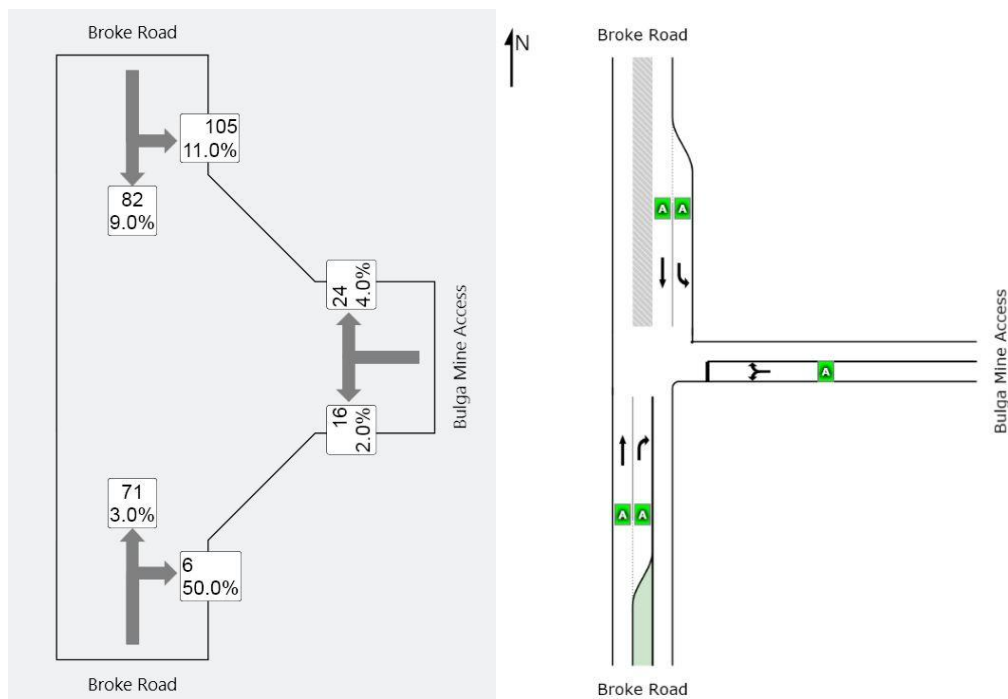


Figure 6 Bulga Mine Access Existing Intersection Volume and Performance AM

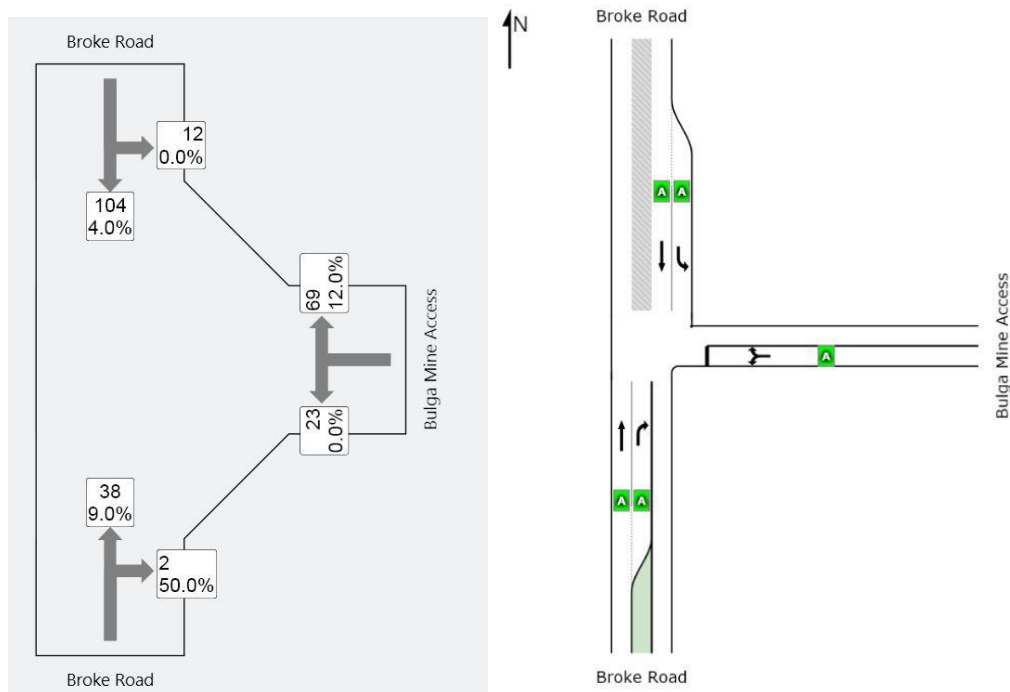


Figure 7 Bulga Mine Access Existing Intersection Volume and Performance PM

From these figures, the existing Bulga Mine intersection is operating well, with extra capacity.

3.2.4 Beltana Mine Access / Broke Road

The morning and evening peak traffic movements and the corresponding level of service is shown in Figure 8 and Figure 9.

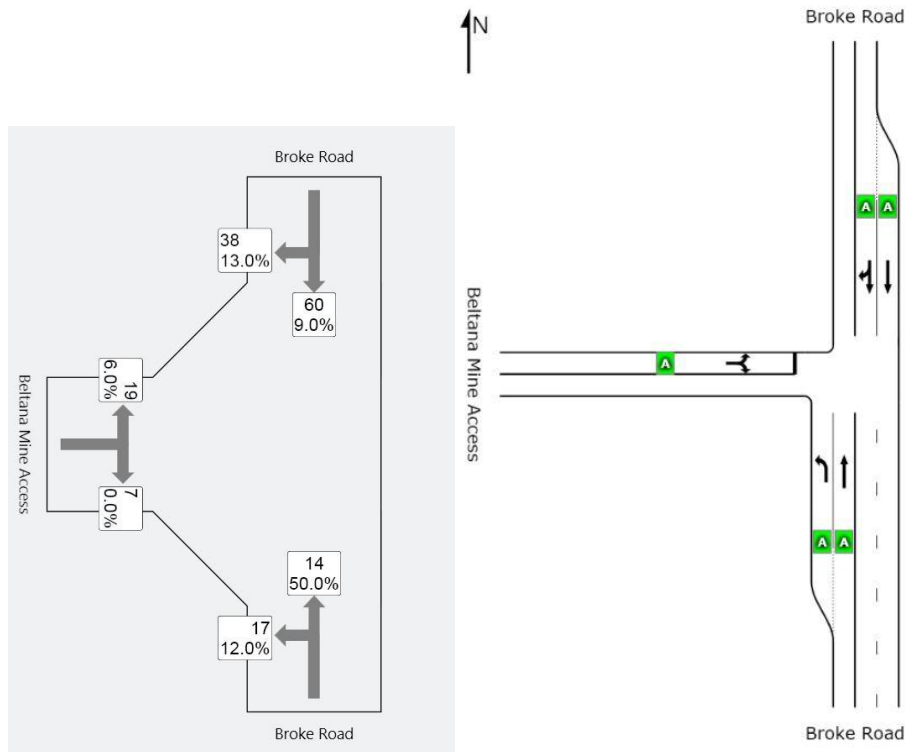


Figure 8 Beltana Mine Access Existing Intersection Volume and Performance AM

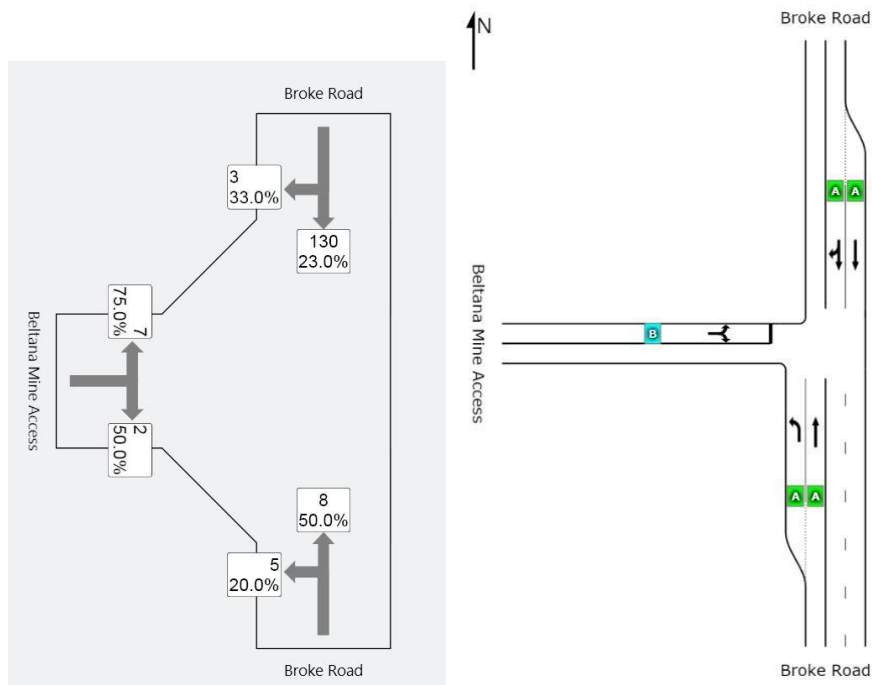


Figure 9 Beltana Mine Access Existing Intersection Volume and Performance PM

From these figures, the existing Beltana Mine intersection is operating well, with spare capacity.

3.2.5 Charlton Road / Broke Road

An intersection count was undertaken at the Bulga Mine access road in May 2011 and the morning and evening peak traffic movements and the corresponding level of service are shown in Figure 10 and Figure 11.

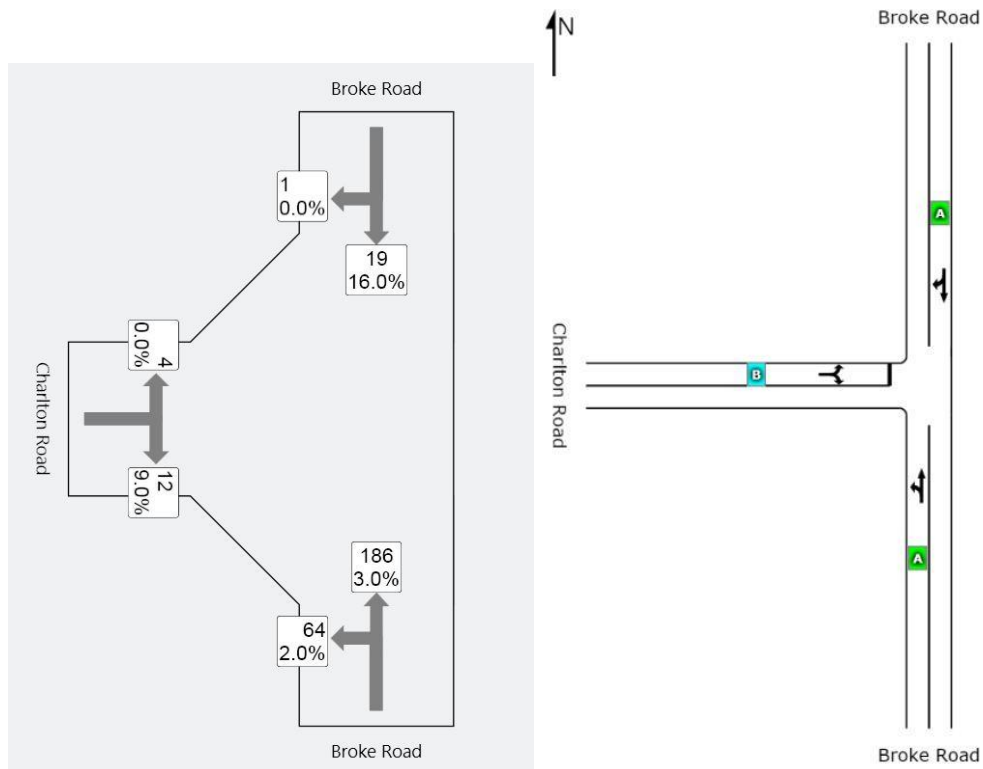


Figure 10 Charlton Road Existing Intersection Volume and Performance AM

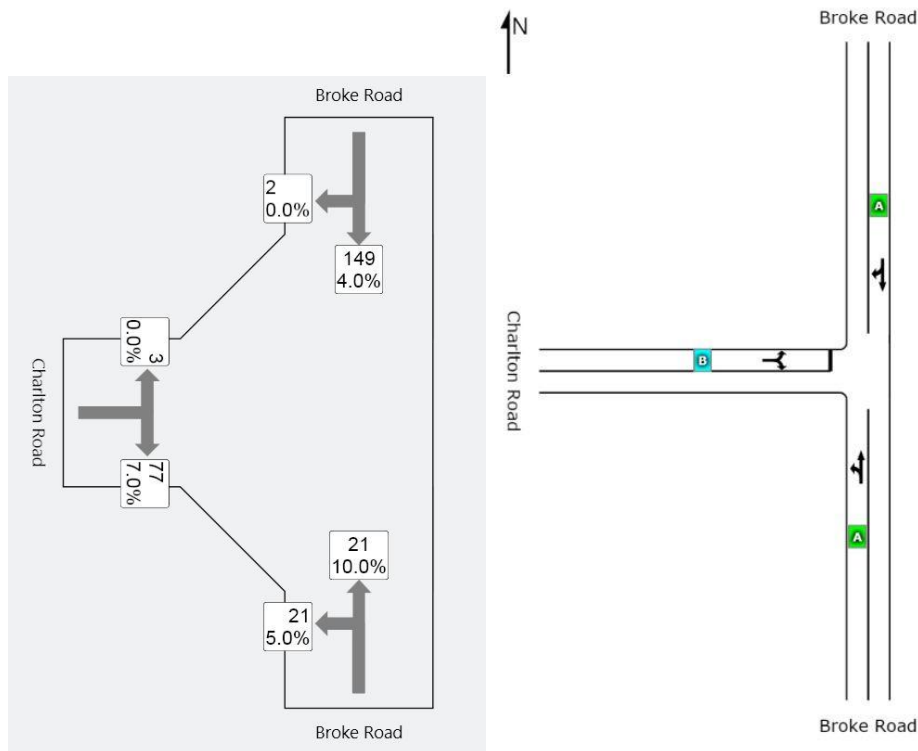


Figure 11 Charlton Road Existing Intersection Volume and Performance PM

According to the model, the intersection operates at a good Level of Service. The worst movement provided a LOS of B. This indicates acceptable delays and spare capacity.

3.2.6 Access from Area 1 to Charlton Road

Access from Area 1 via Charlton Road will vary depending on location of drilling activities. Existing minor unsealed roads and farm/property accesses will be utilised for construction and operational access. Temporary accesses may also be constructed.

Given the low traffic volumes on Charlton Road and the significantly minor movements on the accesses, these have not been modelled.

Management of interaction with residents and traffic on Charlton Road will be addressed in the Contractor's management plans that would be approved through normal mine and statutory planning mechanisms prior to commencement of work.

3.2.7 Golden Highway (Mitchell Line) and Putty Road intersection

According to the proposed Warkworth Extension Project, the Putty Road/Mitchell Line (Golden Highway) intersection currently operates at LoS B.



4. Project Impact Assessment

4.1 Traffic Description

The project will generate traffic during both the construction and operation stages of the project. In terms of traffic generation, the critical period would be during the construction period of the gas and power plants, which is expected to overlap for a period of around 6 months.

The operational phase of the project is expected to generate a minimal amount of traffic as trips to the site would be infrequent and require few staff to access the site.

Traffic will be generated by the construction and operation of:

- Drilling for gas drainage prior to underground mining (pre-drainage) and behind the longwalls as mining progresses (post-drainage).
- Relocation of gas drainage infrastructure (occasional)
- Ventilation fans
- Gas plant
- Power plant and underground gas pipeline that utilises gas from the coal seams.

GHD understands that the Bulga Underground Operations currently employ around 530 full time employees, with contractors employed on a short term basis as required

There will be no increase in personnel required for operation of the mine itself. An overview of the project components is shown on the figure in Appendix B and is useful for site orientation.

Gas drainage

Pre-drainage occurs over a few years prior to mining. Post-drainage occurs over a shorter period of up to 12 months, however pre-drainage will generate more traffic as it requires both horizontal and vertical drilling crews. Post-drainage requires only a vertical drill crew.

For vertical drilling, the following will be required:

- x1 water cart circulating regularly
- x1 drill rig which will remain on-site except when moving between sites
- x3 light vehicles for personnel and support
- x1 non-articulated truck for occasional equipment/supply

For horizontal drilling, all equipment remains on-site once mobilised, however the following personnel will be used:

- x10 personnel and associated light vehicles, which we have assumed single occupancy for the purposes of the study.

Operational traffic will be occasional for the relocation of some gas drainage infrastructure (pipes etc) and would not exceed construction traffic.

Gas drainage activities will be undertaken in Area 1 and 2



Ventilation Fans

Traffic generated from the construction of the ventilation fans will be:

- ▶ x10 light vehicles
- ▶ x5 non-articulated trucks

The ventilation fans are located in Area 2.

Gas Plant

Peak construction of the gas plant will require:

- ▶ 50 to 60 personnel per day (one shift only).
- ▶ x5 deliveries throughout each day

During operation, there would be only 2 or 3 people per day accessing the site. Possibly up to 20 personnel during maintenance shutdowns however this is less than the construction period.

The power plant is located in Area 2.

Power Plant

Peak construction of the power plant will require:

- ▶ 50 to 60 personnel per day (one shift only).
- ▶ x5 deliveries throughout each day

During operation, there would be only 2 or 3 people per day accessing the site. Possibly up to 20 personnel during maintenance shutdowns however this is less than the construction period.

The power plant is located in Area 3.

4.1.1 Timing

The critical period for the work is through 2013 when the power plant, gas plant and gas drainage are proposed to be constructed. All three components will be jointly under construction for a period of approximately 6 months.

4.2 Traffic Generation

The following assumptions have been used when generating the traffic generation:

- ▶ Light vehicles arrive in the AM peak and depart in the PM Peak, therefore 50% of trips occur in the AM and 50% in the PM peak;
- ▶ Heavy vehicles may enter and exit within the peak hour, therefore have assumed 100% peak hour trips;
- ▶ Development traffic distribution is based on the existing traffic distribution.



Table 4.1 Light Vehicle Traffic Generation

Area	Access Point	Activity	IN	OUT
1	Minor Access to Charlton Road	Gas Drainage (Pre) vertical	3	3
		Gas Drainage (Pre) horizontal	10	10
2	Broke Rd / Beltana Access	Fan Construction	10	10
		Gas Drainage (Pre) vertical	3	3
		Gas Drainage (Pre) horizontal	10	10
		Gas Plant	60	60
3	Broke Rd / Bulga Access	Power Plant Construction	60	60

Table 4.2 Heavy Vehicle Traffic Generation

Area	Access Point	Activity	IN	OUT
1	Minor Access to Charlton Road	Gas Drainage (Pre) vertical	2	2
		Gas Drainage (Pre) horizontal	0	0
2	Broke Rd / Beltana Access	Shaft Construction	5	5
		Gas Drainage (Pre) vertical	2	2
		Gas Drainage (Pre) horizontal	0	0
		Gas Plant	5	5
3	Broke Rd / Bulga Access	Power Plant Construction	5	5



Table 4.3 Peak Traffic Generation

Area	Access Point	AM Peak	PM Peak
1	Minor Access to Charlton Road	15	15
2	Broke Rd / Beltana Access	90 ⁽¹⁾	90 ⁽¹⁾
3	Broke Rd / Bulga Access	65	65

⁽¹⁾ Shaft construction occurs after completion of the gas plant.

4.2.1 Historical Growth Rate

RTA AADT Data was used to estimate the average growth on the Golden Highway in the vicinity of Broke Road. The station used was 05.638, on Putty Road, east of Broke Road. This is shown in Table 4.4.

Table 4.4 Golden Highway AADT Station 05.638 SH27 East of Broke Road

Year	1998	2001	2004	2007
AADT	7164	7966	8143	9401

Historically, the traffic growth rate varies from 0.7% to 5% per year, depending which period is used. In the absence of historical data on other local roads, a 2% growth per year has been used in projected traffic modelling for all roads.

As construction will commence in 2013, this year has been used as the baseline time for “existing” traffic volumes for the purposes of analysis. Traffic analysis for existing (2012) and future performance is based on 2% growth factor.

With this growth factor, the existing Broke Road and Golden Highway intersection operates at LoS F in 2012.

4.3 Mid block capacity

Traffic volumes on the roads are within midblock capacity of existing road infrastructure.

4.4 Intersection Operation

4.4.1 Broke Road / Golden Hwy

The morning and evening peak traffic movements and the corresponding level of service is shown in Figure 12 and Figure 13.

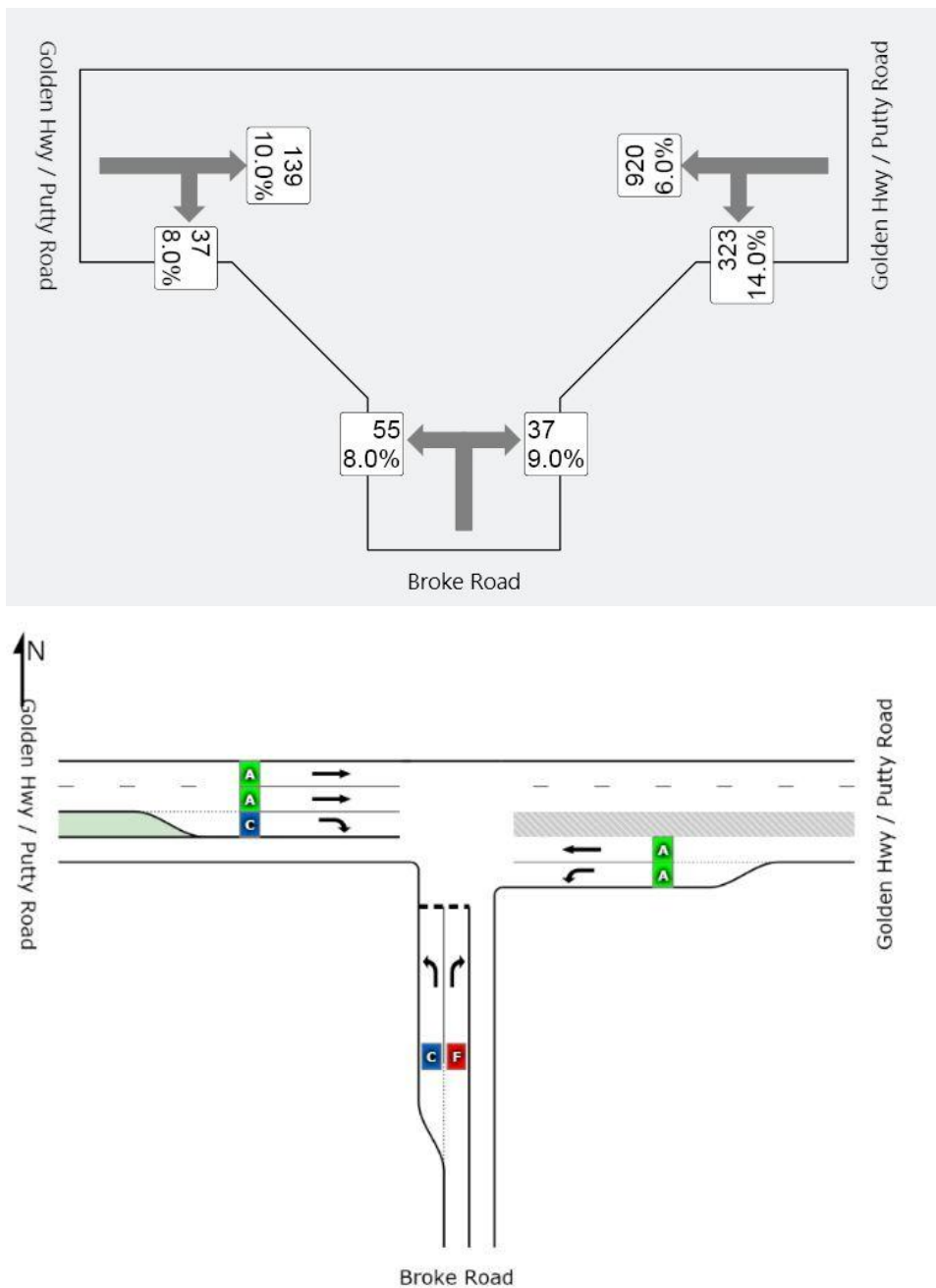


Figure 12 Broke Road at Golden Highway/Putty Road Intersection Volume and Performance AM

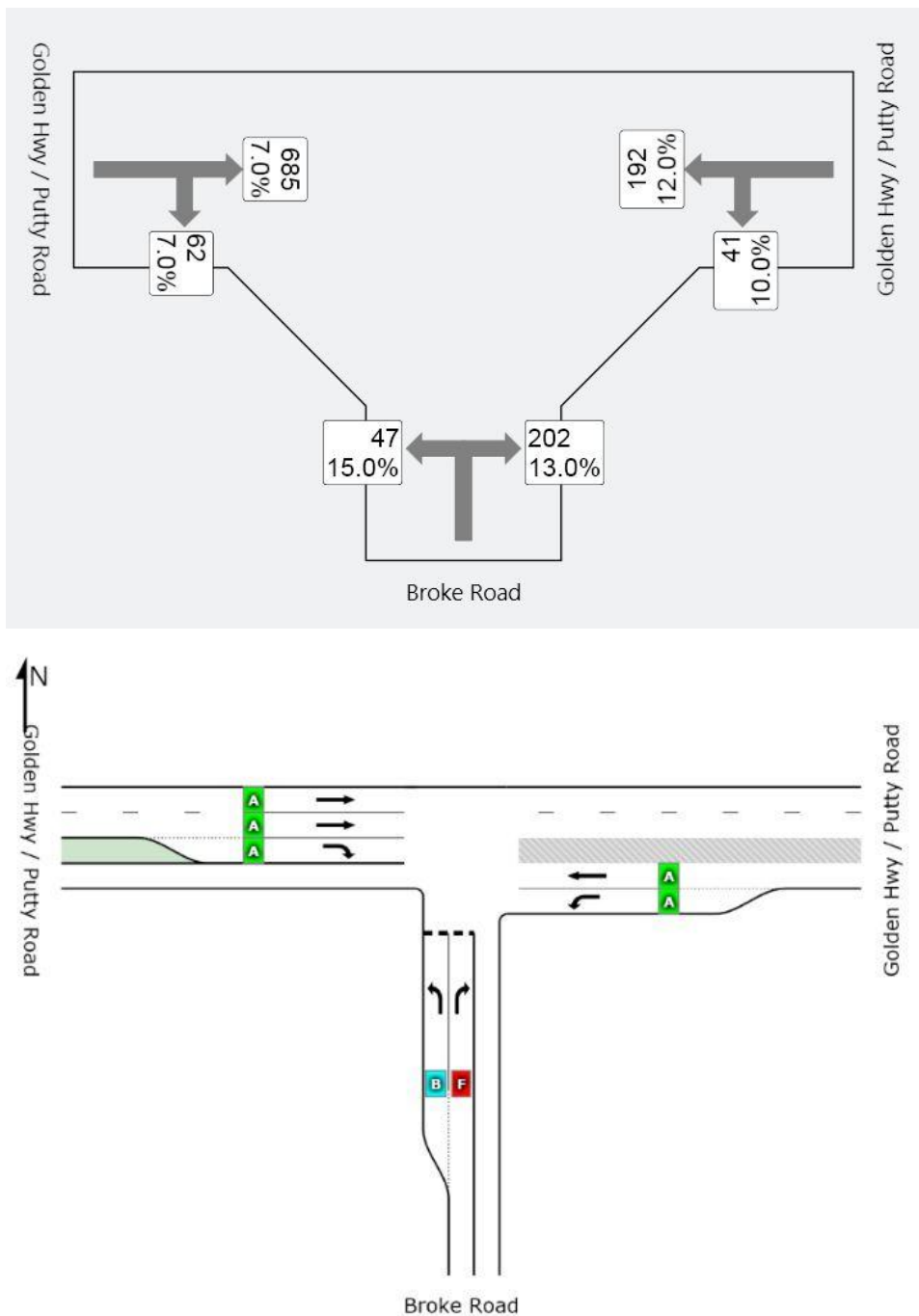


Figure 13 Broke Road at Golden Highway/Putty Road Intersection Volume and Performance PM

These figures confirm the existing Broke Road and Golden Highway/Putty Road intersection will exceed capacity (LoS F).

4.4.2 Bulga Mine Access / Broke Road

The morning and evening peak traffic movements and the corresponding level of service is shown in Figure 14 and Figure 15.

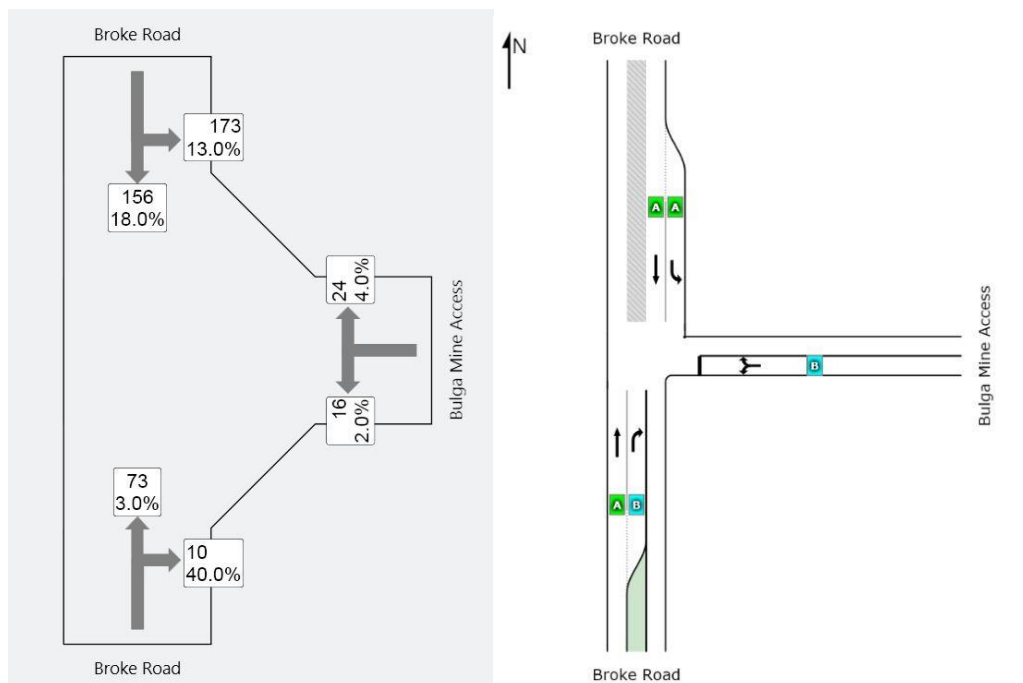


Figure 14 Bulga Mine Access Intersection Volume and Performance AM

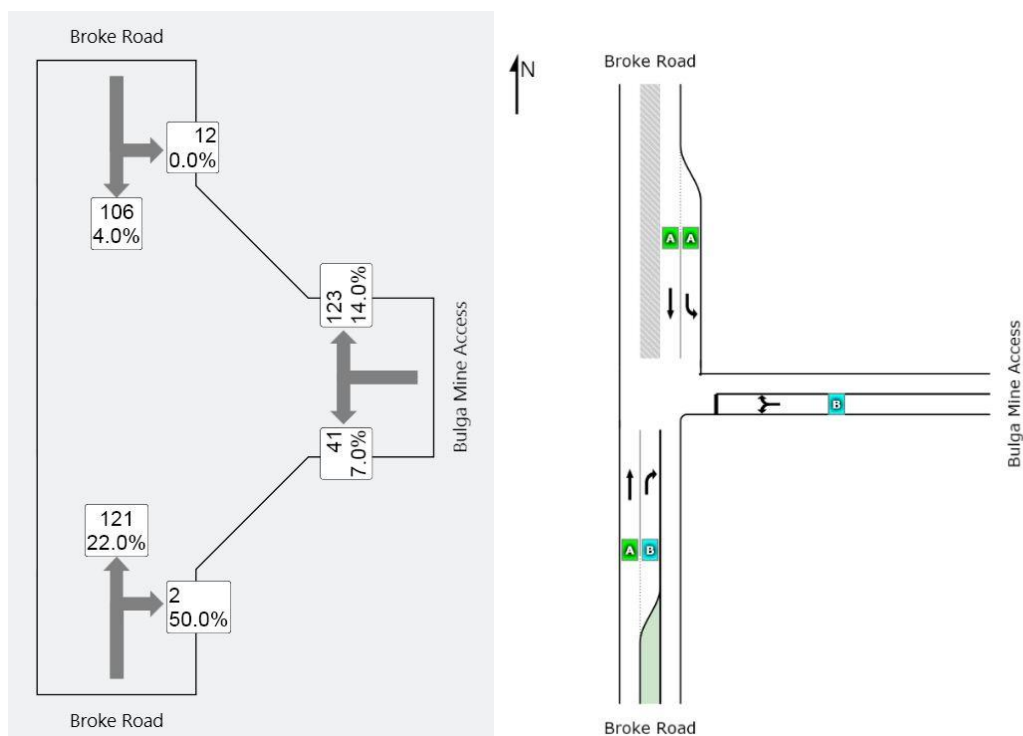


Figure 15 Bulga Mine Access Intersection Volume and Performance PM

From these figures, the existing Bulga Mine intersection is operating well, with spare capacity.

4.4.3 Beltana Mine Access / Broke Road

The morning and evening peak traffic movements and the corresponding level of service is shown in Figure 16 and Figure 17.

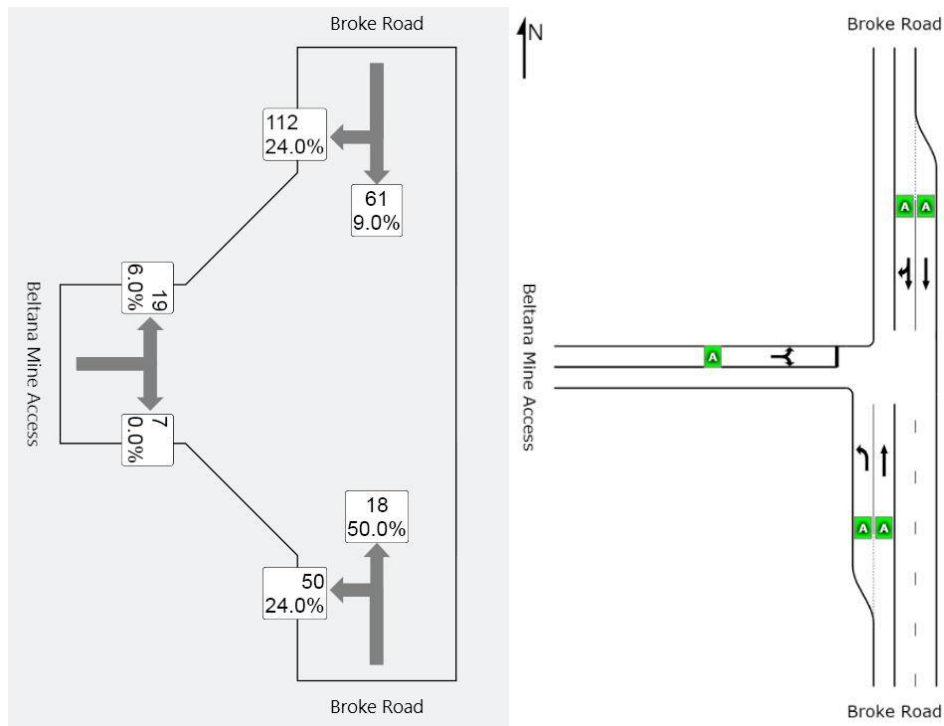


Figure 16 Beltana Mine Access Intersection Volume and Performance AM

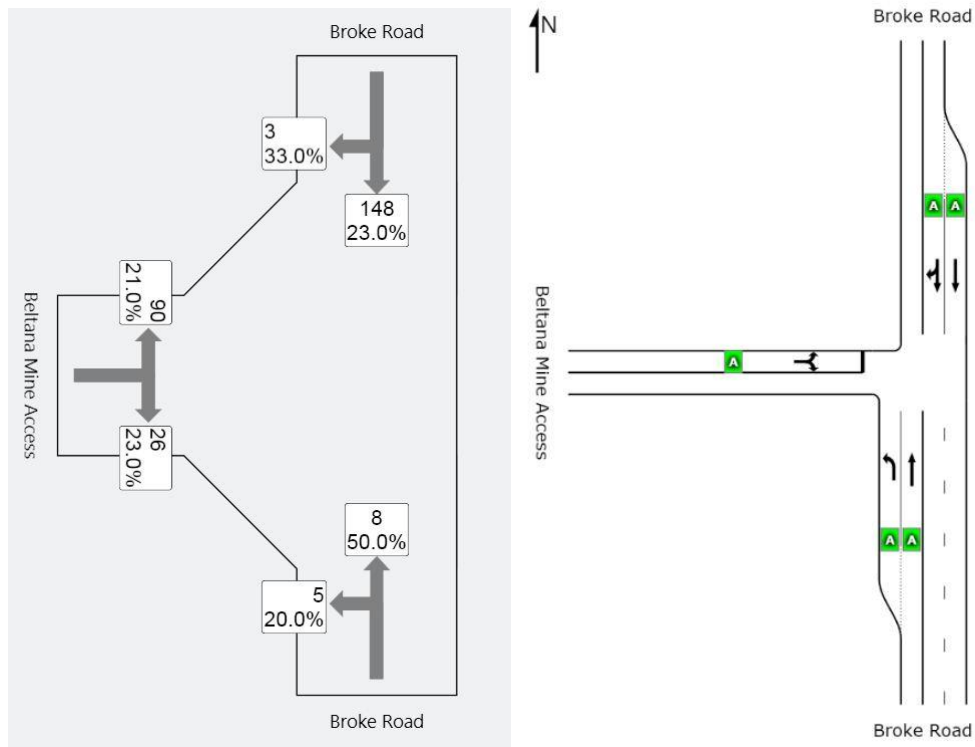


Figure 17 Beltana Mine Access Intersection Volume and Performance PM

From these figures, the existing Beltana Mine intersection is operating well, with extra capacity.

4.4.4 Charlton Road / Broke Road

The morning and evening peak traffic movements and the corresponding level of service are shown in Figure 18 and Figure 19.

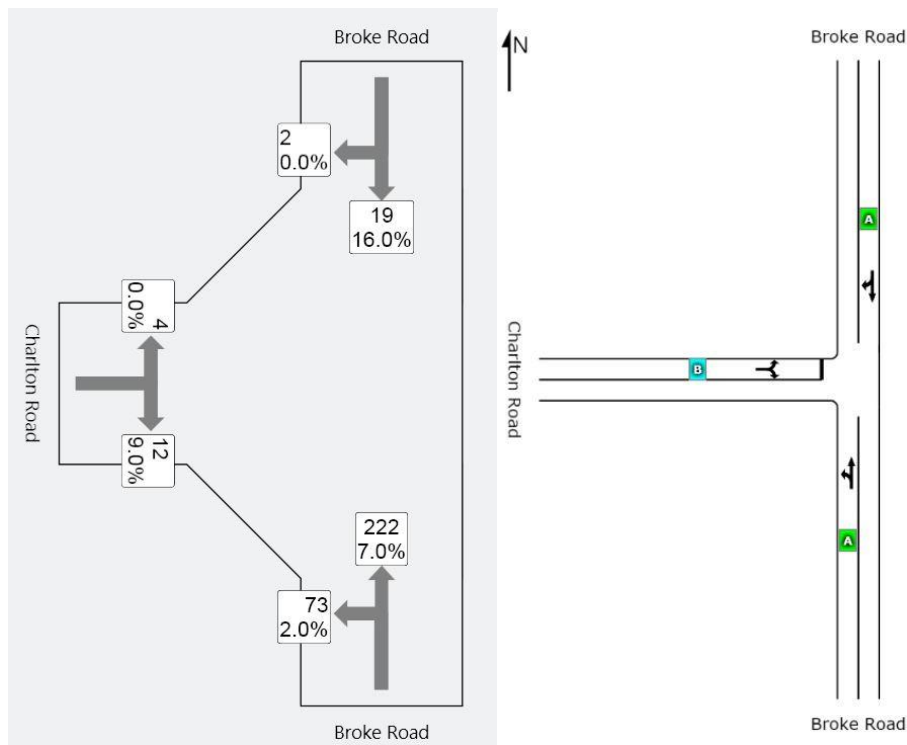


Figure 18 Charlton Road Intersection Volume and Performance AM

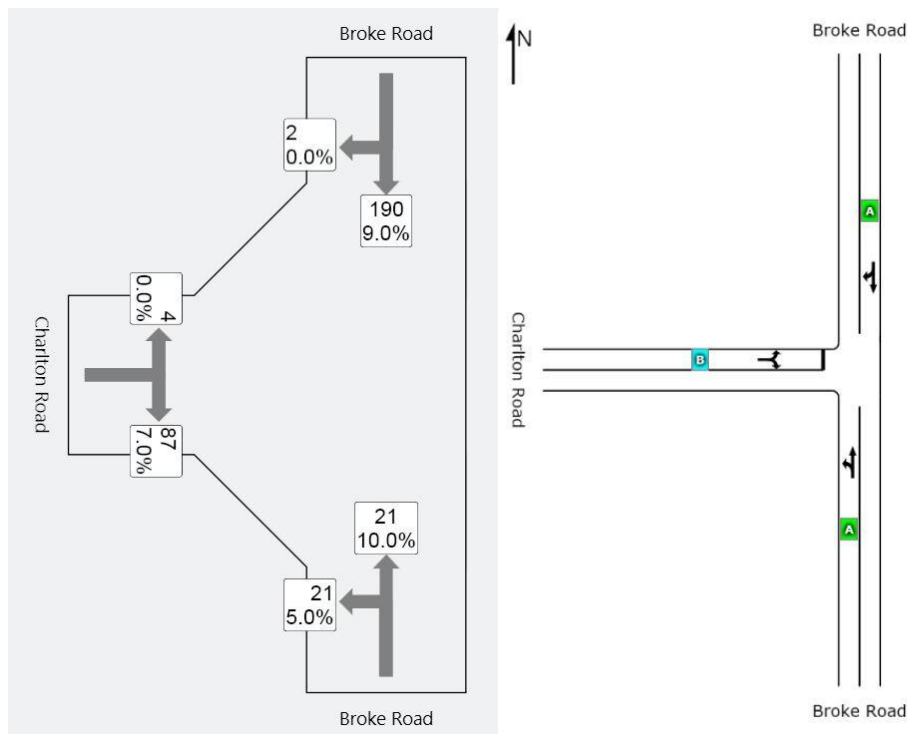


Figure 19 Charlton Road Intersection Volume and Performance PM

According to the model, the intersection operates at a good Level of Service. The worst movement provided a LOS of B. This indicates acceptable delays and spare capacity.



4.4.5 Putty Road /Mitchell Line (Golden Highway) intersection

This intersection has not been modelled on account of the reported impacts from the Warkworth Extension Project that demonstrates the intersection has spare capacity. See Section 4.6.

4.5 Future Impacts

Future impacts of this development during the operational stage of the project have not been assessed as the project would generate minimal traffic during this period. This assessment considers the construction stage of the project, with is the critical period of the project in terms of traffic generated by the project. It should be noted that the critical construction period is of 6 months only.

4.6 Cumulative impacts

The proposed Warkworth Expansion Project to expand adjacent Mt Thorley and Warkworth mines will impact the Broke Road/Golden Highway intersection. Impacts from this project, if it proceeds, are expected in Year 4 of that project which could be in 2015 or 2016. This timing is beyond the critical period for the Blakefield North Modification (2013) and therefore impacts will not be cumulative.

The traffic modelling from the impact assessment for Warkworth supports our modelling as follows:

- Indicates current LoS for the Broke Road/Golden Highway intersection is E (2011).
- With natural growth factors, the Broke Road. Golden Highway intersection will fail in Year 4 (2015 or 2016) without development. Therefore, at Year 4, the intersection will fail with development.
- The Golden Highway intersection at Putty Road and Mitchell Line will operation at LoS C which indicates spare capacity and satisfactory performance.

The Environmental Assessment for the Warkworth Extension Project was sourced from: <https://majorprojects.affinitylive.com/public/581b8c9f14e3e9803f7bf1daeb2562e7/Director-Generals%20Assessment%20Report.pdf>

4.7 Summary of Performance

A summary of results is shown below.

Table 4.5 Summary of Intersection Performance

Intersection	Critical turn	Peak	Existing LoS	Proposal LoS
Broke Rd/Golden Hwy	Right out to Golden Hwy	AM	F (2012)	F
Broke Road/Bulga	None		A	A
Broke Road/Beltana	Right out to Broke Road		B	B
Broke Road/Charlton	Right out to Broke Road		B	B
Access to Charlton Rd	None		Not modelled	Not modelled



In summary:

- ▶ The intersection of Broke Road with the Golden Highway will fail under background growth conditions (without development) by 2012. At the time of traffic counts (2011), it operated at capacity (LoS E).
- ▶ The Broke Road/Golden Highway intersection is expected to continue to operate above capacity with the increase in traffic associated with the construction of the project. However, it should be noted that the assessment has been undertaken for a worst case scenario, which assumes that all light vehicle and heavy vehicle movements associated with the construction of the project would occur during the peak hour periods. In addition, the construction of the project would occur over a period of 6 months only. The operational stage the project expected to generate minimal traffic and therefore would not impact the surrounding road network.
- ▶ All other intersections impacted by the proposal will continue to operate at good level of service with spare capacity.



Appendix A

Traffic Data

27/5/2011 - BROKE RD / Bulga Mine Access, BULGA

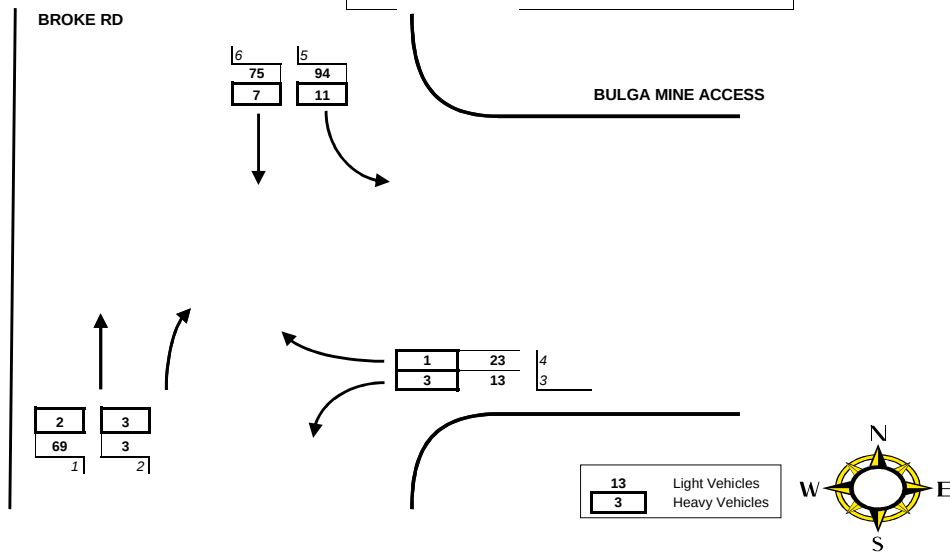
7:15 <<< HOUR ENDING

Friday

Summary:

BROKE RD / Bulga Mine Access

277 Total Light Vehicles
25 Total Heavy Vehicles



27/5/2011 - BROKE RD / Bulga Mine Access, BULGA

Light Vehicles
1 2 3 4 5 6 Total Vehicles
15 MIN HOUR

06:15	25	3	0	0	15	6	49
06:30	10	12	0	0	33	29	84
06:45	22	28	3	3	30	25	111
07:00	18	17	1	3	16 <	15 <	70 314
07:15	19	5 <	9	17	15 <	6 <	71 336 <
07:30	21 <	7	9 <	17	15	9	78 330
07:45	17	3	0	4	12	7	43 262
08:00	20	8	0	5 <	16	10	59 251
08:15	9	1	0	5	12	4	31 211
08:30	7	3	0	3	9	6	28 161
08:45	20	0	0	2	7	8	37 155
09:00	12	2	3	3	8	5	33 129
09:15	16	1	1	5	2	7	32 130
09:30	8	4	1	3	3	6	25 127
09:45	7	0	2	2	5	9	25 115
10:00	13	3	4	2	3	5	30 112

Heavy Vehicles
1 2 3 4 5 6 Total Vehicles
15 MIN HOUR

06:15	1	0	0	0	3	1	5
06:30	0	0	0	0	2	2	4
06:45	1	1	2	1	2	1	8
07:00	1	0	1	0	3	2	7 24
07:15	0	2	0	0	4	2	8 27
07:30	1	1	0	3	3	1	9 32
07:45	0	2 <	0	3	4	3 <	12 36
08:00	1	0 <	0	1	5 <	1	8 37 <
08:15	0	1	1	1 <	3	2	8 37 <
08:30	1	0	2	1	1	2 <	7 35
08:45	1	0	0	0	1	2	4 27
09:00	1	0	0	2	1	2 <	6 25
09:15	3	1	0	2	2	2 <	10 27
09:30	4	0	1	1	2	1	9 29
09:45	1	1	2	1	0	0	5 30
10:00	4 <	0	1 <	1	1	0	7 31

All Vehicles
1 2 3 4 5 6 Total Vehicles
15 MIN HOUR

06:15	26	3	0	0	18	7	54
06:30	10	12	0	0	35	31	88
06:45	23	29	5	4	32	26	119
07:00	19	17	2	3	19	17	77 338
07:15	19	7 <	9	17	19 <	8 <	79 363 <
07:30	22 <	8	9 <	20	18	10	87 362
07:45	17	5	0	7	16	10	55 298
08:00	21	8	0	6 <	21	11	67 288
08:15	9	2	1	6	15	6	39 248
08:30	8	3	2	4	10	8	35 196
08:45	21	0	0	2	8	10	41 182
09:00	13	2	3	5	9	7	39 154
09:15	19	2	1	7	4	9	42 157
09:30	12	4	2	4	5	7	34 156
09:45	8	1	4	3	5	9	30 145
10:00	17	3	5	3	4	5	37 143

Note: Arrows "<" indicate the end time for the peak hour for each turning movement.

12:15 <<< HOUR ENDING

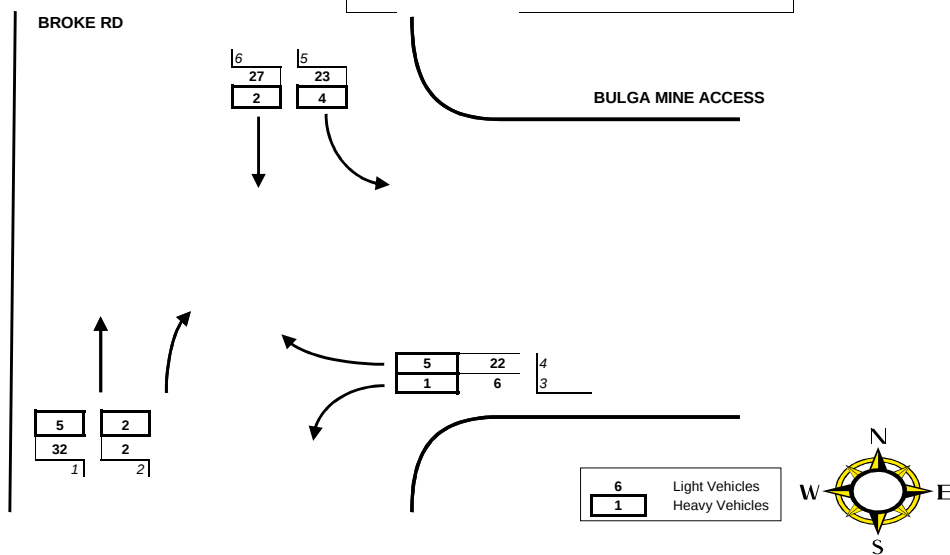
Friday

Summary:

BROKE RD / Bulga Mine Access

112 Total Light Vehicles

14 Total Heavy Vehicles



27/5/2011 - BROKE RD / Bulga Mine Access, BULGA

Light Vehicles
1 2 3 4 5 6 Total Vehicles
15 MIN HOUR

10:15	4	3	0	2	1	8	18
10:30	10	0	0	6	1	5	22
10:45	8	1	0	5	2	9	25
11:00	10	0	1	2	1	13	27 92
11:15	9 <	1	2	1	5	5	23 97
11:30	7	1	1	4	4	9 <	26 101
11:45	5	1	2	2	7	4	21 97
12:00	11	1	2 <	7	2	2	25 95
12:15	9	2	1	9	10	12	43 115 <
12:30	4	0	2 <	8	5 <	7	26 115 <
12:45	2	1	1	6 <	2	4	16 110
13:00	11	2	1	4	0	6	24 109
13:15	8	3 <	1	7	2	4	25 91
13:30	8	0 <	0	1	4	12	25 90
13:45	6	1 <	0	6	4	11	28 102
14:00	6	2 <	0	4	6	9 <	27 105

Heavy Vehicles
1 2 3 4 5 6 Total Vehicles
15 MIN HOUR

10:15	1	0	1	3	0	0	5
10:30	2	0	0	0	1	1	4
10:45	0	0	0	1	3	0	4
11:00	1	0	0	3	1	0	5 18
11:15	0	0	1	2	1	2 <	6 19
11:30	1	2 <	0	2 <	1	0	6 21
11:45	2	0 <	0	0	0	0	2 19
12:00	0	0 <	0	1	2	1 <	4 18
12:15	2 <	0 <	1	2	1	1	7 19
12:30	0	0	0	2	1	1 <	4 17
12:45	1	1	1	1	2	0 <	6 21
13:00	1	1 <	1 <	1	1	0	5 22
13:15	1	0 <	0	2	3	0	6 21
13:30	2 <	0 <	0	3	2 <	1	8 25 <
13:45	1 <	0	0	2 <	2 <	0	5 24
14:00	1 <	0	0	0	0	2 <	3 22

All Vehicles
1 2 3 4 5 6 Total Vehicles
15 MIN HOUR

10:15	5	3	1	5	1	8	23
10:30	12	0	0	6	2	6	26
10:45	8	1	0	6	5	9	29
11:00	11	0	1	5	2	13	32 110
11:15	9 <	1	3	3	6	7	29 116
11:30	8	3	1	6	5	9	32 122
11:45	7	1	2	2	7	4	23 116
12:00	11	1	2 <	8	4	3	29 113
12:15	11	2	2	11	11	13	50 134 <
12:30	4	0	2 <	10	6 <	8	30 132
12:45	3	2	2 <	7 <	4	4	22 131
13:00	12	3	2 <	5	1	6	29 131
13:15	9	3 <	1	9	5	4	31 112
13:30	10	0 <	0	4	6	13	33 115
13:45	7	1	0	8	6	11	33 126
14:00	7	2	0	4	6	11 <	30 127

Note: Arrows "<" indicate the end time for the peak hour for each turning movement.

26/5/2011 - BROKE RD / Bulga Mine Access, BULGA

17:15 <<< HOUR ENDING

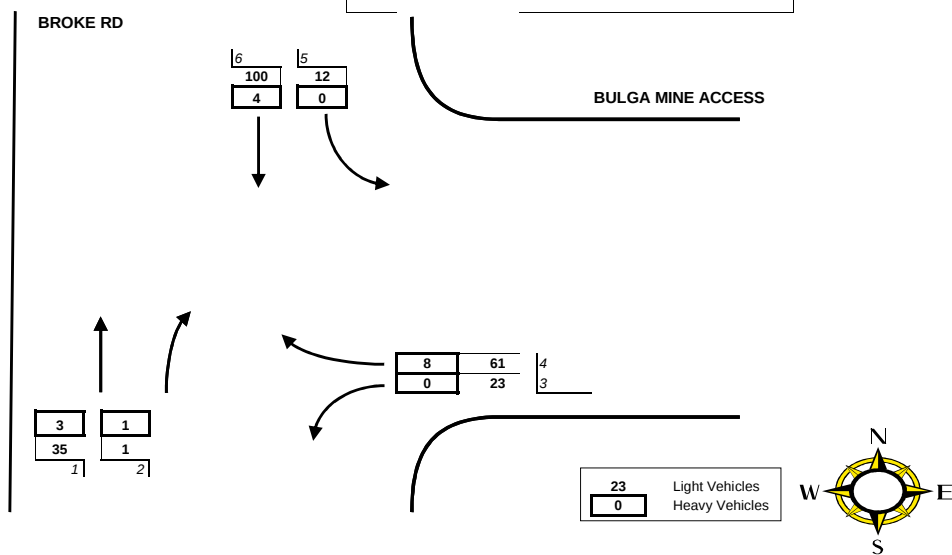
Friday

Summary:

BROKE RD / Bulga Mine Access

232 Total Light Vehicles

13 Total Heavy Vehicles



27/5/2011 - BROKE RD / Bulga Mine Access, BULGA

Light Vehicles
1 2 3 4 5 6 Total Vehicles
15 MIN HOUR

14:15	14	1	4	9	2	10	40
14:30	9	1	2	5	2	13	32
14:45	9	1	3	8	6	21	48
15:00	8	1	0	4	1	15	29 149
15:15	13	1	6	5	4	19	48 157
15:30	13	0	7	4	4 <	15	43 168
15:45	20	0	3	6	2	27	58 178
16:00	18 <	1	9	11	3	18	60 209
16:15	8	2	11	15	1	20	57 218
16:30	12	4	9	7	3	26	61 236
16:45	8	3 <	5 <	15	1	16	48 226
17:00	13	1 <	6	17	6	19	62 228
17:15	2	0	3	22	2	39 <	68 239 <
17:30	9	0	4	14	3	15	45 223
17:45	21	0	11	19 <	2	11	64 239 <
18:00	4	2	2	5	5	8	26 203

Heavy Vehicles
1 2 3 4 5 6 Total Vehicles
15 MIN HOUR

14:15	1	0	0	0	1	3	5
14:30	7	0	1	1	1	2	12
14:45	1	0	0	2	0	0	3
15:00	2 <	0	0	2	3 <	1 <	8 28 <
15:15	0	0	2 <	1	0	1	4 27
15:30	0	0	0	2	1	1	4 19
15:45	1	0	0	2	0	1	4 20
16:00	0	2	0	1	1	1	5 17
16:15	0	3	2	3	0	1	9 22
16:30	1	1 <	0	4 <	0	0	6 24
16:45	2	0 <	0	2 <	0	0	4 24
17:00	0	0	0	1 <	0	0	1 20
17:15	0	0	0	1	0	4	5 16
17:30	0	0	1	0	0	0	1 11
17:45	0	0	0	1	0	0	1 8
18:00	0	0	0	0	0	0	0 7

All Vehicles
1 2 3 4 5 6 Total Vehicles
15 MIN HOUR

14:15	15	1	4	9	3	13	45
14:30	16	1	3	6	3	15	44
14:45	10	1	3	10	6	21	51
15:00	10	1	0	6	4	16	37 177
15:15	13	1	8	6	4	20	52 184
15:30	13	0	7	6	5 <	16	47 187
15:45	21	0	3	8	2	28	62 198
16:00	18 <	3	9	12	4	19	65 226
16:15	8	5	13	18	1	21	66 240
16:30	13	5	9	11	3	26	67 260 <
16:45	10	3 <	5 <	17	1	16	52 250
17:00	13	1	6	18	6	19	63 248
17:15	2	0	3	23	2	43 <	73 255
17:30	9	0	5	14	3	15	46 234
17:45	21	0	11	20 <	2	11	65 247
18:00	4	2	2	5	5	8	26 210

Note: Arrows "<" indicate the end time for the peak hour for each turning movement.

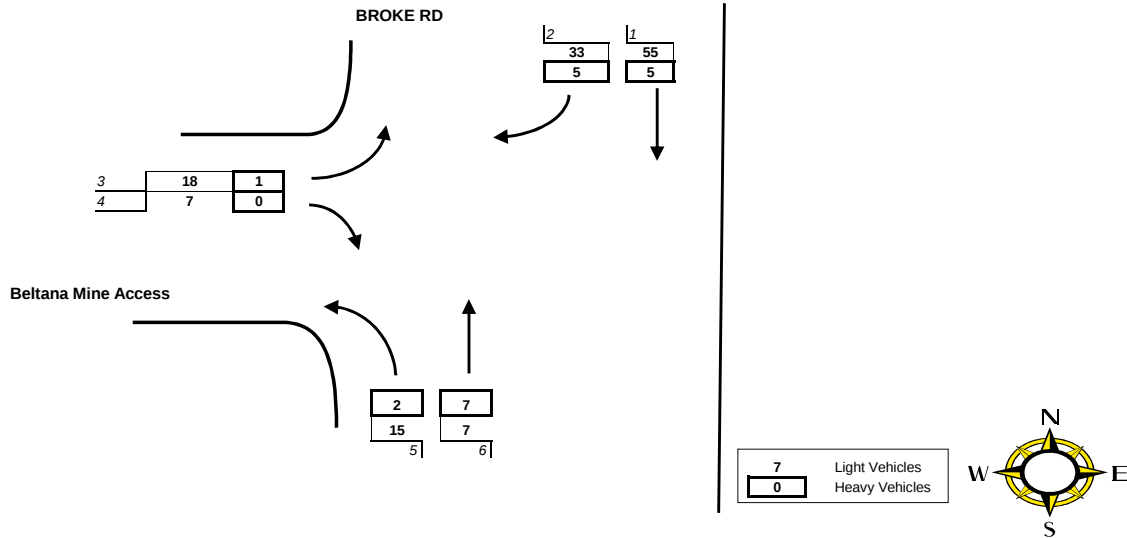
7:30 <<< HOUR ENDING

Friday

Summary:

BROKE RD / Beltana Mine Access

135 Total Light Vehicles
18 Total Heavy Vehicles



27/5/2011 - BROKE RD / Beltana Mine Access, BULGA

Light Vehicles							Total Vehicles	
1	2	3	4	5	6	15 MIN HOUR		
06:15	6	1	0	0	2	31	40	
06:30	21	2	1	3	1	25	53	
06:45	21	7	0	0	6	43	77	
07:00	7	17	1	0	6	37 <	68	238
07:15	13 <	6	2	0	2	14	37	235
07:30	14	3 <	15	7	1	17	57	239 <
07:45	10	3	8	6	7	15	49	211
08:00	6	1	4 <	2	4	24	41	184
08:15	6	2	0	2 <	4	7	21	168
08:30	7	1	0	1	2 <	11	22	133
08:45	5	1	1	3	3	19	32	116
09:00	7	0	0	2	2	18	29	104
09:15	7	1	1	1	2	18	30	113
09:30	8	0	1	1	3	9	22	113
09:45	10	0	1	0	1	11	23	104
10:00	8	4	0	1	1	16	30	105

Heavy Vehicles							Total Vehicles	
1	2	3	4	5	6	15 MIN HOUR		
06:15	0	0	0	0	0	1	1	
06:30	1	0	0	0	1	0	2	
06:45	2	0	0	0	0	1	3	
07:00	1	3	0	0	0	3	7	13
07:15	1	1	0	0	1	2	5	17
07:30	1	1 <	1	0	1	1	5	20
07:45	3	0 <	1	0	1	0	5	22
08:00	2	1	1 <	1	1 <	2	8	23
08:15	1	0	0 <	0	1 <	0	2	20
08:30	1	0	0	0	0	2	3	18
08:45	2	0	0	0	0	0	2	15
09:00	4	0	0	0	1	5	10	17
09:15	1	0	0	1	2	1	5	20
09:30	2 <	0	1	0	0	1	4	21
09:45	1	0	0	0	0	4 <	5	24 <
10:00	2	0	2 <	2 <	0	3	9	23

All Vehicles							Total Vehicles	
1	2	3	4	5	6	15 MIN HOUR		
06:15	6	1	0	0	2	32	41	
06:30	22	2	1	3	2	25	55	
06:45	23	7	0	0	6	44	80	
07:00	8	20	1	0	6	40 <	75	251
07:15	14 <	7	2	0	3	16	42	252
07:30	15	4 <	16	7	2	18	62	259 <
07:45	13	3	9	6	8	15	54	233
08:00	8	2	5 <	3	5	26	49	207
08:15	7	2	0	2 <	5 <	7	23	188
08:30	8	1	0	1	2 <	13	25	151
08:45	7	1	1	3	3	19	34	131
09:00	11	0	0	2	3	23	39	121
09:15	8	1	1	2	4	19	35	133
09:30	10	0	2	1	3	10	26	134
09:45	11	0	1	0	1	15	28	128
10:00	10	4	2	3	1	19	39	128

Note: Arrows "<" indicate the end time for the peak hour for each turning movement.

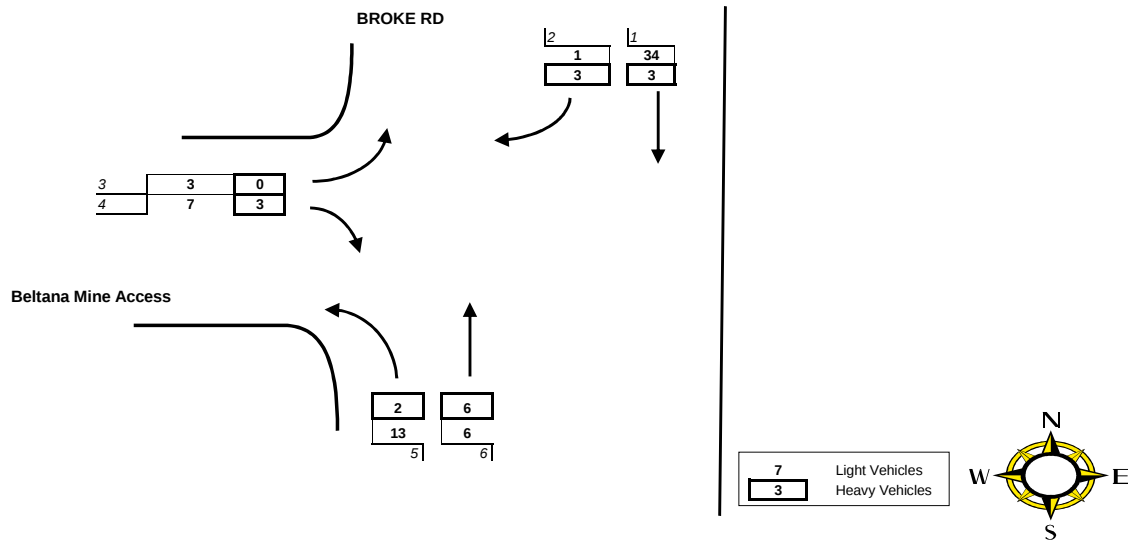
12:45 <<< HOUR ENDING

Thursday

Summary:

BROKE RD / Beltana Mine Access

64 Total Light Vehicles
15 Total Heavy Vehicles



26/5/2011 - BROKE RD / Beltana Mine Access, BULGA

Light Vehicles							Total Vehicles	
1	2	3	4	5	6	15 MIN HOUR		
10:15	5	3	1	4	2	5	20	
10:30	7	1	3	2	3	7	23	
10:45	9	0	0	1	3	7	20	
11:00	8	3 <	2 <	2	0	11	26	89
11:15	11	1	0	1	2	7	22	91
11:30	7	2	1	2	2	6	20	88
11:45	0	0	2	4	0	7	13	81
12:00	10	0	0	4 <	3	11	28	83
12:15	8	1	3 <	1 <	4	11	28	89
12:30	8	0	0	0	3	10	21	90
12:45	8	0	0	2	3 <	17	30	107 <
13:00	8	1	0	2	3 <	14 <	28	107 <
13:15	10	0	1	0	4 <	6	21	100
13:30	7	2	0	3	1	8	21	100
13:45	13	0	0	0	2	10	25	95
14:00	12 <	0	0	4	1	8	25	92

Heavy Vehicles							Total Vehicles	
1	2	3	4	5	6	15 MIN HOUR		
10:15	2	0	0	0	0	1	3	
10:30	-1	1	0	1	0	2	3	
10:45	0	0	0	1	0	0	1	
11:00	1	0	0	0	1	0	2	9
11:15	3	0	0	0	1	1	5	11
11:30	0	0	1	1	1	1	4	12
11:45	0	0	0	0	2 <	2	4	15
12:00	0	2	0	1	1 <	0	4	17 <
12:15	0	0	0	1 <	0	2	3	15
12:30	1	0	0	0	1	1	3	14
12:45	2	1 <	0	1 <	0	3	7	17 <
13:00	0	0	1	0	0	1 <	2	15
13:15	1	0	1	0	0	0	2	14
13:30	1	0	0	0	0	0	1	12
13:45	1	0	1 <	1	0	1	4	9
14:00	3 <	0	0	0	0	1	4	11

All Vehicles							Total Vehicles	
1	2	3	4	5	6	15 MIN HOUR		
10:15	7	3	1	4	2	6	23	
10:30	6	2	3	3	3	9	26	
10:45	9	0	0	2	3	7	21	
11:00	9	3 <	2	2	1	11	28	98
11:15	14	1	0	1	3	8	27	102
11:30	7	2	2	3	3	7	24	100
11:45	0	0	2	4	2	9	17	96
12:00	10	2	0	5	4	11	32	100
12:15	8	1	3 <	2 <	4	13	31	104
12:30	9	0	0	0	4	11	24	104
12:45	10	1	0	3	3 <	20	37	124 <
13:00	8	1	1	2	3	15 <	30	122
13:15	11	0	2	0	4	6	23	114
13:30	8	2	0	3	1	8	22	112
13:45	14	0	1	1	2	11	29	104
14:00	15 <	0	0	4	1	9	29	103

Note: Arrows "<" indicate the end time for the peak hour for each turning movement.

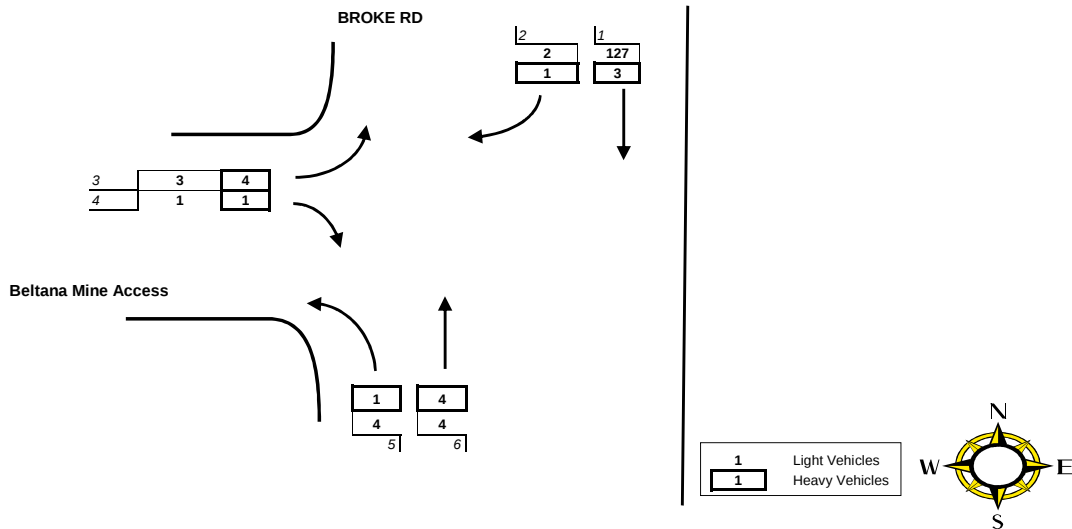
16:30 <<< HOUR ENDING

Thursday

Summary:

BROKE RD / Beltana Mine Access

141 Total Light Vehicles
13 Total Heavy Vehicles



26/5/2011 - BROKE RD / Beltana Mine Access, BULGA

Light Vehicles							Total Vehicles	
1	2	3	4	5	6	15 MIN HOUR		
14:15	14	0	0	4	1	8	27	
14:30	27	0	5	1	1	10	44	
14:45	17	1	0	4	1	11	34	
15:00	20	0	1	5 <	1	14	41	146
15:15	19	0	0	3	1	15	38	157
15:30	24	2	0	0	3 <	15	44	157
15:45	29	1	1	1	1 <	19 <	52	175
16:00	37	1 <	0	0	0	12	50	184
16:15	29	0 <	2	0	2 <	7	40	186 <
16:30	32 <	0	0	0	1	8	41	183
16:45	29 <	2	4	0	0	14	49	180
17:00	25	0	1 <	5	1	3	35	165
17:15	30	0	2 <	1	0	4	37	162
17:30	30	1	0 <	0	0	15	46	167
17:45	11	0	0	2	2	5	20	138
18:00	13	0	0	1	1	8	23	126

Heavy Vehicles							Total Vehicles	
1	2	3	4	5	6	15 MIN HOUR		
14:15	2	0	0	0	0	4	6	
14:30	0	2	0	2	1	0	5	
14:45	1	0	3	0	0	2	6	
15:00	2 <	0 <	0	0 <	0	2 <	4	21 <
15:15	2 <	0 <	0	0 <	0	1	3	18
15:30	0 <	0	0	1	2	0	3	16
15:45	0	0	0	0	1 <	0	1	11
16:00	1	0	0	0	0 <	0	1	8
16:15	2	1	1	0	0 <	2	6	11
16:30	0	0	3	1	0	2	6	14
16:45	0	1 <	2 <	0	0	0	3	16
17:00	2	0 <	0 <	0	0	0	2	17
17:15	2	0	0	0	0	1	3	14
17:30	0	0	0	1	0	0	1	9
17:45	0	0	0	0	0	0	0	6
18:00	0	0	0	0	0	0	0	4

All Vehicles							Total Vehicles	
1	2	3	4	5	6	15 MIN HOUR		
14:15	16	0	0	4	1	12	33	
14:30	27	2	5	3	2	10	49	
14:45	18	1	3	4	1	13	40	
15:00	22	0	1	5 <	1	16	45	167
15:15	21	0	0	3	1	16	41	175
15:30	24	2	0	1	5	15	47	173
15:45	29	1	1	1	2 <	19 <	53	186
16:00	38	1	0	0	0	12	51	192
16:15	31	1 <	3	0	2 <	9	46	197 <
16:30	32 <	0	3	1	1	10	47	197 <
16:45	29 <	3 <	6	0	0	14	52	196
17:00	27	0	1 <	5	1	3	37	182
17:15	32	0	2	1	0	5	40	176
17:30	30	1	0	1	0	15	47	176
17:45	11	0	0	2	2	5	20	144
18:00	13	0	0	1	1	8	23	130

Note: Arrows "<" indicate the end time for the peak hour for each turning movement.

7:00 <<< HOUR ENDING

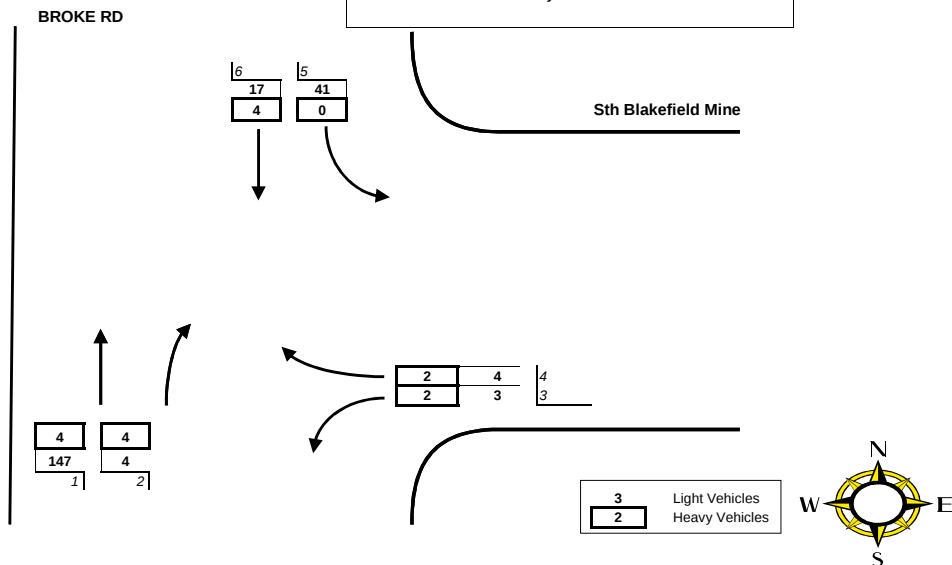
Friday

Summary:

BROKE RD / Sth Blakefield Mine

216 Total Light Vehicles

12 Total Heavy Vehicles



27/5/2011 - BROKE RD / Sth Blakefield Mine, BULGA

Light Vehicles
1 2 3 4 5 6 Total Vehicles
15 MIN HOUR

06:15	32	5	0	1	3	3	44
06:30	26	11	0	0	19	5	61
06:45	49	15	0	0	15	6	85
07:00	40 <	9 <	3	3	4	3	62 252 <
07:15	14	2	3	2	5 <	8	34 242
07:30	12	3	4	6	4	17	46 227
07:45	11	3	4	11	7	9	45 187
08:00	20	2	8	8 <	4	4 <	46 171
08:15	9	0	5 <	2 <	6	2	24 161
08:30	11	2	0	2	4	4	23 138
08:45	19	0	0	3	3	5	30 123
09:00	15	2	0	5	6	3	31 108
09:15	14	1	1	6	1	7	30 114
09:30	9	3	1	3	1	8	25 116
09:45	10	3	2	2	2	8	27 113
10:00	10	4	0	7	3	6	30 112

Heavy Vehicles
1 2 3 4 5 6 Total Vehicles
15 MIN HOUR

06:15	0	1	0	1	0	0	2
06:30	1	2	0	0	0	1	4
06:45	1	0	0	0	0	2	3
07:00	2	1	2	1	0	1	7 16
07:15	0	2 <	0	3	0	1	6 20
07:30	1	1	1 <	1	0	1	5 21
07:45	1	0	0 <	0	1	2	4 22
08:00	1	0	0	2 <	1	2 <	6 21
08:15	0	0	0	1	0	1 <	2 17
08:30	1	0	0	1	0	1 <	3 15
08:45	0	0	0	0	2	0	2 13
09:00	3	1	0	3	1	3	11 18
09:15	3	0	0	0	1	1	5 21
09:30	1	0	0	0	2	0	3 21
09:45	1 <	1	1	3 <	1	0	7 26 <
10:00	2	3	0	1	3 <	1	10 25

All Vehicles
1 2 3 4 5 6 Total Vehicles
15 MIN HOUR

06:15	32	6	0	2	3	3	46
06:30	27	13	0	0	19	6	65
06:45	50	15	0	0	15	8	88
07:00	42 <	10 <	5	4	4	4	69 268 <
07:15	14	4	3	5	5 <	9	40 262
07:30	13	4	5	7	4	18	51 248
07:45	12	3	4	11	8	11	49 209
08:00	21	2	8	10 <	5	6 <	52 192
08:15	9	0	5 <	3	6	3	26 178
08:30	12	2	0	3	4	5	26 153
08:45	19	0	0	3	5	5	32 136
09:00	18	3	0	8	7	6	42 126
09:15	17	1	1	6	2	8	35 135
09:30	10	3	1	3	3	8	28 137
09:45	11	4	3	5	3	8	34 139
10:00	12	7	0	8	6	7	40 137

Note: Arrows "<" indicate the end time for the peak hour for each turning movement.

12:45 <<< HOUR ENDING

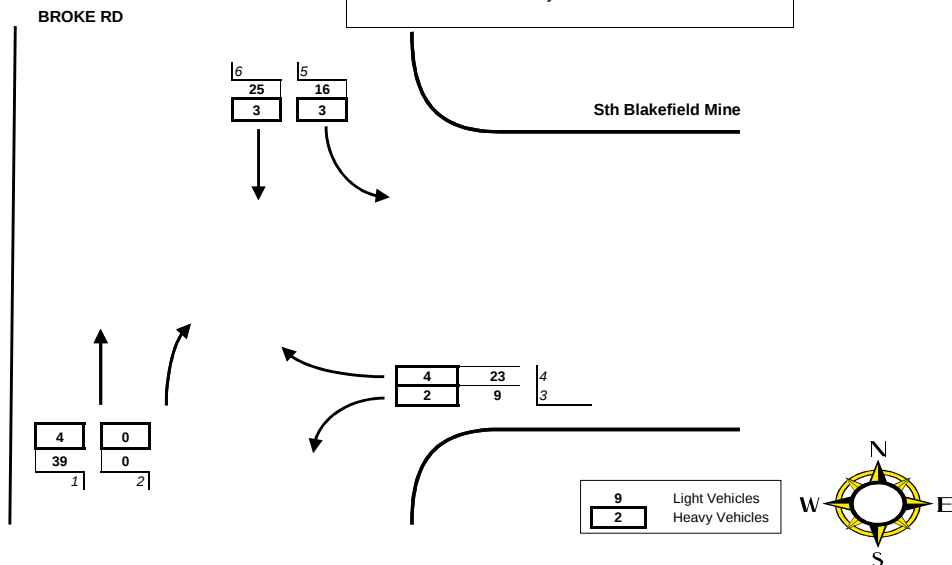
Thursday

Summary:

BROKE RD / Sth Blakefield Mine

112 Total Light Vehicles

12 Total Heavy Vehicles



26/5/2011 - BROKE RD / Sth Blakefield Mine, BULGA

Light Vehicles							Total Vehicles	
1	2	3	4	5	6	15 MIN HOUR		
10:15	5	4	1	2	5	4	21	
10:30	7	0	0	3	2	7	19	
10:45	8	0	2	2	5	5	22	
11:00	7	3	2	4	0	10	26	88
11:15	8	1	3	1	3	9	25	92
11:30	6	4	2	2	5	4	23	96
11:45	4	1	3	3	1	3	15	89
12:00	6	3	2	8	6	8	33	96
12:15	9	3	6 <	6	2	7	33	104
12:30	11	2	0	2	4	4	23	104
12:45	13	7 <	1	7 <	4 <	6	38	127 <
13:00	12 <	1	2	5	1	9	30	124
13:15	7	0	2	3	2	8	22	113
13:30	8	2	1	1	2	8	22	112
13:45	6	1	1	6	2	11	27	101
14:00	5	5	1	4	3	13 <	31	102

Heavy Vehicles							Total Vehicles	
1	2	3	4	5	6	15 MIN HOUR		
10:15	0	1	0	1	2	0	4	
10:30	0	0	0	2	0	0	2	
10:45	0	1	0	0	0	1	2	
11:00	1	1 <	0	0	0	1	3	11
11:15	1	0	0	1	1	2 <	5	12
11:30	0	0	0	2	1	0 <	3	13
11:45	2 <	1	1	2	0	0	6	17 <
12:00	1 <	0	1 <	0	1 <	0	3	17 <
12:15	0	0	0 <	2 <	1 <	0	3	15
12:30	1 <	0	0 <	1	0	1	3	15
12:45	2 <	0	1 <	1	1 <	2	7	16
13:00	1 <	1	0	0	0	0	2	15
13:15	0 <	0	0	0	1	0	1	13
13:30	0	0	1 <	0	1 <	0	2	12
13:45	1	0	0	0	1 <	1	3	8
14:00	1	0	0	0	0 <	3 <	4	10

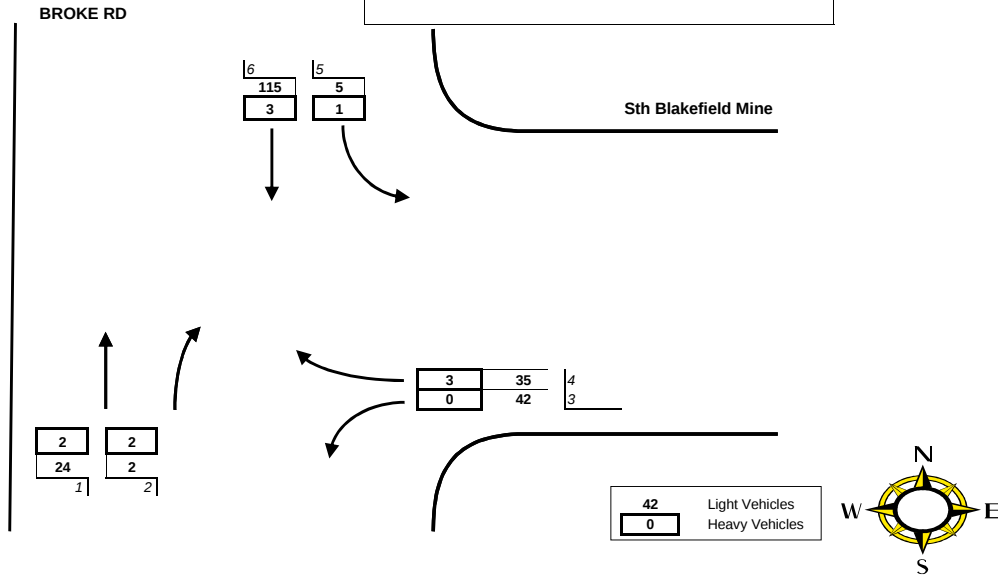
All Vehicles							Total Vehicles	
1	2	3	4	5	6	15 MIN HOUR		
10:15	5	5	1	3	7	4	25	
10:30	7	0	0	5	2	7	21	
10:45	8	1	2	2	5	6	24	
11:00	8	4	2	4	0	11	29	99
11:15	9	1	3	2	4	11	30	104
11:30	6	4	2	4	6	4	26	109
11:45	6	2	4	5	1	3	21	106
12:00	7	3	3	8	7	8	36	113
12:15	9	3	6 <	8	3	7	36	119
12:30	12	2	0	3	4	5	26	119
12:45	15	7 <	2	8 <	5 <	8	45	143 <
13:00	13 <	2	2	5	1	9	32	139
13:15	7	0	2	3	3	8	23	126
13:30	8	2	2	1	3	8	24	124
13:45	7	1	1	6	3	12	30	109
14:00	6	5	1	4	3	16 <	35	112

Note: Arrows "<" indicate the end time for the peak hour for each turning movement.

Summary:

BROKE RD / Sth Blakefield Mine

223 Total Light Vehicles
9 Total Heavy Vehicles



26/5/2011 - BROKE RD / Sth Blakefield Mine, BULGA

Light Vehicles

1 2 3 4 5 6 **Total Vehicles**
15 MIN HOUR

14:15	6	7	1	3	6	12	35
14:30	9	5	2	2	10	18	46
14:45	10	6	5	2	5	16	44
15:00	12	3 <	5	3	4 <	21	48 173
15:15	9 <	2	6	7	0	22	46 184
15:30	5	2	15	13	1	23	59 197
15:45	6	2	18 <	14	0	30	70 223
16:00	7	0	5 <	5 <	2	35	54 229 <
16:15	6	2	4	3	2	27	44 227
16:30	3	2	2	6	2	30 <	45 213
16:45	9	1	1	5	1	28	45 188
17:00	3	0	3	1	0	30	37 171
17:15	3	0	2	1	0	31	37 164
17:30	11	0	0	4	3	27	45 164
17:45	4	2	2	3	0	13	24 143
18:00	7	0	1	2	1	13	24 130

Heavy Vehicles

1 2 3 4 5 6 **Total Vehicles**
15 MIN HOUR

14:15	4	0	0	0	2	0	6
14:30	1	0	0	0	0	2	3
14:45	1	1	0	1	0	1	4
15:00	0 <	0	0	2	1 <	1	4 17 <
15:15	1	0	0	0	1	1 <	3 14
15:30	1	0	0	1 <	0	1	3 14
15:45	1	0	0	0	0	0	1 11
16:00	0	0	0	0	0	1	1 8
16:15	0	2 <	0	2	1	1	6 11
16:30	2	0 <	0	0	0	1	3 11
16:45	0	0 <	0	0	0	0	0 10
17:00	0	0 <	0	0	0	2	2 11
17:15	0	0	0	1	1	1	3 8
17:30	0	0	0	0	0	1	1 6
17:45	0	0	0	0	0	0	0 6
18:00	0	0	0	0	0	0	0 4

All Vehicles

1 2 3 4 5 6 **Total Vehicles**
15 MIN HOUR

14:15	10	7	1	3	8	12	41
14:30	10	5	2	2	10	20	49
14:45	11	7	5	3	5	17	48
15:00	12 <	3 <	5	5	5 <	22	52 190
15:15	10 <	2	6	7	1	23	49 198
15:30	6	2	15	14	1	24	62 211
15:45	7	2	18 <	14 <	0	30	71 234
16:00	7	0	5 <	5 <	2	36	55 237
16:15	6	4	4	5	3	28	50 238 <
16:30	5	2	2	6	2	31 <	48 224
16:45	9	1	1	5	1	28	45 198
17:00	3	0	3	1	0	32	39 182
17:15	3	0	2	2	1	32	40 172
17:30	11	0	0	4	3	28	46 170
17:45	4	2	2	3	0	13	24 149
18:00	7	0	1	2	1	13	24 134

Note: Arrows "<" indicate the end time for the peak hour for each turning movement.

27/5/2011 - PUTTY RD / GOLDEN HWY, BULGA

7:00 <<< HOUR ENDING

Friday

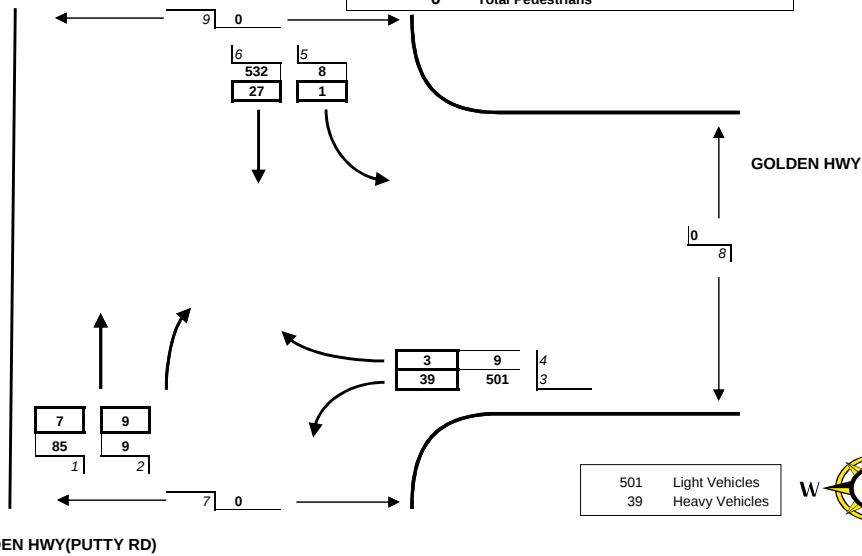
Summary:

PUTTY RD / GOLDEN HWY

1144 Total Light Vehicles
79 Total Heavy Vehicles
0 Total Pedestrians



PUTTY RD



GOLDEN HWY(PUTTY RD)

27/5/2011 - PUTTY RD / GOLDEN HWY, BULGA

Light Vehicles

1 2 3 4 5 6 Total Vehicles 15 MIN HOUR

Pedestrians

7 8 9

06:15	14	17	174	1	0	121	327				0	0	0
06:30	12	9	144	2	2	166	335				0	0	0
06:45	29	22	94	4	0	123	272				0	0	0
07:00	30	23	89 <	2 <	6	122 <	272	1206 <			0	0	0
07:15	43	49	42	1 <	5 <	49	189	1068			0	0	0
07:30	43	41 <	46	1	1	64	196	929			0	0	0
07:45	33	22 <	54	0	0	45	154	811			0	0	0
08:00	37 <	18	37	1	1	59	153	692			0	0	0
08:15	29	11	30	1	0	44	115	618			0	0	0
08:30	30	11	35	2	1	28	107	529			0	0	0
08:45	36	6	28	2	3	44	119	494			0	0	0
09:00	44	17	30	0	2	44	137	478			0	0	0

Heavy Vehicles

1 2 3 4 5 6 Total Vehicles 15 MIN HOUR

06:15	2	2	9	0	0	4	17						
06:30	0	3	13	2	1	8	27						
06:45	2	3	7	0	0	5	17						
07:00	3	1	10 <	1	0	10	25	86					
07:15	1	4	9 <	1 <	1	10	26	95					
07:30	4	1	6	2 <	1	19	33	101					
07:45	6	6	8	0 <	1 <	16 <	37	121					
08:00	4	5	5	0	0 <	9	23	119					
08:15	2	8	13	0	1 <	10	34	127 <					
08:30	8 <	0	5	1	1 <	4	19	113					
08:45	6 <	5	1	1	0	7	20	96					
09:00	2	9 <	8	0	0	4	23	96					

All Vehicles

1 2 3 4 5 6 Total Vehicles 15 MIN HOUR

06:15	16	19	183	1	0	125	344						
06:30	12	12	157	4	3	174	362						
06:45	31	25	101	4	0	128	289						
07:00	33	24	99 <	3	6	132 <	297	1292 <					
07:15	44	53	51	2 <	6 <	59	215	1163					
07:30	47	42	52	3	2	83	229	1030					
07:45	39	28 <	62	0	1 <	61	191	932					
08:00	41 <	23	42	1	1	68	176	811					
08:15	31	19	43	1	1	54	149	745					
08:30	38	11	40	3	2	32	126	642					
08:45	42	11	29	3	3	51	139	590					
09:00	46	26	38	0	2	48	160	574					

Note: Arrows "<" indicate the end time for the peak hour for each turning movement.

26/5/2011 - PUTTY RD / GOLDEN HWY, BULGA

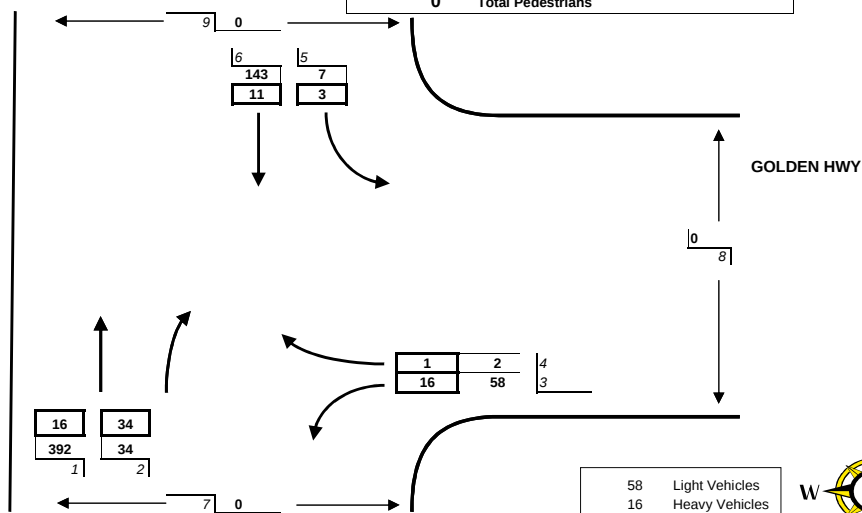


16:15 <<< HOUR ENDING

Thursday

Summary:		
PUTTY RD / GOLDEN HWY		
636	Total Light Vehicles	
65	Total Heavy Vehicles	
0	Total Pedestrians	

PUTTY RD



GOLDEN HWY(PUTTY RD)

26/5/2011 - PUTTY RD / GOLDEN HWY, BULGA

	Light Vehicles						Total Vehicles			Pedestrians		
	1	2	3	4	5	6	15 MIN HOUR			7	8	9
15:15	62	81	11	2	5	25	186			0	0	0
15:30	74	66	13	0	3	40	196			0	0	0
15:45	127	91	25	0	1	33	277			0	0	0
16:00	99	87 <	9	1	0	31	227	886		0	0	0
16:15	92	78	11	1	3	39	224	924 <		0	0	0
16:30	80 <	55	17	0	1	40	193	921		0	0	0
16:45	113	74	9	1	1	28	226	870		0	0	0
17:00	90	74	20	1	5 <	39	229	872		0	0	0
17:15	99	113	12	1	0	44	269	917		0	0	0
17:30	70	63	22	2 <	1	31	189	913		0	0	0
17:45	76	49	19	0	0	39	183	870		0	0	0
18:00	53	44	39 <	0	0	41 <	177	818		0	0	0

	Heavy Vehicles					Total Vehicles		
	1	2	3	4	5	6	15 MIN HOUR	
15:15	8	9	1	0	1	3	22	
15:30	1	11	4	0	0	1	17	
15:45	6	7	2	0	1	3	19	
16:00	5	5	3	0	0	5 <	18	76
16:15	4	11 <	7 <	1 <	2 <	2	27	81 <
16:30	2	3	3	0 <	0 <	0	8	72
16:45	8	9	2	0 <	0	3	22	75
17:00	9	4	1	0 <	0	2	16	73
17:15	5	13	4	0	0	0	22	68
17:30	4 <	3	1	0	0	2	10	70
17:45	0	7	5	0	1	0	13	61
18:00	5	5	3	0	2 <	1	16	61

	All Vehicles					Total Vehicles		
	1	2	3	4	5	6	15 MIN HOUR	
15:15	70	90	12	2	6	28	208	
15:30	75	77	17	0	3	41	213	
15:45	133	98	27	0	2	36	296	
16:00	104	92 <	12	1	0	36	245	962
16:15	96	89	18	2	5	41	251	1005 <
16:30	82 <	58	20	0	1	40	201	993
16:45	121	83	11	1	1	31	248	945
17:00	99	78	21	1	5 <	41	245	945
17:15	104	126	16	1	0	44	291	985
17:30	74	66	23	2 <	1	33	199	983
17:45	76	56	24	0	1	39	196	931
18:00	58	49	42 <	0	2	42 <	193	879

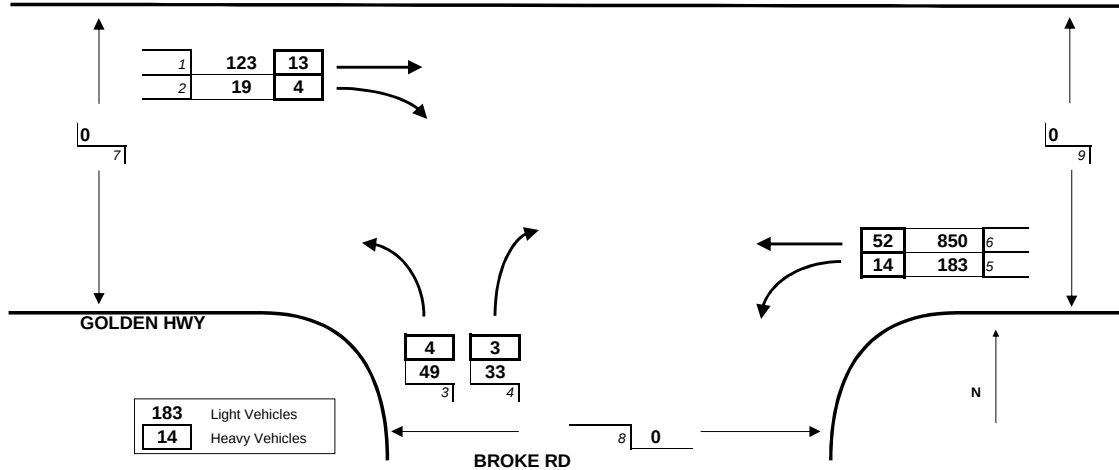
Note : Arrows "<" indicate the end time for the peak hour for each turning movement.

27/5/2011 - GOLDEN HWY / BROKE RD, BULGA

7:00 <<< HOUR ENDING

Friday

Summary:		
GOLDEN HWY / BROKE RD		
1257	Total Light Vehicles	
90	Total Heavy Vehicles	
0	Total Pedestrians	



27/5/2011 - GOLDEN HWY / BROKE RD, BULGA

	Light Vehicles					Total Vehicles			Pedestrians		
	1	2	3	4	5	6	15 MIN HOUR		7	8	9
06:15	12	1	14	19	43	252	341		0	0	0
06:30	19	7	9	2	63	247	347		0	0	0
06:45	46	7	11	5	50	167	286		0	0	0
07:00	46	4	15 <	7	27 <	184 <	283	1257 <	0	0	0
07:15	70	3 <	7	22	26	65	193	1109	0	0	0
07:30	48 <	5	7	36	24	86	206	968	0	0	0
07:45	41	2	3	14	21	78	159	841	0	0	0
08:00	44	1	7	11 <	25	71	159	717	0	0	0
08:15	31	2	4	9	15	59	120	644	0	0	0
08:30	34	4	2	7	13	50	110	548	0	0	0
08:45	32	2	6	10	10	62	122	511	0	0	0
09:00	47	2	3	14	9	65	140	492	0	0	0
09:15	0	0	0	0	0	0	0	372	0	0	0
09:30	0	0	0	0	0	0	0	262	0	0	0
09:45	0	0	0	0	0	0	0	140	0	0	0
10:00	0	0	0	0	0	0	0	0	0	0	0

	Heavy Vehicles					Total Vehicles	
	1	2	3	4	5	6	15 MIN HOUR
06:15	2	0	1	2	3	10	18
06:30	3	0	0	0	3	18	24
06:45	5	1	1	0	4	8	19
07:00	3	3	2	1	4	16	29
07:15	5	3 <	0	0	4	15	27
07:30	5	0 <	2 <	0	5 <	20	32
07:45	8	1 <	1 <	4	2	22 <	38
08:00	6	1	1	3	6 <	8	25
08:15	10	1	1 <	0	3	20	35
08:30	6	1	1	2 <	3	6	19
08:45	10	1	0	1	3	5	20
09:00	9 <	1	2	2	3	9	26
09:15	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0

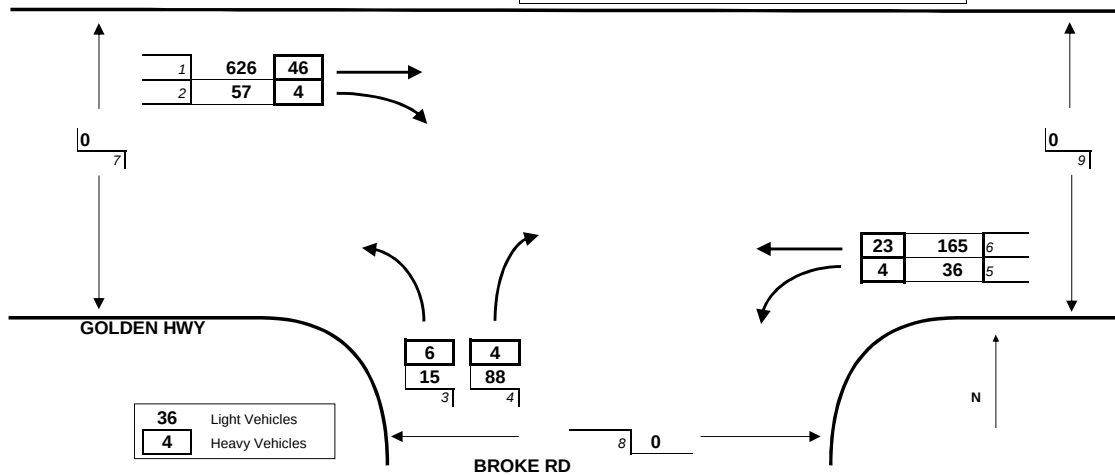
	All Vehicles					Total Vehicles		
	1	2	3	4	5	6	15 MIN HOUR	
06:15	14	1	15	21	46	262	359	
06:30	22	7	9	2	66	265	371	
06:45	51	8	12	5	54	175	305	
07:00	49	7	17	8	31	200	312	1347
07:15	75	6	7	22	30	80	220	1208
07:30	53	5	9	36	29	106	238	1075
07:45	49	3	4	18	23	100	197	967
08:00	50	2	8	14	31	79	184	839
08:15	41	3	5	9	18	79	155	774
08:30	40	5	3	9	16	56	129	665
08:45	42	3	6	11	13	67	142	610
09:00	56	3	5	16	12	74	166	592
09:15	0	0	0	0	0	0	0	437
09:30	0	0	0	0	0	0	0	308
09:45	0	0	0	0	0	0	0	166
10:00	0	0	0	0	0	0	0	0

Note : Arrows "<" indicate the end time for the peak hour for each turning movement.

Summary:

GOLDEN HWY / BROKE RD

987	Total Light Vehicles
87	Total Heavy Vehicles
0	Total Pedestrians



26/5/2011 - GOLDEN HWY / BROKE RD, BULGA

	Light Vehicles						Total Vehicles 15 MIN HOUR	Pedestrians		
	1	2	3	4	5	6		7	8	9
15:15	128	15	4	15	10	26	198	0	0	0
15:30	119	9	2	21	4	49	204	0	0	0
15:45	199	24	3	19	8	50	303	0	0	0
16:00	161	8	5	25	8	32	239	944	0	0
16:15	147 <	16	5	23	16	34	241	987	0	0
16:30	114	10 <	4	21	11	46	206	989 <	0	0
16:45	159	12	1	28	9	28	237	923	0	0
17:00	134	12	3	30	16	43	238	922	0	0
17:15	187	24 <	1	25	13	43	293	974	0	0
17:30	110	7	2	23	15 <	38	195	963	0	0
17:45	92	1	12 <	33 <	8	50	196	922	0	0
18:00	76	1	0	21	7	73 <	178	862	0	0
18:15	0	0	0	0	0	0	0	569	0	0
18:30	0	0	0	0	0	0	0	374	0	0
18:45	0	0	0	0	0	0	0	178	0	0
19:00	0	0	0	0	0	0	0	0	0	0

	Heavy Vehicles						Total Vehicles 15 MIN HOUR			
	1	2	3	4	5	6		7	8	9
15:15	15	0	1	2	1	3	22			
15:30	11	1	2	1	0	5	20			
15:45	12	1	1	1	0	5	20			
16:00	9 <	1	0	1	3	5	19	81		
16:15	14	1	3 <	1	1	8 <	28	87 <		
16:30	2	1	0	3	0	3	9	76		
16:45	11	0	2	6 <	1 <	4	24	80		
17:00	12	1	0	1 <	0	3	17	78		
17:15	18	3 <	0	0	1	3	25	75		
17:30	6 <	0	0	1	0	3	10	76		
17:45	7	0	0	0	0	5	12	64		
18:00	9	0	0	1	0	4	14	61		
18:15	0	0	0	0	0	0	0	36		
18:30	0	0	0	0	0	0	0	26		
18:45	0	0	0	0	0	0	0	14		
19:00	0	0	0	0	0	0	0	0		

	All Vehicles						Total Vehicles 15 MIN HOUR			
	1	2	3	4	5	6		7	8	9
15:15	143	15	5	17	11	29	220			
15:30	130	10	4	22	4	54	224			
15:45	211	25	4	20	8	55	323			
16:00	170	9	5	26	11	37	258	1025		
16:15	161 <	17	8 <	24	17	42	269	1074 <		
16:30	116	11	4 <	24	11	49	215	1065		
16:45	170	12	3	34	10	32	261	1003		
17:00	146	13	3	31	16	46	255	1000		
17:15	205	27 <	1	25 <	14	46	318	1049		
17:30	116	7	2	24 <	15 <	41	205	1039		
17:45	99	1	12	33	8	55	208	986		
18:00	85	1	0	22	7	77 <	192	923		
18:15	0	0	0	0	0	0	0	605		
18:30	0	0	0	0	0	0	0	400		
18:45	0	0	0	0	0	0	0	192		
19:00	0	0	0	0	0	0	0	0		

Note: Arrows "<" indicate the end time for the peak hour for each turning movement.

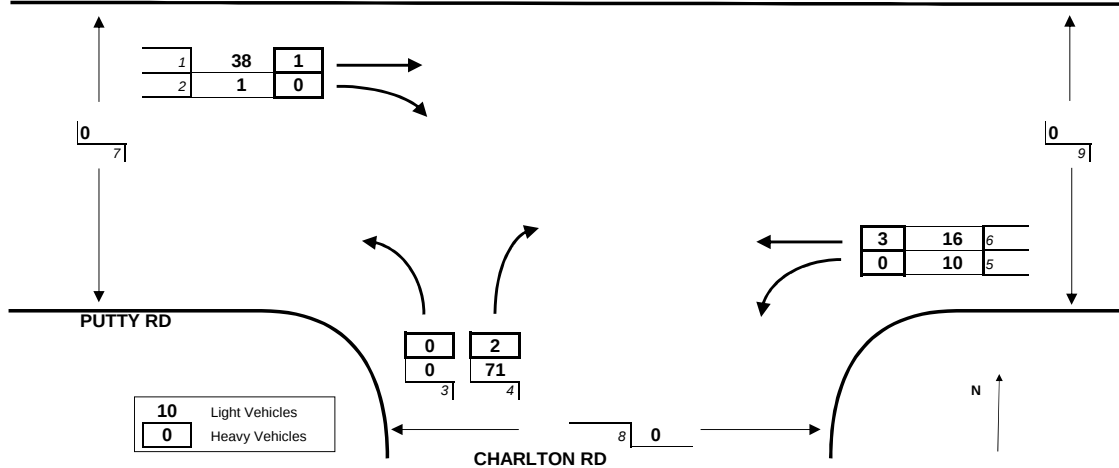
27/5/2011 - PUTTY RD / CHARLTON RD, BULGA

7:00 <<< HOUR ENDING

Friday

Summary:

PUTTY RD / CHARLTON RD	
136	Total Light Vehicles
6	Total Heavy Vehicles
0	Total Pedestrians



27/5/2011 - PUTTY RD / CHARLTON RD, BULGA

Light Vehicles							Total Vehicles		Pedestrians		
	1	2	3	4	5	6	15 MIN HOUR		7	8	9
06:15	11	0	0	14	0	4	29		0	0	0
06:30	9	1	0	26	2	3	41		0	0	0
06:45	10	0	0	21	5	5	41		0	0	0
07:00	8	0	0	10 <	3	4	25	136 <	0	0	0
07:15	7	1	0	8	0	6	22	129	0	0	0
07:30	3	0	0	8	5	9	25	113	0	0	0
07:45	8	1	0	1	5	9	24	96	0	0	0
08:00	12	1 <	0	3	1	5	22	93	0	0	0
08:15	13	0	0	1	3 <	7 <	24	95	0	0	0
08:30	10	0	0	2	3	4	19	89	0	0	0
08:45	14 <	0	2	10	3	8	37	102	0	0	0
09:00	10	2	3 <	7	3	11 <	36	116	0	0	0

Heavy Vehicles							Total Vehicles				
	1	2	3	4	5	6	15 MIN HOUR				
06:15	1	0	0	1	0	0	2				
06:30	0	0	0	0	0	0	0				
06:45	0	0	0	1	0	1	2				
07:00	0	0	0	0	0	2	2	6			
07:15	0	0	0	0	0	1	1	5			
07:30	2	0	0	0	0	4	6	11			
07:45	1	0	0	1	0	3 <	5	14			
08:00	0	0	0	1	0	0	1	13			
08:15	4	0	0	0	0	1	5	17 <			
08:30	1	0	0	1 <	0	1	3	14			
08:45	3 <	0	0	1 <	0	2	6	15			
09:00	0 <	0	0	1 <	0	0	1	15			

All Vehicles							Total Vehicles				
	1	2	3	4	5	6	15 MIN HOUR				
06:15	12	0	0	15	0	4	31				
06:30	9	1	0	26	2	3	41				
06:45	10	0	0	22	5	6	43				
07:00	8	0	0	10 <	3	6	27	142 <			
07:15	7	1	0	8	0	7	23	134			
07:30	5	0	0	8	5	13	31	124			
07:45	9	1	0	2	5	12 <	29	110			
08:00	12	1 <	0	4	1	5	23	106			
08:15	17	0	0	1	3 <	8 <	29	112			
08:30	11	0	0	3	3	5	22	103			
08:45	17 <	0	2	11	3	10	43	117			
09:00	10	2	3 <	8	3	11	37	131			

Note : Arrows "<" indicate the end time for the peak hour for each turning movement.

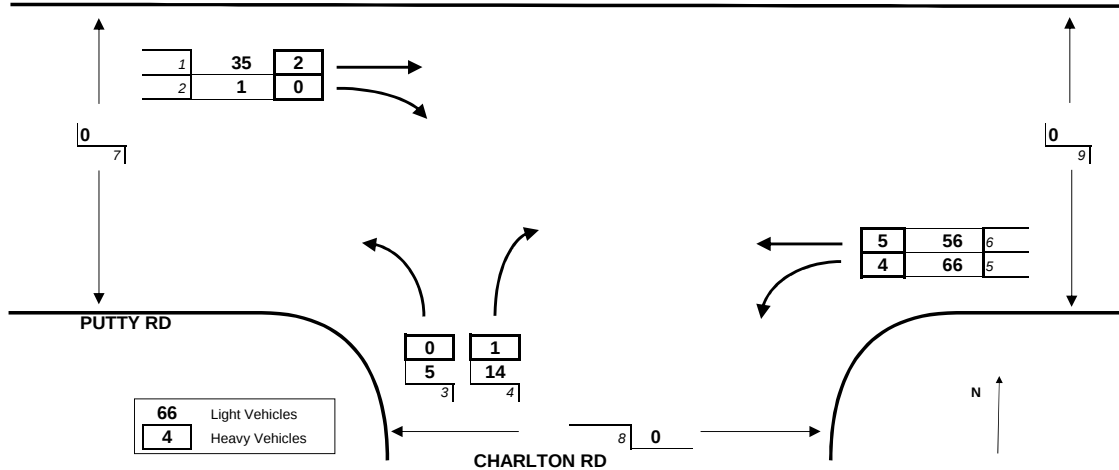
26/5/2011 - PUTTY RD / CHARLTON RD, BULGA

16:00 <<< HOUR ENDING

Thursday

Summary:

	PUTTY RD	/	CHARLTON RD
177	Total Light Vehicles		
12	Total Heavy Vehicles		
0	Total Pedestrians		



26/5/2011 - PUTTY RD / CHARLTON RD, BULGA

Light Vehicles							Total Vehicles			Pedestrians		
1	2	3	4	5	6	15 MIN HOUR	7	8	9	7	8	9
15:15	8	0	2	0	11	12	33			0	0	0
15:30	6	1	1	2	15	18	43			0	0	0
15:45	12	0	1	9	16	14	52			0	0	0
16:00	9	0	1 <	3	24 <	12	49	177 <		0	0	0
16:15	8	0	1	4	7	11	31	175		0	0	0
16:30	15 <	0	0	3 <	10	12	40	172		0	0	0
16:45	11	1	0	4	8	18	42	162		0	0	0
17:00	6	0	0	2	9	13	30	143		0	0	0
17:15	11	2	0	3	15	24	55	167		0	0	0
17:30	5	1 <	2	2	8	14 <	32	159		0	0	0
17:45	16	1 <	0	4	3	16	40	157		0	0	0
18:00	4	0 <	0	2	7	4	17	144		0	0	0

Heavy Vehicles							Total Vehicles		
1	2	3	4	5	6	15 MIN HOUR	7	8	9
15:15	0	0	0	0	0	3	3		
15:30	1	0	0	0	0	2	3		
15:45	0	0	0	0	3	0	3		
16:00	1 <	0	0	1 <	1	0 <	3	12 <	
16:15	0 <	0	0	0 <	2	1	3	12 <	
16:30	0	0	0	0 <	1 <	1	2	11	
16:45	1 <	0	0	0 <	0	1	2	10	
17:00	0	1 <	0	0	0	1	2	9	
17:15	1 <	0 <	0	1 <	1	2 <	5	11	
17:30	0 <	0 <	0	0 <	0	0	0	9	
17:45	1 <	0 <	0	0 <	0	0	1	8	
18:00	0 <	1 <	0	0 <	1	0	2	8	

All Vehicles							Total Vehicles		
1	2	3	4	5	6	15 MIN HOUR	7	8	9
15:15	8	0	2	0	11	15	36		
15:30	7	1	1	2	15	20	46		
15:45	12	0	1	9	19	14	55		
16:00	10	0	1 <	4	25 <	12	52	189 <	
16:15	8	0	1	4	9	12	34	187	
16:30	15 <	0	0	3 <	11	13	42	183	
16:45	12 <	1	0	4	8	19	44	172	
17:00	6	1	0	2	9	14	32	152	
17:15	12 <	2	0	4	16	26	60	178	
17:30	5	1 <	2	2	8	14 <	32	168	
17:45	17	1 <	0	4	3	16	41	165	
18:00	4	1 <	0	2	8	4	19	152	

Note : Arrows "<" indicate the end time for the peak hour for each turning movement.

27/5/2011 - BROKE RD / CHARLTON RD, BROKE

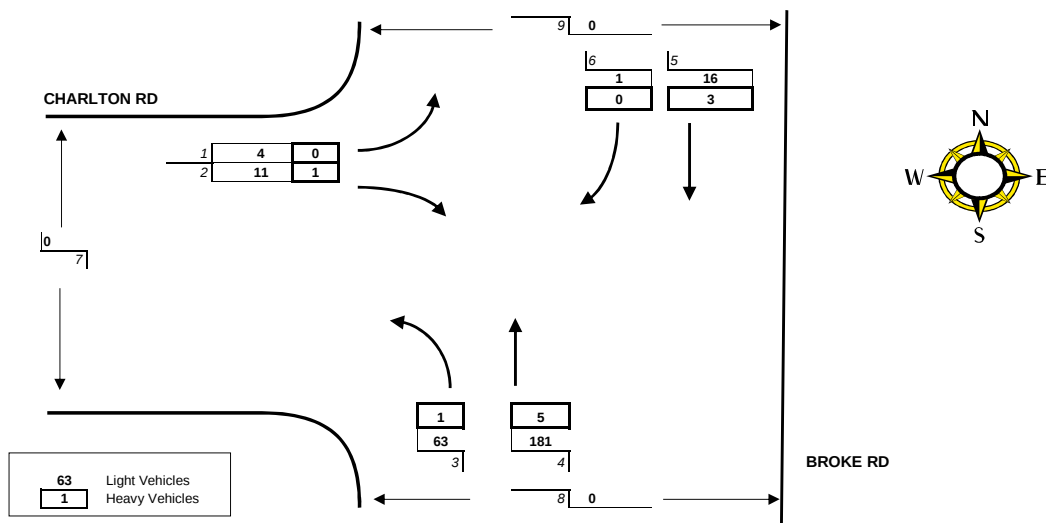
7:00 <<< HOUR ENDING

Friday

Summary:

BROKE RD / CHARLTON RD

276 Total Light Vehicles
10 Total Heavy Vehicles
0 Total Pedestrians



27/5/2011 - BROKE RD / CHARLTON RD, BROKE

Light Vehicles

1 2 3 4 5 6 15 MIN HOUR

Pedestrians

7 8 9

	1	2	3	4	5	6	15 MIN HOUR		7	8	9
06:15	2	1	10	34	2	1	50		0	0	0
06:30	0	0	22	39	2	0	63		0	0	0
06:45	0	7	20	70	10	0	107		0	0	0
07:00	2 <	3	11 <	38 <	2	0	56	276 <	0	0	0
07:15	1	2	9	17	5	0	34	260	0	0	0
07:30	0	4 <	6	15	19	0	44	241	0	0	0
07:45	0	7 <	3	13	12	0	35	169	0	0	0
08:00	0	2	2	22	14	0	40	153	0	0	0
08:15	1	3 <	2	10	6 <	0	22	141	0	0	0
08:30	0	1	4	10	5	1	21	118	0	0	0
08:45	0	3	16	19	6	1 <	45	128	0	0	0
09:00	0	4	4	15	3	0 <	26	114	0	0	0

Heavy Vehicles

1 2 3 4 5 6 15 MIN HOUR

	1	2	3	4	5	6	15 MIN HOUR	
06:15	0	1	0	1	0	0	2	
06:30	0	0	1	0	1	0	2	
06:45	0	0	0	2	1	0	3	
07:00	0	0 <	0	2	1	0	3	10
07:15	0	0	1	0	1	0	2	10
07:30	0	0	1	2 <	1	0	4	12 <
07:45	0	0	1	0	2 <	0	3	12 <
08:00	0	0	1 <	1	0	0	2	11
08:15	0	0	1 <	0	2 <	0	3	12 <
08:30	0	0	1 <	1	1 <	0	3	11
08:45	0	0	1 <	2	0	0	3	11
09:00	0	0	1 <	1	0	0	2	11

All Vehicles

1 2 3 4 5 6 15 MIN HOUR

	1	2	3	4	5	6	15 MIN HOUR	
06:15	2	2	10	35	2	1	52	
06:30	0	0	23	39	3	0	65	
06:45	0	7	20	72	11	0	110	
07:00	2 <	3	11 <	40 <	3	0	59	286 <
07:15	1	2	10 <	17	6	0	36	270
07:30	0	4 <	7	17	20	0	48	253
07:45	0	7 <	4	13	14	0	38	181
08:00	0	2	3	23	14	0	42	164
08:15	1	3 <	3	10	8 <	0	25	153
08:30	0	1	5	11	6	1	24	129
08:45	0	3	17	21	6	1 <	48	139
09:00	0	4	5	16	3	0 <	28	125

Note : Arrows "<" indicate the end time for the peak hour for each turning movement.

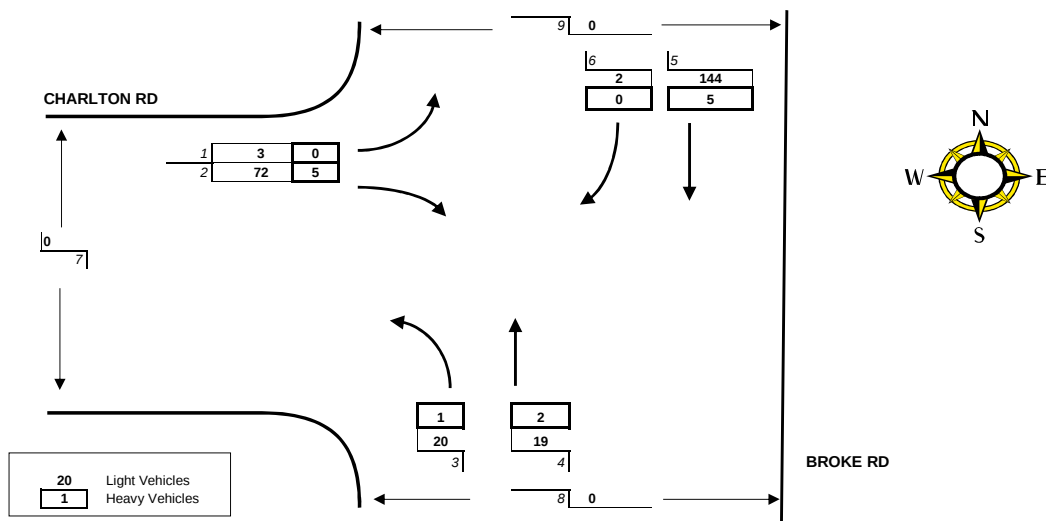
26/5/2011 - BROKE RD / CHARLTON RD, BROKE

16:15 <<< HOUR ENDING

Thursday

Summary:

	BROKE RD	CHARLTON RD
260	Total Light Vehicles	
13	Total Heavy Vehicles	
0	Total Pedestrians	



26/5/2011 - BROKE RD / CHARLTON RD, BROKE

	Light Vehicles						Total Vehicles 15 MIN HOUR	Pedestrians		
	1	2	3	4	5	6		7	8	9
15:15	0	9	7	11	23	0	50	0	0	0
15:30	0	17	5	5	25	1	53	0	0	0
15:45	2	14	8	4	35	0	63	0	0	0
16:00	1 <	21	3 <	6	51	1	83	249	0	0
16:15	0 <	20 <	4	4	33	0	61	260 <	0	0
16:30	0 <	6	4	8	31	0	49	256	0	0
16:45	0	10	2	6	36 <	1	55	248	0	0
17:00	0	7	2	9 <	25	2	45	210	0	0
17:15	0	13	3	1	26	2	45	194	0	0
17:30	1	13	5	7	37	1	64	209	0	0
17:45	0	6	1	8	30	2 <	47	201	0	0
18:00	0	6	2	3	10	0	21	177	0	0

	Heavy Vehicles						Total Vehicles 15 MIN HOUR
	1	2	3	4	5	6	
15:15	0	0	0	0	1	0	1
15:30	0	0	0	0	2	0	2
15:45	0	3	0	1	1	0	5
16:00	0	0	1 <	1	0	0	2 10
16:15	0	2	0 <	0	2	0	4 13 <
16:30	0	1 <	0 <	0	1	0	2 13 <
16:45	0	0	0 <	2 <	0	0	2 10
17:00	0	1	0	0	0	0	1 9
17:15	0	0	1 <	1 <	3	1 <	6 11
17:30	0	1	0 <	0 <	2	0 <	3 12
17:45	0	0	0 <	0	1 <	0 <	1 11
18:00	0	1	0 <	1	0 <	0 <	2 12

	All Vehicles						Total Vehicles 15 MIN HOUR
	1	2	3	4	5	6	
15:15	0	9	7	11	24	0	51
15:30	0	17	5	5	27	1	55
15:45	2	17	8	5	36	0	68
16:00	1 <	21	4 <	7	51	1	85 259
16:15	0 <	22 <	4	4	35	0	65 273 <
16:30	0 <	7	4	8	32 <	0	51 269
16:45	0	10	2	8	36 <	1	57 258
17:00	0	8	2	9 <	25	2	46 219
17:15	0	13	4	2	29	3	51 205
17:30	1	14	5	7	39	1	67 221
17:45	0	6	1	8	31	2 <	48 212
18:00	0	7	2	4	10	0	23 189

Note : Arrows "<" indicate the end time for the peak hour for each turning movement.

27/5/2011 - PUTTY RD / WALLABY SCRUB RD, BULGA

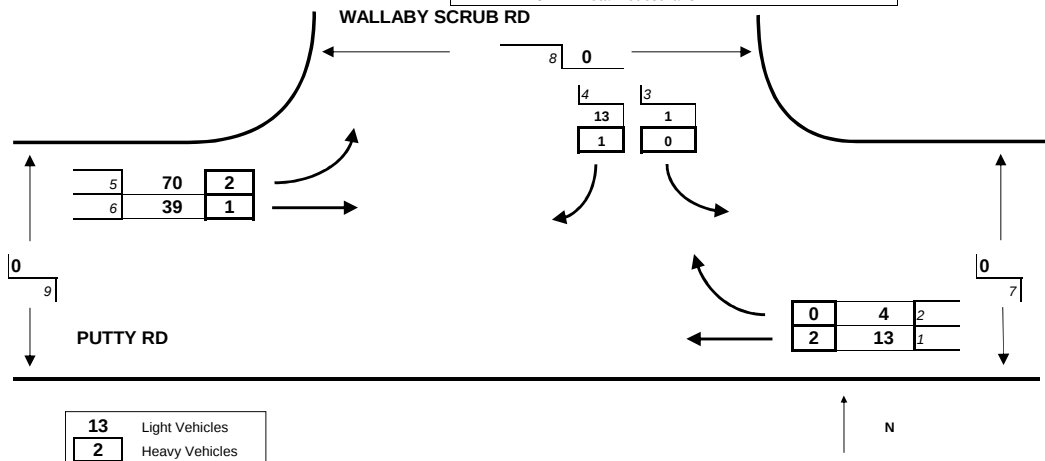
7:00 <<< HOUR ENDING

Friday

Summary:

PUTTY RD / WALLABY SCRUB RD

128 Total Light Vehicles
6 Total Heavy Vehicles
0 Total Pedestrians



27/5/2011 - PUTTY RD / WALLABY SCRUB RD, BULGA

Light Vehicles
1 2 3 4 5 6 Total Vehicles
15 MIN HOUR

Pedestrians
7 8 9

	1	2	3	4	5	6	Total Vehicles 15 MIN HOUR		7	8	9
06:15	2	1	0	2	10	15	30		0	0	0
06:30	4	0	1	1	28	7	41		0	0	0
06:45	4	0	0	6	23	8	41		0	0	0
07:00	3	3 <	0 <	4	9 <	9	28 140 <		0	0	0
07:15	5	0	0 <	1	9	6	21 131		0	0	0
07:30	9	0	0	5	6	5	25 115		0	0	0
07:45	6 <	0	0	8	2	7	23 97		0	0	0
08:00	2	0	0	4	2	13	21 90		0	0	0
08:15	4	0	0	6 <	4	10	24 93		0	0	0
08:30	3	0	0	4	5	7	19 87		0	0	0
08:45	7	0	0	4	8	16 <	35 99		0	0	0
09:00	7	1	0	7	13	4	32 110		0	0	0

Heavy Vehicles
1 2 3 4 5 6 Total Vehicles
15 MIN HOUR

	1	2	3	4	5	6	Total Vehicles 15 MIN HOUR	
06:15	0	0	0	0	1	1	2	
06:30	0	0	0	0	0	0	0	
06:45	1	0	0	0	1	0	2	
07:00	1	0	0	1	0	0	2 6	
07:15	1	0	0	0	0	0	1 5	
07:30	4	0	0	0	0	2	6 11	
07:45	2 <	0	0	1 <	1	1	5 14	
08:00	0	0	0	0	2	0	2 14	
08:15	1	0	0	0	1	3 <	5 18 <	
08:30	1	0	0	0	1	1	3 15	
08:45	2	0	0	0	5 <	0	7 17	
09:00	0	0	0	0	1	0	1 16	

All Vehicles
1 2 3 4 5 6 Total Vehicles
15 MIN HOUR

	1	2	3	4	5	6	Total Vehicles 15 MIN HOUR	
06:15	2	1	0	2	11	16	32	
06:30	4	0	1	1	28	7	41	
06:45	5	0	0	6	24	8	43	
07:00	4	3 <	0 <	5	9 <	9	30 146 <	
07:15	6	0	0 <	1	9	6	22 136	
07:30	13	0	0	5	6	7	31 126	
07:45	8 <	0	0	9	3	8	28 111	
08:00	2	0	0	4	4	13	23 104	
08:15	5	0	0	6 <	5	13	29 111	
08:30	4	0	0	4	6	8	22 102	
08:45	9	0	0	4	13	16 <	42 116	
09:00	7	1	0	7	14	4	33 126	

Note : Arrows "<" indicate the end time for the peak hour for each turning movement.

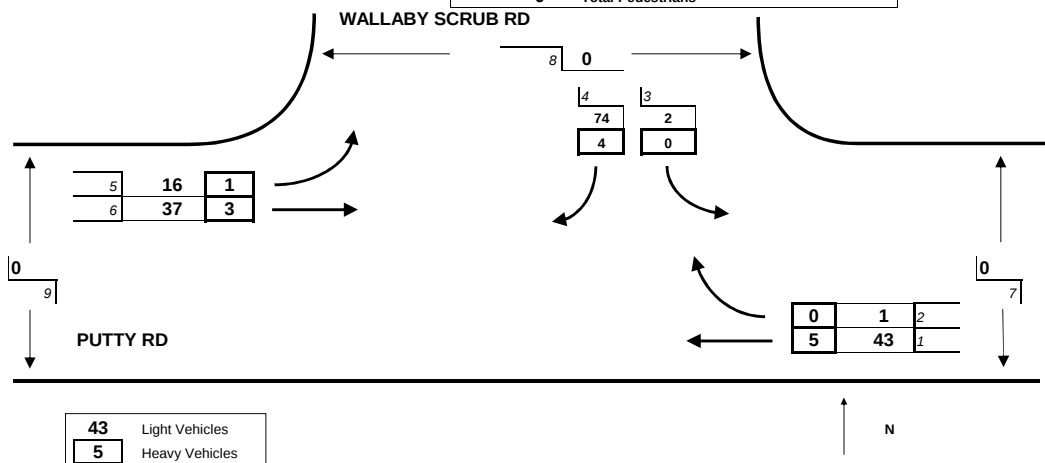
16:15 <<< HOUR ENDING

Thursday

Summary:

PUTTY RD / WALLABY SCRUB RD

101 Total Light Vehicles
13 Total Heavy Vehicles
0 Total Pedestrians



26/5/2011 - PUTTY RD / WALLABY SCRUB RD, BULGA

Light Vehicles							Total Vehicles			Pedestrians		
1	2	3	4	5	6	15 MIN HOUR	7	8	9	7	8	9
15:15	8	0	2	15	0	8	33			0	0	0
15:30	16	0	0	17	3	5	41			0	0	0
15:45	11	1	2	19	5	16	54			0	0	0
16:00	16	0	0 <	20	5	7	48	176 <		0	0	0
16:15	0	0	0	18 <	3	9	30	173		0	0	0
16:30	13	1 <	0	9	6 <	12 <	41	173		0	0	0
16:45	12	1 <	1	14	5 <	10	43	162		0	0	0
17:00	15	0 <	0	7	1	7	30	144		0	0	0
17:15	20 <	0 <	0	19	1	13	53	167		0	0	0
17:30	12	0	0	10	3	4	29	155		0	0	0
17:45	9	0	0	10	8	12	39	151		0	0	0
18:00	4	1	0	7	3	3	18	139		0	0	0

Heavy Vehicles							Total Vehicles		
1	2	3	4	5	6	15 MIN HOUR	7	8	9
15:15	2	0	0	1	0	0	3		
15:30	2	0	0	0	0	1	3		
15:45	1	0	0	2	0	0	3		
16:00	1 <	0	0	0	0	2 <	3	12	
16:15	1	0	0	2	1 <	0 <	4	13 <	
16:30	0	0	0	2 <	0 <	0	2	12	
16:45	1	0	0	0	0 <	1 <	2	11	
17:00	1	0	0	0	0 <	0	1	9	
17:15	2	0	0	1	0	2 <	5	10	
17:30	0	0	0	0	1 <	0 <	1	9	
17:45	0	0	0	0	0 <	1 <	1	8	
18:00	0	0	0	1	0 <	0 <	1	8	

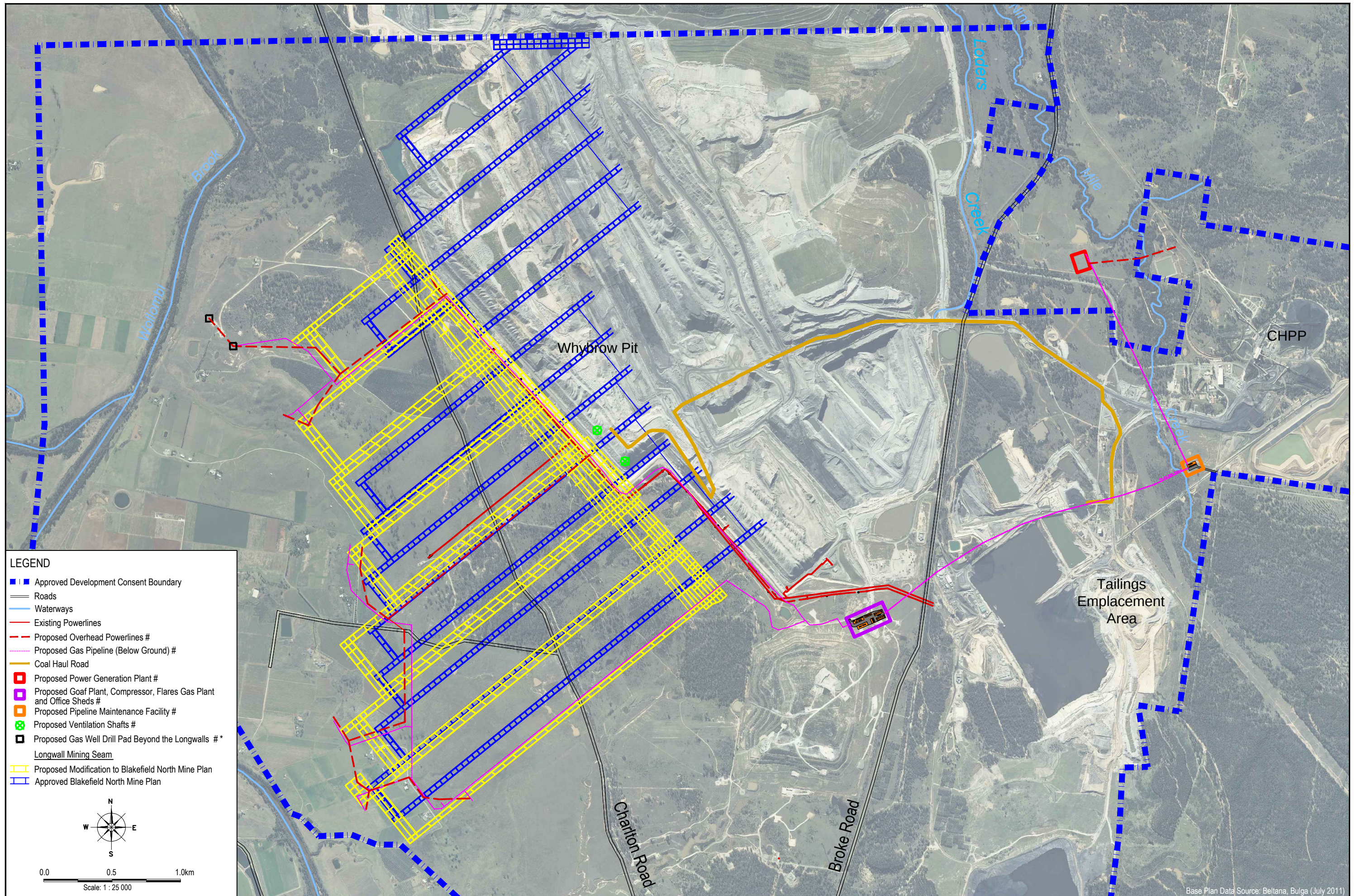
All Vehicles							Total Vehicles		
1	2	3	4	5	6	15 MIN HOUR	7	8	9
15:15	10	0	2	16	0	8	36		
15:30	18	0	0	17	3	6	44		
15:45	12	1	2	21	5	16	57		
16:00	17	0	0 <	20	5	9	51	188 <	
16:15	1	0	0	20 <	4	9	34	186	
16:30	13	1 <	0	11	6 <	12 <	43	185	
16:45	13	1 <	1	14	5 <	11	45	173	
17:00	16	0 <	0	7	1	7	31	153	
17:15	22 <	0 <	0	20	1	15	58	177	
17:30	12	0	0	10	4	4	30	164	
17:45	9	0	0	10	8	13	40	159	
18:00	4	1	0	8	3	3	19	147	

Note : Arrows "<" indicate the end time for the peak hour for each turning movement.



Appendix B

Overview of Project Components



To be printed A3



Appendix C

SIDRA Outputs

MOVEMENT SUMMARY

Site: PM 2012 Charlton Broke -
PROPOSED

Charlton Road / Broke Road PM 2011 Existing

Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broke Road											
4	L	22	5.0	0.024	13.0	LOS A	0.0	0.0	0.00	1.01	69.1
5	T	22	10.0	0.024	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		44	7.5	0.024	6.5	NA	0.0	0.0	0.00	0.50	81.9
North: Broke Road											
11	T	200	9.0	0.110	0.1	LOS A	0.6	4.3	0.14	0.00	92.5
12	R	2	0.0	0.110	12.4	LOS A	0.6	4.3	0.14	1.54	70.9
Approach		202	8.9	0.110	0.3	NA	0.6	4.3	0.14	0.02	92.2
West: Charlton Road											
1	L	4	0.0	0.104	15.5	LOS B	0.4	2.9	0.30	0.77	65.2
3	R	92	7.0	0.104	15.8	LOS B	0.4	2.9	0.30	0.91	66.1
Approach		96	6.7	0.104	15.8	LOS B	0.4	2.9	0.30	0.90	66.1
All Vehicles		342	8.1	0.110	5.4	NA	0.6	4.3	0.16	0.33	82.0

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: AM 2012 Charlton Broke -
PROPOSED

Charlton Road / Broke Road AM 2011 Existing

Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broke Road											
4	L	77	2.0	0.167	12.7	LOS A	0.0	0.0	0.00	1.22	69.1
5	T	234	7.0	0.167	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		311	5.8	0.167	3.2	NA	0.0	0.0	0.00	0.30	90.2
North: Broke Road											
11	T	20	16.0	0.013	1.0	LOS A	0.1	0.6	0.38	0.00	81.0
12	R	2	0.0	0.013	13.2	LOS A	0.1	0.6	0.38	1.16	72.6
Approach		22	14.5	0.013	2.2	NA	0.1	0.6	0.38	0.11	80.1
West: Charlton Road											
1	L	4	0.0	0.019	15.7	LOS B	0.1	0.5	0.37	0.83	65.1
3	R	13	9.0	0.019	16.2	LOS B	0.1	0.5	0.37	0.87	66.1
Approach		17	6.8	0.019	16.1	LOS B	0.1	0.5	0.37	0.86	65.8
All Vehicles		349	6.4	0.167	3.7	NA	0.1	0.6	0.04	0.32	88.0

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: PM 2011 Charlton Broke - Existing

Charlton Road / Broke Road PM 2011 Existing

Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broke Road											
4	L	22	5.0	0.024	13.0	LOS A	0.0	0.0	0.00	1.01	69.1
5	T	22	10.0	0.024	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		44	7.5	0.024	6.5	NA	0.0	0.0	0.00	0.50	81.9
North: Broke Road											
11	T	157	4.0	0.084	0.1	LOS A	0.4	3.2	0.13	0.00	92.6
12	R	2	0.0	0.084	12.4	LOS A	0.4	3.2	0.13	1.54	70.9
Approach		159	3.9	0.084	0.3	NA	0.4	3.2	0.13	0.02	92.2
West: Charlton Road											
1	L	3	0.0	0.087	15.2	LOS B	0.3	2.4	0.27	0.78	65.6
3	R	81	7.0	0.087	15.5	LOS B	0.3	2.4	0.27	0.90	66.5
Approach		84	6.7	0.087	15.5	LOS B	0.3	2.4	0.27	0.89	66.5
All Vehicles		287	5.3	0.087	5.7	NA	0.4	3.2	0.15	0.35	81.5

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

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INTERSECTION

MOVEMENT SUMMARY

Site: AM 2011 Charlton Broke - Existing

Charlton Road / Broke Road AM 2011 Existing

Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broke Road											
4	L	67	2.0	0.139	12.7	LOS A	0.0	0.0	0.00	1.21	69.1
5	T	196	3.0	0.139	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		263	2.7	0.139	3.3	NA	0.0	0.0	0.00	0.31	89.9
North: Broke Road											
11	T	20	16.0	0.012	0.8	LOS A	0.1	0.5	0.34	0.00	82.7
12	R	1	0.0	0.012	13.0	LOS A	0.1	0.5	0.34	1.25	72.6
Approach		21	15.2	0.012	1.4	NA	0.1	0.5	0.34	0.06	82.2
West: Charlton Road											
1	L	4	0.0	0.018	15.4	LOS B	0.1	0.5	0.34	0.83	65.5
3	R	13	9.0	0.018	15.9	LOS B	0.1	0.5	0.34	0.87	66.4
Approach		17	6.8	0.018	15.8	LOS B	0.1	0.5	0.34	0.86	66.2
All Vehicles		301	3.8	0.139	3.8	NA	0.1	0.5	0.04	0.32	87.6

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

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INTERSECTION

MOVEMENT SUMMARY

Site: PM 2012 Beltana Broke -
PROPOSED

Beltana Access / Broke Road PM 2011 Existing
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broke Road											
1	L	5	20.0	0.003	13.5	LOS A	0.0	0.0	0.00	0.75	63.3
2	T	8	50.0	0.006	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		14	38.5	0.006	5.2	NA	0.0	0.0	0.00	0.29	84.3
North: Broke Road											
8	T	156	23.0	0.047	0.1	LOS A	0.3	2.4	0.05	0.00	97.2
9	R	3	33.0	0.047	14.5	LOS A	0.3	2.4	0.10	1.76	64.2
Approach		159	23.2	0.047	0.3	NA	0.3	2.4	0.05	0.04	96.4
West: Beltana Mine Access											
10	L	95	21.0	0.144	13.8	LOS A	0.6	4.8	0.07	0.95	52.2
12	R	27	23.0	0.144	13.7	LOS A	0.6	4.8	0.07	1.00	52.4
Approach		122	21.4	0.144	13.8	LOS A	0.6	4.8	0.07	0.96	52.2
All Vehicles		295	23.2	0.144	6.1	NA	0.6	4.8	0.05	0.43	71.2

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: AM 2012 Beltana Broke -
PROPOSED

Beltana Access / Broke Road AM 2011 Existing
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broke Road											
1	L	53	24.0	0.033	13.7	LOS A	0.0	0.0	0.00	0.75	63.3
2	T	19	50.0	0.013	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		72	30.9	0.033	10.1	NA	0.0	0.0	0.00	0.55	71.8
North: Broke Road											
8	T	64	9.0	0.035	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
9	R	118	24.0	0.108	14.4	LOS A	0.5	3.8	0.22	0.71	61.8
Approach		182	18.7	0.108	9.3	NA	0.5	3.8	0.14	0.46	73.6
West: Beltana Mine Access											
10	L	20	6.0	0.030	12.7	LOS A	0.1	0.8	0.16	0.89	52.2
12	R	7	0.0	0.030	12.0	LOS A	0.1	0.8	0.16	0.96	52.5
Approach		27	4.4	0.030	12.6	LOS A	0.1	0.8	0.16	0.91	52.3
All Vehicles		281	20.4	0.108	9.8	NA	0.5	3.8	0.11	0.53	70.0

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

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INTERSECTION

MOVEMENT SUMMARY

Site: PM 2011 Beltana Broke - Existing

Beltana Access / Broke Road PM 2011 Existing Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broke Road											
1	L	5	20.0	0.003	13.5	LOS A	0.0	0.0	0.00	0.75	63.3
2	T	8	50.0	0.006	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		14	38.5	0.006	5.2	NA	0.0	0.0	0.00	0.29	84.3
North: Broke Road											
8	T	137	23.0	0.042	0.0	LOS A	0.3	2.1	0.05	0.00	97.2
9	R	3	33.0	0.042	14.5	LOS A	0.3	2.1	0.10	1.76	64.2
Approach		140	23.2	0.042	0.4	NA	0.3	2.1	0.05	0.04	96.4
West: Beltana Mine Access											
10	L	7	75.0	0.016	18.0	LOS B	0.1	0.6	0.08	0.94	52.0
12	R	2	50.0	0.016	16.0	LOS B	0.1	0.6	0.08	0.98	52.3
Approach		9	69.4	0.016	17.5	LOS B	0.1	0.6	0.08	0.95	52.1
All Vehicles		163	27.2	0.042	1.8	NA	0.3	2.1	0.05	0.11	90.9

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: AM 2011 Beltana Broke - Existing

Beltana Access / Broke Road AM 2011 Existing Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broke Road											
1	L	18	12.0	0.010	13.1	LOS A	0.0	0.0	0.00	0.75	63.3
2	T	15	50.0	0.010	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		33	29.2	0.010	7.2	NA	0.0	0.0	0.00	0.41	78.3
North: Broke Road											
8	T	63	9.0	0.033	0.0	LOS A	0.1	1.0	0.01	0.00	99.5
9	R	40	13.0	0.033	13.5	LOS A	0.1	1.0	0.12	0.75	62.6
Approach		103	10.6	0.033	5.2	NA	0.1	1.0	0.05	0.29	83.6
West: Beltana Mine Access											
10	L	20	6.0	0.027	12.3	LOS A	0.1	0.7	0.11	0.92	52.6
12	R	7	0.0	0.027	11.6	LOS A	0.1	0.7	0.11	0.96	52.8
Approach		27	4.4	0.027	12.1	LOS A	0.1	0.7	0.11	0.93	52.7
All Vehicles		163	13.2	0.033	6.8	NA	0.1	1.0	0.05	0.42	74.7

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: PM 2012 Bulga Broke -
PROPOSED

Bulga Mine Access / Broke Road PM 2011 Existing
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broke Road											
2	T	127	22.0	0.075	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
3	R	2	50.0	0.003	16.2	LOS B	0.0	0.1	0.27	0.67	61.5
Approach		129	22.5	0.075	0.3	NA	0.0	0.1	0.00	0.01	99.2
East: Bulga Mine Access											
4	L	43	7.0	0.283	15.2	LOS B	1.3	9.7	0.44	0.81	50.5
6	R	129	14.0	0.283	15.5	LOS B	1.3	9.7	0.44	0.95	50.7
Approach		173	12.3	0.283	15.4	LOS B	1.3	9.7	0.44	0.91	50.7
North: Broke Road											
7	L	13	0.0	0.007	12.5	LOS A	0.0	0.0	0.00	0.75	63.3
8	T	112	4.0	0.059	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		124	3.6	0.059	1.3	NA	0.0	0.0	0.00	0.08	95.6
All Vehicles		426	12.8	0.283	6.7	NA	1.3	9.7	0.18	0.40	71.1

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: AM 2012 Bulga Broke -
PROPOSED

Bulga Mine Access / Broke Road AM 2011 Existing
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broke Road											
2	T	77	3.0	0.040	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
3	R	11	40.0	0.017	17.8	LOS B	0.1	0.6	0.48	0.74	58.1
Approach		87	7.5	0.040	2.1	NA	0.1	0.6	0.06	0.09	93.7
East: Bulga Mine Access											
4	L	17	2.0	0.068	14.6	LOS B	0.3	1.8	0.46	0.85	50.7
6	R	25	4.0	0.068	14.6	LOS B	0.3	1.8	0.46	0.93	51.0
Approach		42	3.2	0.068	14.6	LOS B	0.3	1.8	0.46	0.90	50.9
North: Broke Road											
7	L	182	13.0	0.107	13.2	LOS A	0.0	0.0	0.00	0.75	63.3
8	T	164	18.0	0.094	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		346	15.4	0.107	6.9	NA	0.0	0.0	0.00	0.40	79.1
All Vehicles		476	12.8	0.107	6.7	NA	0.3	1.8	0.05	0.38	77.4

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

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MOVEMENT SUMMARY

Site: PM 2011 Bulga Broke - Existing

Bulga Mine Access / Broke Road PM 2011 Existing Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broke Road											
2	T	40	9.0	0.022	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
3	R	2	50.0	0.003	16.2	LOS B	0.0	0.1	0.27	0.67	61.5
Approach		42	11.1	0.022	0.8	NA	0.0	0.1	0.01	0.03	97.7
East: Bulga Mine Access											
4	L	24	0.0	0.133	13.0	LOS A	0.5	4.1	0.33	0.83	51.9
6	R	73	12.0	0.133	13.6	LOS A	0.5	4.1	0.33	0.90	52.2
Approach		97	9.0	0.133	13.5	LOS A	0.5	4.1	0.33	0.88	52.1
North: Broke Road											
7	L	13	0.0	0.007	12.5	LOS A	0.0	0.0	0.00	0.75	63.3
8	T	109	4.0	0.058	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		122	3.6	0.058	1.3	NA	0.0	0.0	0.00	0.08	95.6
All Vehicles		261	6.8	0.133	5.7	NA	0.5	4.1	0.12	0.37	73.2

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: AM 2011 Bulga Broke - Existing

Bulga Mine Access / Broke Road AM 2011 Existing Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broke Road											
2	T	75	3.0	0.039	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
3	R	6	50.0	0.008	16.9	LOS B	0.0	0.3	0.36	0.69	60.4
Approach		81	6.7	0.039	1.3	NA	0.0	0.3	0.03	0.05	96.2
East: Bulga Mine Access											
4	L	17	2.0	0.056	13.2	LOS A	0.2	1.5	0.34	0.83	51.8
6	R	25	4.0	0.056	13.1	LOS A	0.2	1.5	0.34	0.90	52.1
Approach		42	3.2	0.056	13.1	LOS A	0.2	1.5	0.34	0.87	52.0
North: Broke Road											
7	L	111	11.0	0.064	13.1	LOS A	0.0	0.0	0.00	0.75	63.3
8	T	86	9.0	0.047	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		197	10.1	0.064	7.3	NA	0.0	0.0	0.00	0.42	77.8
All Vehicles		320	8.3	0.064	6.6	NA	0.2	1.5	0.05	0.39	76.5

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: PM 2012 Broke Golden Hwy -
PROPOSED

Broke Road / Golden Hwy - Putty Road 2011 AM Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broke Road											
1	L	49	15.0	0.078	15.1	LOS B	0.2	1.7	0.35	0.73	66.7
3	R	213	13.0	1.788	778.0	LOS F	66.1	513.9	1.00	2.98	3.5
Approach		262	13.4	1.788	634.0	LOS F	66.1	513.9	0.88	2.55	4.3
East: Golden Hwy / Putty Road											
4	L	43	10.0	0.025	13.3	LOS A	0.0	0.0	0.00	0.76	69.1
5	T	202	12.0	0.112	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		245	11.6	0.112	2.3	NA	0.0	0.0	0.00	0.13	92.8
West: Golden Hwy / Putty Road											
11	T	721	7.0	0.193	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
12	R	65	7.0	0.060	14.1	LOS A	0.2	1.8	0.35	0.72	67.1
Approach		786	7.0	0.193	1.2	NA	0.2	1.8	0.03	0.06	96.2
All Vehicles		1294	9.2	1.788	129.6	NA	66.1	513.9	0.20	0.58	18.1

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: AM 2012 Broke Golden Hwy -
PROPOSED

Broke Road / Golden Hwy - Putty Road 2011 AM Existing
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broke Road											
1	L	58	8.0	0.255	29.9	LOS C	0.9	6.5	0.85	0.98	48.9
3	R	39	9.0	0.603	103.3	LOS F	2.1	16.1	0.97	1.05	21.5
Approach		97	8.4	0.603	59.4	LOS E	2.1	16.1	0.90	1.01	32.3
East: Golden Hwy / Putty Road											
4	L	340	14.0	0.201	13.6	LOS A	0.0	0.0	0.00	0.76	69.1
5	T	968	6.0	0.516	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		1308	8.1	0.516	3.5	NA	0.0	0.0	0.00	0.20	89.8
West: Golden Hwy / Putty Road											
11	T	146	10.0	0.040	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
12	R	39	8.0	0.173	29.2	LOS C	0.6	4.2	0.86	0.97	49.5
Approach		185	9.6	0.173	6.1	NA	0.6	4.2	0.18	0.20	82.6
All Vehicles		1591	8.3	0.603	7.2	NA	2.1	16.1	0.08	0.25	80.4

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

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SIDRA
INTERSECTION

MOVEMENT SUMMARY

Site: PM 2011 Broke Golden Hwy - Existing

Broke Road / Golden Hwy - Putty Road 2011 AM Existing
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broke Road											
1	L	22	3.0	0.030	13.9	LOS A	0.1	0.6	0.32	0.70	66.9
3	R	97	4.0	0.621	51.7	LOS D	2.9	20.7	0.93	1.08	35.3
Approach		119	3.8	0.621	44.7	LOS D	2.9	20.7	0.81	1.01	38.7
East: Golden Hwy / Putty Road											
4	L	42	10.0	0.024	13.3	LOS A	0.0	0.0	0.00	0.76	69.1
5	T	198	12.0	0.109	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		240	11.6	0.109	2.3	NA	0.0	0.0	0.00	0.13	92.9
West: Golden Hwy / Putty Road											
11	T	707	7.0	0.190	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
12	R	64	7.0	0.059	14.0	LOS A	0.2	1.7	0.35	0.71	67.1
Approach		772	7.0	0.190	1.2	NA	0.2	1.7	0.03	0.06	96.2
All Vehicles		1131	7.7	0.621	6.0	NA	2.9	20.7	0.11	0.18	82.9

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: AM 2011 Broke Golden Hwy - Existing

Broke Road / Golden Hwy - Putty Road 2011 AM Existing
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broke Road											
1	L	56	8.0	0.205	26.1	LOS B	0.7	5.1	0.80	0.96	52.4
3	R	38	9.0	0.443	70.0	LOS E	1.5	11.6	0.94	1.03	28.8
Approach		94	8.4	0.443	43.9	LOS D	1.5	11.6	0.86	0.99	39.4
East: Golden Hwy / Putty Road											
4	L	207	7.0	0.117	13.1	LOS A	0.0	0.0	0.00	0.76	69.1
5	T	949	6.0	0.506	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		1157	6.2	0.506	2.3	NA	0.0	0.0	0.00	0.14	92.7
West: Golden Hwy / Putty Road											
11	T	143	10.0	0.039	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
12	R	24	2.0	0.072	22.5	LOS B	0.2	1.7	0.78	0.95	55.7
Approach		167	8.8	0.072	3.3	NA	0.2	1.7	0.11	0.14	89.9
All Vehicles		1418	6.6	0.506	5.2	NA	1.5	11.6	0.07	0.19	84.9

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

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SIDRA Standard Delay Model used.



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Document Status

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		Name	Signature	Name	Signature	Date
0	P Youman	O Peel	<i>O Peel</i>	P Youman	<i>P Youman</i>	10/02/12
1	P Youman	O Peel	<i>O Peel</i>	P Youman	<i>P Youman</i>	13/02/12
2	K Burns	P Youman	<i>P Youman</i>	P Youman	<i>P Youman</i>	02/08/12
3	K Burns	P Youman	<i>P Youman</i>	P Youman	<i>P Youman</i>	10/08/12