Vickery Coal Project

Environmental Impact Statement

APPENDIX F

ROAD TRANSPORT ASSESSMENT

Resource Strategies

WHITEHAVEN COAL

Vickery Coal Project
Gunnedah Basin, NSW
Road Transport Assessment

transportation planning, design and delivery

12S1283000 26/10/12

GTAconsultants

Vickery Coal Project

Gunnedah Basin, NSW

Road Transport Assessment

Issue: A 26/10/12

Client: Whitehaven Coal Limited
Reference: 12S1283000
GTA Consultants Office: NSW

Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By
A	26/10/12	Final	Penny Dalton	Ken Hollyoak	

GTAconsultants
Certified System Quality ISO 9001
MELBOURNE • SYDNEY • BRISBANE • CANBERRA
ADELAIDE • GOLD COAST • TOWNSVILLE
www.gta.com.au

Table of Contents

Attachments

A: Non-Project Traffic Generation

B: Project Traffic Generation

Tables

Figures

References

Continuation of Boggabri Coal Mine Traffic Impact Assessment, Parsons Brinkerhoff (2010)

Guide to Traffic Generating Developments, NSW Roads and Traffic Authority (2002)

Guide to Traffic Management Part 3: Traffic Studies and Analysis, Austroads (2009)

Highway Capacity Manual, Transportation Research Board (2000)

Maules Creek Coal Project Preliminary Environmental Assessment, Hansen Bailey (2010)

Maules Creek Project Traffic and Transport Impact Assessment, Hyder Consulting, (2010)

Operating Conditions: Specific Permits for Oversize and Over-mass Vehicles and Loads, Roads and Transport Authority (2007)

References (Continued)

Tarrawonga Coal Project Road Transport Assesssment, Halcrow (2011)

Transport Route Construction Management Plan for the East Boggabri Coal Mine, Tarrawonga Coal Pty Ltd (2005)

Vickery Coal Project Road Transport Assesssment Baseline Assessment, Halcrow (2012)

1. Introduction

This report has been prepared on behalf of Whitehaven Coal Limited (Whitehaven) to present the results of an assessment of the road transport implications of a proposal to develop and operate an open cut mining operation known as the Vickery Coal Project (the Project) with run-of-mine (ROM) coal production of up to 4.5 million tonnes per annum (Mtpa) for approximately 30 years.

This study has been undertaken with reference to the road transport components of the Director General's Requirements (DGRs) for this Project, which require:

- *Traffic and Transport – including:*
  - *detailed consideration of alternative forms of coal transport, including use of conveyors to connect with proposed rail loading facilities to the south;*
  - *detailed assessment of the potential impacts of the development on the capacity, safety and efficiency of the local and regional road network, with particular regard to a cumulative traffic impact assessment, condition assessment of the existing network and proposed new infrastructure;*
  - *detailed description of the measures that would be implemented to maintain and/or improve the capacity, efficiency and safety of the road network in the surrounding area over the life of the project;*
  - *detailed design of the proposed new road infrastructure and road alignments; and*
  - *assessment of rail impacts associated with the life of the project, noting that the proposal does not propose increased production capacity at the Whitehaven CHPP.*

The rail components of the DGRs are addressed separately in Section 4 of the Main Report of the Environmental Impact Statement (EIS).

The assessment has been prepared in accordance with the *Guide to Traffic Generating Developments* (New South Wales [NSW] Roads and Traffic Authority [RTA], 2002). It is noted that while the DGRs refer to the *Road Design Guide* (RTA, 1996), NSW Roads and Maritime Services (RMS) (formerly RTA), together with all road agencies across Australia, has agreed to adopt the Austroads guides. The Austroads guides and the Australian Standards referenced in them are now the primary technical references for use within RMS. The Austroads *Guide to Road Design* series and the accompanying RMS Supplements are therefore the relevant reference rather than the *Road Design Guide* (RTA, 1996).

A Baseline Assessment for the Project was prepared by Halcrow (2012), which presents information regarding the existing road environment, such as the road network, traffic volumes, observed growth in background traffic, and road safety. This report should be read in conjunction with the Baseline Assessment report.

The remainder of the report is set out as follows:

- Section 2 describes the proposed Project and its characteristics relating to road transport.
- Section 3 discusses changes expected on the surrounding road system which are unrelated to the Project, including planned or approved developments in the region and background growth in traffic.
- Section 4 discusses the Project's construction and operational traffic generation and road system changes.

- Section 5 presents the future road transport conditions, including traffic volumes, roadway efficiency and safety implications of the Project.
- Section 6 presents the conclusions of the assessment.

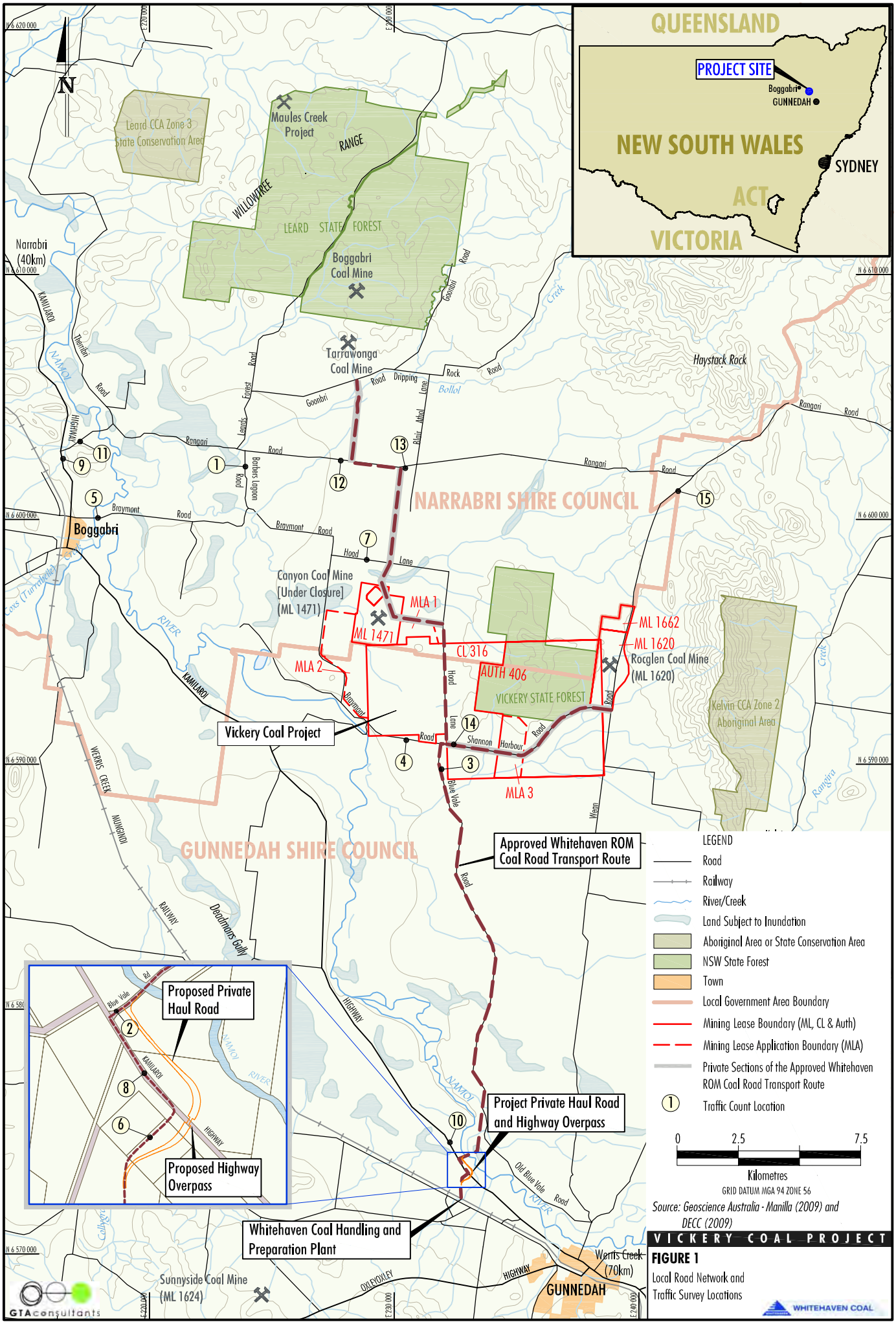
2. Proposed Project Operations

The Project is located in the Gunnedah Basin, approximately 25 kilometres (km) north of Gunnedah and 18 km southeast of Boggabri in NSW. Small scale mining operations were undertaken there during the 1980s and 1990s, and no mining has been conducted on the site since 1998. The location of the Project in its regional context is shown on **Figure 1** of this report.

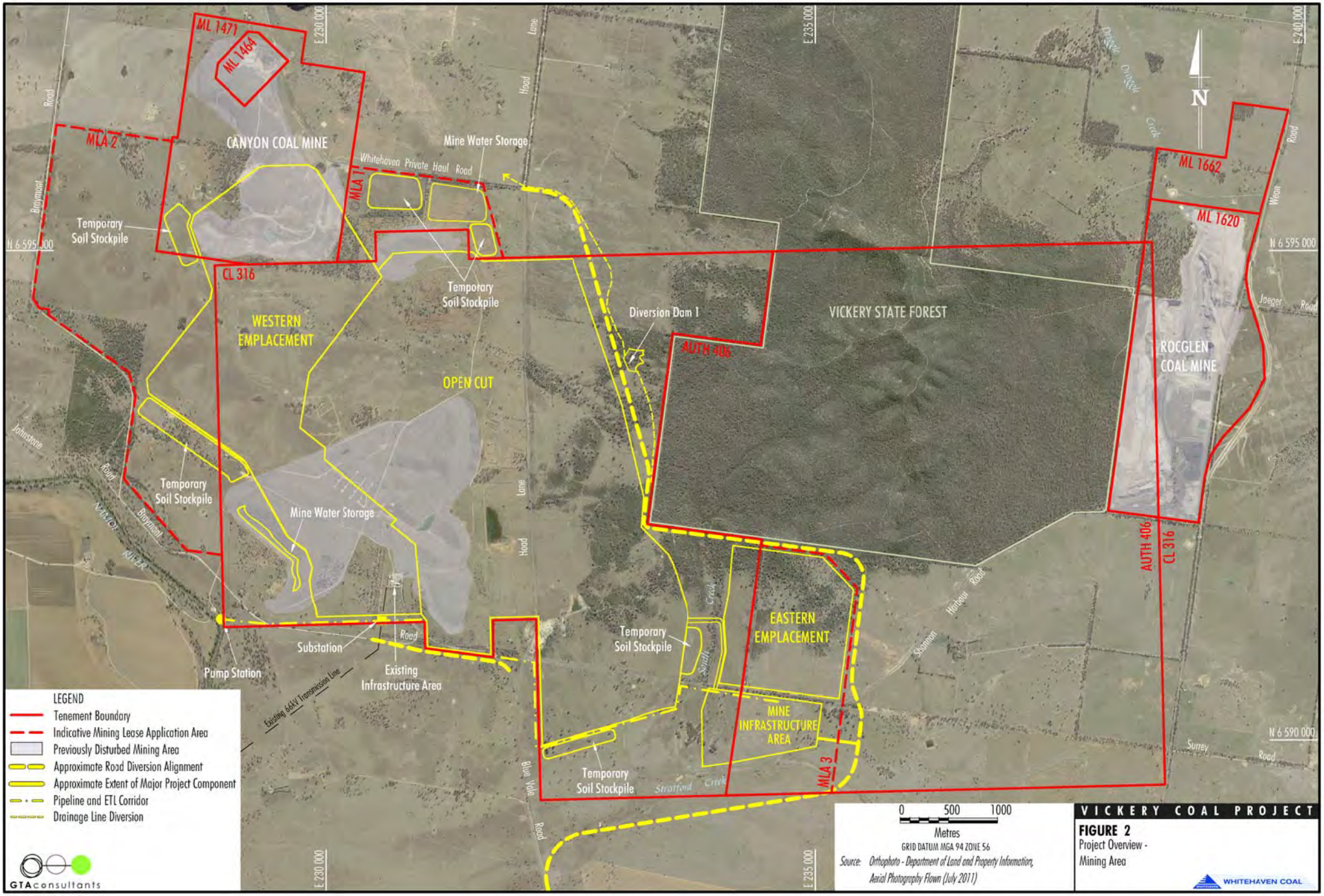
2.1 Description of the Project

The main activities associated with the development of the Project would include (refer to **Figure 2**):

- development and operation of an open cut mine within Coal Lease 316, Authorisation 406, Mining Lease 1471, Mining Lease Application (MLA) 1, MLA 2 and MLA 3;
- use of conventional mining equipment, haul trucks and excavators to remove up to 4.5 Mtpa of ROM coal and approximately 48 million bank cubic metres of waste rock per annum from the planned open cut;
- placement of waste rock (i.e. overburden and interburden/partings) within external emplacements to the west and east of the planned open cut (i.e. Western Emplacement and Eastern Emplacement) and within mined-out voids;
- construction and use of a Mine Infrastructure Area (MIA), including on-site coal crushing, screening and handling facilities to produce sized ROM coal, workshops, offices and services;
- transport of ROM coal by haulage trucks to the Whitehaven Coal Handling and Processing Plant (CHPP) on the outskirts of Gunnedah (approximately 20 km to the south of the Project open cut) for processing;
- use of an on-site mobile crusher for coal crushing and screening of up to 150,000 tonnes (t) of domestic specification coal per annum for direct collection by customers at the Project site;
- use an on-site mobile crusher to produce up to approximately 90,000 cubic metres (m^3) of gravel materials per annum for direct collection by customers at the Project site;
- construction and use of water supply bores, and a surface water extraction point on the bank of the Namoi River and associated pump and pipeline systems;
- construction and use of new dams, sediment basins, channels, dewatering bores and other water management infrastructure required to operate the mine;
- construction and use of new soil stockpile areas, laydown areas and gravel/borrow areas;
- construction of a 66 kilovolt (kV)/11 kV electricity substation and 11 kV electricity transmission line;
- transport of coarse rejects generated at the Whitehaven CHPP via truck to the Project for emplacement within an in-pit emplacement area;
- transport of tailings (i.e. fine rejects) generated within the Whitehaven CHPP via truck to the Project for emplacement within co-disposal storage areas in the open cut and/or disposal in existing off-site licensed facilities (e.g. the Brickworks Pit);
- realignment of sections of Blue Vale Road, Shannon Harbour Road and Hoad Lane to the east and south of the open cut;



WHC-10-03_EIS_App RTA_104C



WHC-10-03_EIS_App RTA_102C

- realignment of the southern extent of Braymont Road to the south of the open cut;
- construction of an approximately 1 km long section of private haul road (including an overpass over the Kamilaroi Highway) between Blue Vale Road and the Whitehaven CHPP (referred to as the private haul road and highway overpass);
- ongoing exploration, monitoring and rehabilitation activities; and
- construction and use of other associated infrastructure, equipment and mine service facilities.

The proposed life of the Project is 30 years.

2.2 Road Transport Aspects of the Project

Key aspects of the Project which relate directly to road transport implications are summarised below.

Existing Road Network

- The existing road network is described in the Baseline Assessment (Halcrow, 2012).

Life of Mine

- The overall life of the mine would be 30 years.

Road System

- Construction of a private haul road and highway overpass.
- Realignment of a section of Blue Vale Road to the east of the Project.
- Realignment of a section of the Rocglen Coal Mine access and haul road (Shannon Harbour Road) to the south of the Project.
- Realignment of the southern extent of Braymont Road to the south of the Project.

Workforce

- Light vehicle traffic generated during Year 1 by approximately 80 full time on-site operational personnel.
- Light vehicle traffic generated after Year 1 by approximately 250 full time on-site operational personnel.
- Light vehicle traffic generated during Year 1 by the construction workforce of approximately 60 personnel.

Deliveries and Visitors

- Deliveries of materials and consumables and visitors associated with the construction and development activities required during the life of the Project.
- Deliveries of consumables and visitors directly resulting from on-going ROM coal production and on-site operational activity.
- Deliveries and visitor hours would be generally during daylight hours, approximately 6.00am to 6.00pm daily.

Coal Haulage

- Transport of up to 4.5 Mtpa of coal from the Project to the Whitehaven CHPP along Blue Vale Road and the private haul road and highway overpass (once constructed), utilising 40 t capacity trucks at an average rate of 335 trucks per day.
- ROM coal road transport would occur up to 24 hours a day, seven days a week.

Coal Reject Haulage

- Transport of coarse rejects generated at the Whitehaven CHPP using ROM coal haulage trucks returning to the Project for emplacement within an in-pit emplacement area.
- Disposal of fine rejects generated at the Whitehaven CHPP within the existing off-site licensed facilities (e.g. the Brickworks Pit) or once existing approvals expire, transported using ROM coal haulage trucks returning to the Project for emplacement within an in-pit emplacement area at the Project.

Gravel and Domestic Coal Sales

- Collection of up to 90,000 m^3 of crushed gravel per annum from the Project by customers, utilising the haul route from Gunnedah, or via Kamilaroi Highway, Rangari Road and the haul route from Boggabri and surrounding areas.
- Collection of up to 150,000 t of domestic coal per annum from the Project by customers, utilising Blue Vale Road from Gunnedah, or via Kamilaroi Highway, Rangari Road and the Tarrawonga Coal Mine haul route when travelling from Boggabri and surrounding areas.
- Gravel and domestic coal haulage would occur between 7.00am and 6.00pm.

2.3 Future Scenarios

The future stages of particular interest to the Project with regard to road transport conditions which have been considered in this assessment are:

- Year 1, during which Project construction activity would peak, and some Project operational traffic and background growth in non-Project traffic would be expected. This scenario includes construction and operational traffic associated with the Boggabri Coal Mine, the Maules Creek Project[1] and the Tarrawonga Coal Project.
- Year 7, during which peak Project operational activity would occur at the same time as increases in background growth in non-Project traffic. This scenario includes operational traffic associated with the Boggabri Coal Mine, Maules Creek Project and the Tarrawonga Coal Project. Within this scenario, two options have been considered, both with and without the proposed private haul road and Kamilaroi Highway overpass.

[1] Although peak construction for the Maules Creek Project is expected to occur in 2012 (Hyder Consulting, 2010), this assessment conservatively assumes that it would occur during Year 1 (2013) of the Project, i.e., during peak Project construction.

- Year 17, during which Project operational activity would occur at the same time as additional background growth in non-Project traffic. This scenario would also include operational traffic associated with the Boggabri Coal Mine, Maules Creek Project, and the Tarrawonga Coal Project. Within this scenario, two options have been considered, both with and without the proposed private haul road and Kamilaroi Highway overpass.

Traffic movements during the decommissioning stage of the Project would be significantly lower than the construction and operational stages of the Project identified above. The potential road transport impacts associated with the decommissioning stages of the Project would therefore be less than the construction and operational stages of the Project (assessed in this section) and have not been considered further.

By way of comparison, the impacts of transporting coal from the Project to the Whitehaven CHPP via a non-road transport method have also been reviewed for the Year 7 and Year 17 scenarios above.

It is noted that a vehicle trip is a one way movement, so a vehicle approaching and departing a site generates two vehicle trips.

3. Non-Project Traffic Changes

The cumulative impacts of the Project together with any other planned or approved developments in the region need to be considered. These developments and their traffic generation characteristics are described in this section, together with background growth in traffic unrelated to the Project or other developments.

3.1 Boggabri Coal Mine

The Boggabri Coal Mine is located to the north of the Project. In October 2009, Boggabri Coal Pty Limited submitted a Project Application to the NSW Department of Planning and Infrastructure for the continuation of its mining operations for a further 21 years. This application was approved by the Department of Planning and Infrastructure in July 2012.

A traffic impact assessment for the Boggabri Coal Mine Environmental Assessment (Parsons Brinckerhoff, 2010) estimated that the Boggabri Coal Mine would result in the following additional vehicle movements:

- additional 353 operational employees would generate approximately 527 vehicle trips per day during peak production (2016); and
- 150 construction employees would generate approximately 224 vehicle trips per day during peak construction (2016).

Given the above, it has been assumed that the Boggabri Coal Mine would generate an additional 751 trips per day during its peak construction (Year 2016) and approximately 527 trips per day thereafter. The full increase in construction and operational employees would not occur immediately however, and it is assumed that in Year 1 of the Project, 50% of the peak construction and operational workforce would be on the Boggabri Coal Mine site, i.e., 378 vehicle trips per day.

The Boggabri Coal Mine has its vehicular access off Leard Forest Road, and a section of Leard Forest Road would be closed to through traffic in the future. The Project Approval for the Boggabri Coal Project requires the provision of a similar level of road access from Maules Creek to Manilla Road compared to the existing Leard Forest Road following its closure. The potential additional daily traffic generated by the Boggabri Coal Mine on the surrounding road system is presented in Attachment A.

The proposed Boggabri Coal Mine Rail Line and Loop would branch to the east from the Werris Creek Moree Railway about 5 km to the north of Boggabri. The rail spur would include a rail bridge and overpass across the Namoi River floodplain, Therribri Road and the Kamilaroi Highway. Therefore, there would be no interaction between rail and road traffic where the spur line is proposed to cross Kamilaroi Highway approximately 5 km to the north of the intersection of Rangari Road with Kamilaroi Highway.

3.2 Maules Creek Project

Aston Coal 2 Pty Ltd lodged a Project Application to the NSW Department of Planning and Infrastructure for the Maules Creek Project in August 2010. The Maules Creek Project would include the development of surface infrastructure and open cut mining activities for a period of 21 years (Hansen Bailey, 2010) and is located approximately 20 km to the north-northwest of the Project. This has been reviewed by the Planning Assessment Commission and is currently being assessed by the Department of Planning and Infrastructure.

Hyder Consulting (2010) prepared a traffic and transport impact assessment as part of the Maules Creek Project Environmental Assessment. That assessment estimated that the Maules Creek Project would result in the following additional vehicle movements:

- 470 operational employees would generate approximately 78 vehicle trips per day during peak production (2020);
- 340 construction employees would generate approximately 128 vehicle trips per day during peak construction (2012); and
- heavy vehicles would generate approximately 66 vehicle trips per day during peak construction (2012).

Leards Forest Road would be used initially to access the Maules Creek Project and then Therribri Road would be utilised once the site access road has been completed. Light vehicles (including employee shuttle buses) would obtain access to the site via Kamilaroi Highway, Rangari Road, Therribri Road/Leards Forest Road. Heavy vehicles would access the site via Blue Vale Road, Braymont Road, Barbers Lagoon, Rangari Road and Therribri Road/Leards Forest Road (Hyder Consulting, 2010).

The additional traffic generated by the Maules Creek Project for the future scenarios relevant to the Project is summarised in Attachment A. The forecasts conservatively assume that the peak construction period for the Maules Creek Project would coincide with Year 1 of the Project.

3.3 Tarrawonga Coal Project

The Tarrawonga Coal Mine is owned and operated by Whitehaven and is located approximately 10 km to the north of the Project. It utilises the approved haul route past the Project (referred to as the approved Whitehaven ROM coal road transport route) to transport coal between the Tarrawonga Coal Mine and the Whitehaven CHPP (**Figure 1**). An application has been lodged to continue and extend operations at the Tarrawonga Coal Mine to 2029, and to increase annual ROM coal production from 2.0 Mtpa up to 3.0 Mtpa (the Tarrawonga Coal Project), with transport of ROM coal being transferred from the approved haul route to an internal haul road link to the Boggabri Coal Mine Infrastructure Facilities. This transfer is expected to occur in 2013. Following this, no coal will be hauled by road from the Tarrawonga Coal Mine to the Whitehaven CHPP.

The road transport implications of the Tarrawonga Coal Project were assessed by Halcrow (2011), and the additional traffic expected to be generated by the Tarrawonga Coal Project on the surrounding road system is summarised in Attachment A.

The Tarrawonga Project would result in decreases in traffic on the approved haul route between the Tarrawonga Coal Mine and Whitehaven CHPP after 2013, when haulage of coal would no longer occur on the approved haul route. In addition, changes planned to routes used by other heavy vehicles associated with the Tarrawonga Coal Mine would result in minor decreases in traffic volumes on some surrounding roads.

3.4 Rocglen Extension Project

The Rocglen Coal Mine is owned and operated by Whitehaven and is located approximately 5 km to the east of the Project. It utilises the approved Whitehaven ROM coal road transport route to transport coal between the mine and the Whitehaven CHPP (**Figure 1**). The Rocglen Coal Extension Project was approved in 2011, and extended the mine life until 2022. No change to the previously approved ROM coal production rate of 1.5 Mtpa was approved as part of the Rocglen Coal Extension Project.

Traffic volumes associated with the Rocglen Extension Project have been conservatively assumed to continue for the life of the Project.

3.5 Vickery South Project

The Vickery South Project is an exploration project located to the immediate south of the Project and is owned by Whitehaven. No project application is currently proposed for the Vickery South Project and as such no consideration of traffic associated with the Vickery South Project has been included in this assessment.

3.6 Background Traffic Growth

The historic Annual Average Daily Traffic data for Kamilaroi Highway (Halcrow, 2012) indicate that daily traffic volumes have tended to fluctuate without resulting in significant increases or decreases over time. Notwithstanding, and for the purpose of this assessment, a background growth in daily traffic of 1.0% per annum has been assumed. This background growth is assumed to occur on all roads in the vicinity of the Project, which is considered to result in conservatively high estimates of future traffic volumes. The growth rate has been applied to the surveyed traffic, excluding the traffic associated with the existing operations at the Tarrawonga Coal Mine (Halcrow, 2011).

The assumed increases in average weekday traffic volumes on the surrounding roads resulting from general background increases in traffic unrelated to the individual projects discussed above are presented in Attachment A. These assume that all surveyed volumes are notionally for the year 2010, although five were collected during 2011 (Halcrow, 2012), thus growth to the future scenario years are considered to be slightly overstated at some locations.

3.7 Total Non-Project Traffic Changes

Table 3.1 summarises how traffic is expected to change over time without the Project, and includes background growth, traffic to and from the Boggabri Coal Mine, Maules Creek Project, Rocglen Extension Project and Tarrawonga Coal Project. These forecasts are based upon those developed by Halcrow (2011) and the volumes presented in the Baseline Assessment (Halcrow, 2012). The locations of the data are shown on **Figure 1**.

Table 3.1: Average Weekday Daily Traffic – No Project (vehicles/day)

Site	Road and Location	Existing	Year 2013	Year 2019	Year 2029
1	Barbers Lagoon Rd south of Rangari Rd	51	128	64	68
2	Blue Vale Rd northeast of Kamilaroi Hwy	1,515	1,743	1,347	1,452
3	Blue Vale Rd south of Shannon Harbour Rd	480	677	222	222
4	Braymont Rd west of Blue Vale Rd	273	282	298	325
5	Braymont Rd at Namoi River Bridge	122	131	137	149
6	CHPP Access Rd	673	684	394	430
7	Hoad Lane west of Haul Route	49	51	54	59
8	Kamilaroi Hwy btwn Blue Vale Rd and CHPP	3,188	3,468	3,174	3,445
9	Kamilaroi Hwy south of Rangari Rd	2,028	2,430	2,540	2,739
10	Kamilaroi Hwy north of Blue Vale Rd	2,488	2,749	2,974	3,223
11	Rangari Rd east of Kamilaroi Hwy	369	847	897	928
12	Rangari Rd west of Haul Route	637	768	849	907
13	Rangari Rd east of Haul Route	67	150	183	189
14	Shannon Harbour Rd east of Blue Vale Rd	217	224	237	258
15	Wean Rd south of Rangari Rd	49	51	54	59

Forecasts include background growth, Tarrawonga Coal Project, Maules Creek Project and Boggabri Coal Mine Project construction and operational traffic predictions.

Table 3.1 demonstrates that significant changes to traffic can be expected in the region in the future. The transfer of Tarrawonga Coal Mine export coal from the approved haul route to an internal haul route to Boggabri would result in decreases in traffic volumes on the haul route from the existing volumes.

Table 3.2 presents the existing and forecast peak hourly traffic volumes at three key locations on Blue Vale Road and Kamilaroi Highway with the combined influences of background traffic growth, and traffic to and from the Boggabri Coal Mine, Maules Creek Project and Tarrawonga Coal Project. The hour/s during which the peak is expected to occur is also noted.

Table 3.2: Average Weekday Peak Hour Traffic – No Project (vehicles/hour)

Site	Road and Location	Existing	Year 2013	Year 2019	Year 2029
2	Blue Vale Rd northeast of Kamilaroi Hwy	114 3pm-4pm	131 3pm-4pm	97 3pm-4pm	111 7am-8am
3	Blue Vale Rd south of Shannon Harbour Rd	43 6am-7am 4pm-5pm	65 6am-7am	52 6am-7am	52 6am-7am
8	Kamilaroi Hwy btwn Blue Vale Rd and CHPP	244 3pm-4pm	265 3pm-4pm	239 2pm-3pm 3pm-4pm	260 3pm-4pm

Forecasts include background growth, Tarrawonga Coal Project, Maules Creek Project and Boggabri Coal Mine Project construction and operational traffic predictions.

Table 3.2 indicates that in the longer term, the peak hourly traffic volumes on Blue Vale Road and Kamilaroi Highway would be expected to remain similar to the current levels. This is a result of the increases in traffic associated with the various developments and background growth being offset by a reduction in coal haulage trucks on the route between the Tarrawonga Coal Mine and the Whitehaven CHPP after 2013.

4. Project Traffic Characteristics

Likely sources and characteristics of traffic generated by the Project are described in this section, together with a description of road system changes proposed as part of the Project and their implications for road transport conditions. The traffic generation and distribution forecasts for the Project draw on the characteristics of the nearby Tarrawonga Coal Mine, which is considered to be a comparable development for the purpose of this assessment. Data provided by Tarrawonga Coal Pty Ltd (TCPL) relating to the Tarrawonga Coal Mine has therefore been applied to the proposed Project.

4.1 Private Haul Road and Kamilaroi Highway Overpass

The Project proposes construction of a private haul road and Kamilaroi Highway overpass to link Blue Vale Road and the Whitehaven CHPP (**Figure 3**). The private haul road would intersect with Blue Vale Road at a priority controlled tee intersection east of Kamilaroi Highway, extend approximately parallel to Kamilaroi Highway before crossing Kamilaroi Highway at an overpass adjacent and to the south of the existing CHPP access road. A new private intersection would be constructed within the Whitehaven CHPP site. The existing at grade intersections of Kamilaroi Highway with Blue Vale Road and the CHPP access road would be retained in their current configurations.

The private haul road and Kamilaroi Highway overpass would remove all ROM coal haulage trucks travelling between the Project and the Whitehaven CHPP from the Kamilaroi Highway and its intersections with Blue Vale Road and the CHPP access road.

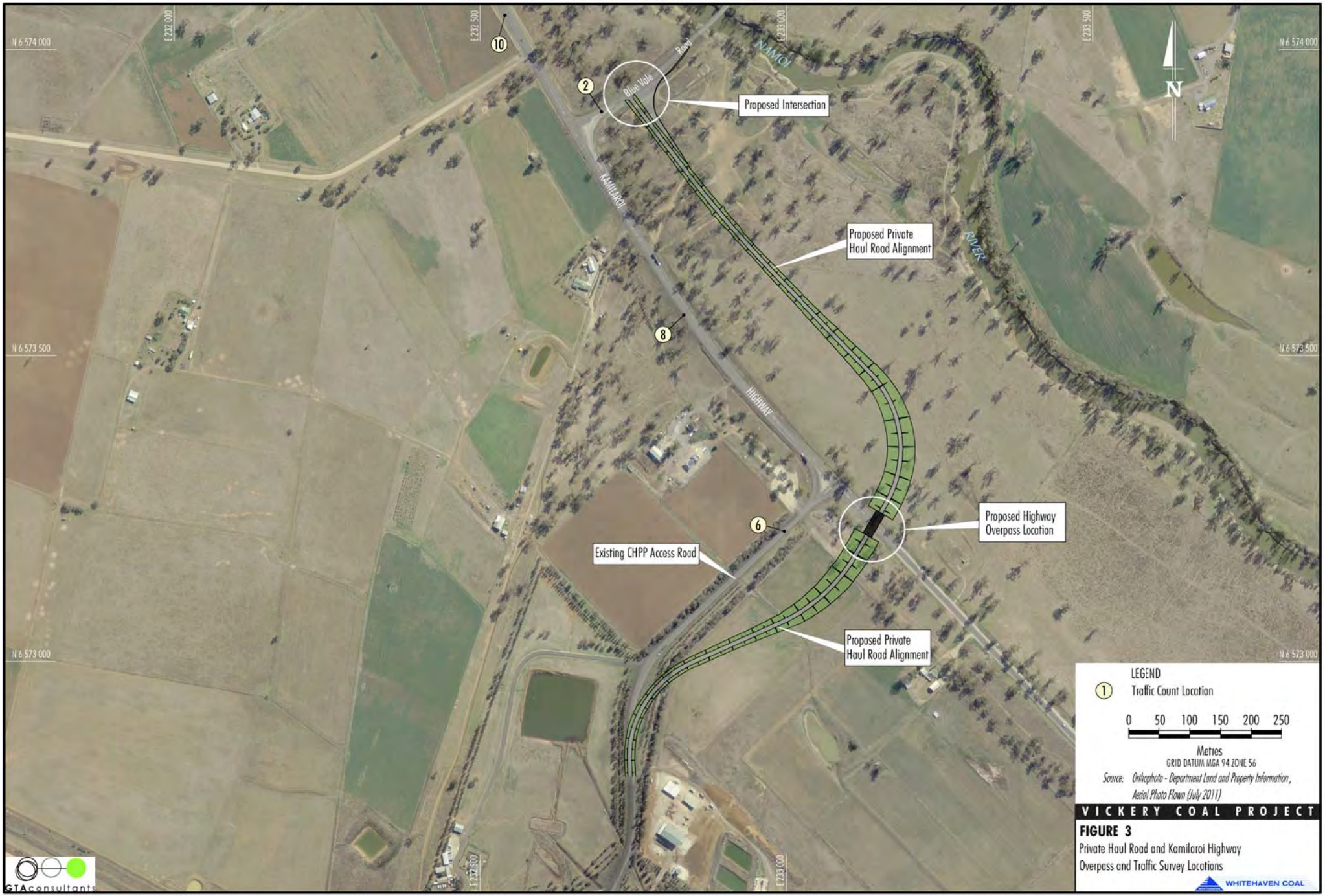
The ROM coal haulage route between the Project and CHPP is therefore defined as the Project access road, Blue Vale Road, and the private haul road and Kamilaroi Highway overpass into the Whitehaven CHPP. Empty ROM coal haulage trucks would return from the Whitehaven CHPP to the Project along the same route.

The private haul road and Kamilaroi Highway overpass is not anticipated to cater for other vehicles associated with the Project, such as employees, deliveries, visitors, gravel and domestic coal collection. Vehicles travelling between the Project and Gunnedah would use Kamilaroi Highway and Blue Vale Road via the existing at grade intersection. Some Whitehaven employee movements between the Whitehaven CHPP and the Project may use the private haul road and Kamilaroi Highway overpass, but this volume is anticipated to be insignificant.

The construction of the private haul road and highway overpass would commence as soon as land title negotiations for the relevant lots are settled, and all relevant approvals have been obtained. It is expected to be constructed during the first years of the Project, however additional scenarios have been assessed based on the unlikely event that the private haul road and Kamilaroi Highway overpass is not constructed until later in the mine life.

4.2 Construction Traffic

The construction phase of the Project would occur during Year 1. All construction activities would generally be undertaken during daytime hours up to seven days a week.



WHC-10-03_EIS_App RTA_103C

4.2.1 Construction Workforce

The Project is expected to attract approximately 60 full time contractors during the peak construction phase. Based on observations from neighbouring mines, car pooling for construction employees is anticipated to be limited, and construction activity would typically occur between 7.00am and 6.00pm. On this basis, the construction workforce would be expected to generate up to 120 vehicle trips per day.

It is assumed that the travel routes of the construction employees would be similar to those of the existing workforce at the Tarrawonga Coal Mine (Halcrow, 2011), as below:

- Gunnedah 54%;
- Boggabri 21%;
- Narrabri 13%;
- Manilla 9%; and
- Other 3%.

4.2.2 Construction Deliveries and Visitors

The Project is expected to generate an increase in delivery and visitor vehicles each day associated with construction activity. It is expected that as a direct result of construction activity, 10 visitor (light) vehicles and 5 delivery (heavy) vehicles would access the site on a typical day. This is equivalent to 20 light vehicle trips per day and 10 heavy vehicle trips per day. These trips would be spread evenly across the day between 7.00am and 6.00pm. Delivery and visitor vehicle trips are assumed to approach and depart the Project from and to the following locations, based on TCPL's nearby operations at Tarrawonga Coal Mine:

- Gunnedah 80%;
- Boggabri 10%; and
- Narrabri 10%.

4.3 Operational Traffic

The Project would generate operational traffic as a result of:

- the workforce travelling to and from the site at the start and end of shifts;
- deliveries and visitors; and
- transport of ROM coal from the Project to the Whitehaven CHPP.

In addition, after Year 1, domestic specification coal and gravel would be sold direct to customers, who arrange for collection from the site (Sections 4.3.4 and 4.3.5). These vehicles would not be operated by Whitehaven or its contractors, and therefore do not form part of Whitehaven's operations with regard to the Project. They are however included in this assessment as they would contribute to future traffic conditions on the road system.

Changes to traffic conditions would also result from the proposed realignment of a section of Blue Vale Road, realignment of a section of Shannon Harbour Road (the Rocglen Coal Mine access and haul road), and construction of the private haul road between Blue Vale Road and the Whitehaven CHPP, including an overpass over Kamilaroi Highway.

4.3.1 Operational Workforce

The Project's operational workforce would function on a shift basis, and employees would typically travel to and from the Project by car. The operational workforce is expected to be 80 employees in Year 1, increasing to approximately 250 employees thereafter. At the nearby Tarrawonga Coal Mine, the typical occupancy of vehicles carrying employees to and from work is 1.2 employees per vehicle (Halcrow, 2011), and it is assumed that the employee travel characteristics of the Project would be similar. The expected shift times are:

- Administration personnel – 7.00 am to 5.00 pm weekdays, approximately 20% of employees;
- Mining Operations (Day) Personnel – 6.30 am to 7.00 pm, approximately 40% of employees; and
- Mining Operations (Night) Personnel – 6.30 pm to 7.00 am, approximately 40% of employees.

The workforce would be primarily drawn from the local area around Gunnedah, Boggabri, Manilla and Narrabri. The distribution of Project operational employees is assumed to be similar to that of the existing employees at the Tarrawonga Coal Mine (refer to Section 4.2.1).

4.3.2 Operational Deliveries and Visitors

A review of the site log book at the Tarrawonga Coal Mine for a typical week in late 2010 indicates that there were 233 deliveries and visitors during the week, of which 15% (35 deliveries) were made by heavy vehicles. The heavy vehicles included rigid trucks, semi-trailers and B-doubles.

The Project's maximum ROM coal production rate of 4.5 Mtpa would be greater than the Tarrawonga Coal Mine's maximum production rate of 2.0 Mtpa, thus it is expected that the Project would generate a greater number of delivery and visitor trips than the Tarrawonga Coal Mine. For the purpose of this assessment, it is assumed that the Project would generate delivery and visitor trips at the same rate as the Tarrawonga Coal Mine, adjusted pro rata for the increased maximum production rate at the Project. This is considered to be a conservatively high estimate of such trips.

During Year 1 while operations ramp-up, delivery and visitor traffic would be lower than expected at the maximum production rate. For the purpose of this assessment, it is assumed that during Year 1, operational delivery and visitor trips would be approximately one-third of those expected at maximum operational activity. This is consistent with the Year 1 operational workforce being approximately one-third of the maximum operational workforce. On this basis, the Project is estimated to attract 168 deliveries and visitors per week during Year 1, and 524 deliveries and visitors per week after Year 1.

It is conservatively estimated that 20% of the weekly delivery and visitor trips may occur on the average weekday. In reality, these would be spread throughout the week, including weekend days, with day-to-day random variations. Deliveries and visitors are therefore assumed to generate:

- 58 light vehicle trips per day and 10 heavy vehicle trips per day during Year 1; and
- 178 light vehicle trips per day and 32 heavy vehicle trips per day after Year 1.

These trips would be spread evenly throughout the day, generally between 6.00am and 6.00pm, and approach and depart the Project from and to the same locations discussed in Section 4.2.2 for construction traffic, which is based on TCPL's nearby operations at Tarrawonga Coal Mine.

4.3.3 ROM Coal Haulage

The Project would produce coal that is transported from the site to the Whitehaven CHPP located in Gunnedah. The maximum production and transport rate for coal is proposed to be 4.5 Mtpa. ROM coal haulage would occur 24 hours per day and seven days per week, over approximately 48 weeks per year. The coal would be transported by road from the Project to the Whitehaven CHPP, using the private haul road and Kamilaroi Highway overpass (once constructed), which is a combination of public and private roads. Up to 42 trucks each of 42 t capacity would be used for this task.

The Project would generate an average of 335 truck departures per day, which would be matched by the return of empty vehicles. ROM coal haulage would therefore generate an average of 670 vehicle trips per day.

By way of comparison, the impacts of transporting ROM coal from the Project to the Whitehaven CHPP via a non-road haulage method have been reviewed for the operational phase of the Project in Years 7 and 17. It is likely that an alternative coal haulage scheme would alter the construction traffic associated with the Project from that assumed in Section 4.2, as transport infrastructure would need to be constructed to transport the coal, and the private haul road and Kamilaroi Highway overpass would not need to be constructed. For the purpose of this assessment of the general implications of an alternative coal haulage method, however, it has been assumed that all construction and operational vehicle movements associated with the Project would occur as described above, with the exception of the truck movements associated with the transport of ROM coal from the Project to the Whitehaven CHPP and the return of empty trucks.

4.3.4 Domestic Coal Haulage

Domestic coal would be sold direct from the Project site to customers, who arrange collection from the site. At the maximum transport rate for domestic coal, i.e., 150,000 tonnes per annum, it is expected that some 12 trucks would collect coal from the Project per coal haulage day. This would generate 24 truck trips on the road network. The truck trips would be spread evenly throughout the day, with dispatch being between 7.00am and 6.00pm.

The distribution of domestic coal collection trucks is expected to be similar to that of the nearby Tarrawonga Coal Mine, which is typically:

- Sydney 36%;
- Tamworth 35%;
- Gunnedah 16%; and
- Narrabri 13%.

It is noted that although the movements associated with the collection of domestic coal would be related to the operation of the Project, these trucks would not be operated by Whitehaven or its contractors. They therefore do not form part of Whitehaven's operations with regard to the Project.

4.3.5 Gravel Haulage

The Vickery Coal Mine would allow for the collection of up to 90,000 m^3 of crushed gravel per annum, utilising the Blue Vale Road from Gunnedah or via public roads from Boggabri, i.e., Kamilaroi Highway, Rangari Road and the Whitehaven ROM coal road transport route.

Gravel sales are expected to generate 22 trucks per day (44 heavy vehicle trips per day), with 90 percent being to/from Narrabri, and 10 percent to/from Gunnedah. The truck trips would be spread evenly throughout the day, with dispatch being between 7.00am and 6.00pm.

It is noted that although the movements associated with the collection of crushed gravel would be related to the operations of the Project, these trucks would not be operated by Whitehaven or its contractors. They therefore do not form part of Whitehaven's operations with regard to the Project.

4.4 Traffic Routes

Some components of the Project's traffic would make use of the approved haul route currently being used by trucks hauling ROM coal from the Tarrawonga Coal Mine to the Whitehaven CHPP. The approved haul route (**Figure 1**) includes a combination of public and private roads and provides the shortest and least trafficked route between the Tarrawonga Coal Mine and Whitehaven CHPP. The haul route was constructed in 2006 in accordance with the approved *Transport Route Construction Management Plan for the East Boggabri Coal Mine* (TCPL, 2005).

Project traffic to and from the north and west would use the private road portion of the approved haul route adjacent to the Canyon Coal Mine site north of the Project. This is referred to as the Whitehaven ROM coal road transport route in the following descriptions of travel routes.

4.4.1 Construction Traffic Routes

The construction facilities area would be located on the southern side of Shannon Harbour Road between Blue Vale Road and the Rocglen Coal Mine Access. Vehicles travelling to and from the construction area in Year 1 are assumed to use the following routes:

- to/from Gunnedah – Kamilaroi Highway, Blue Vale Road, Shannon Harbour Road;
- to/from Boggabri – Braymont Road, Hoad Lane, Whitehaven ROM coal road transport route, Shannon Harbour Road;
- to/from Narrabri – Rangari Road, Whitehaven ROM coal road transport route, Shannon Harbour Road; and
- to/from Manilla – Rangari Road, Wean Road, Riordan Road, Shannon Harbour Road.

4.4.2 Operational Traffic Routes

While the MIA is constructed during Year 1, vehicular access to the operational component of the Project (located at the Existing Infrastructure Area [**Figure 2**]) would be via an access road from Braymont Road. Vehicles travelling to the operational area in Year 1 are assumed to use the following routes:

- to/from Gunnedah – Kamilaroi Highway, Blue Vale Road, Braymont Road;
- to/from Boggabri – Braymont Road, Hoad Lane, Whitehaven ROM coal road transport route, Braymont Road;
- to/from Narrabri – Rangari Road, Whitehaven ROM coal road transport route, Braymont Road; and
- to/from Manilla – Rangari Road, Wean Road, Riordan Road, Shannon Harbour Road, Braymont Road.

Once constructed, light and delivery vehicles would access the MIA via a new access road (MIA Access Road) at the intersection connecting the Shannon Harbour Road with the Blue Vale Road Diversion. ROM coal haulage trucks would have dedicated access to the MIA via the ROM Coal Haulage Truck Access Road off the Blue Vale Road Diversion, to the south of Shannon Harbour Road (**Figure 4**). Project vehicles (excluding ROM coal haulage vehicles) travelling to the MIA after Year 1 are assumed to use the following routes:

- to/from Gunnedah – Kamilaroi Highway, Blue Vale Road, Blue Vale Road Diversion, MIA Access Road;
- to/from Boggabri – Braymont Road, Hoad Lane, Whitehaven ROM coal road transport route, Blue Vale Road Diversion, MIA Access Road;
- to/from Narrabri – Rangari Road, Whitehaven ROM coal road transport route, Blue Vale Road Diversion, MIA Access Road; and
- to/from Manilla – Rangari Road, Wean Road, Riordan Road, Shannon Harbour Road, MIA Access Road.

It is anticipated that haulage of ROM coal from the Project to the Whitehaven CHPP would commence in Year 2 of the Project. Three ROM coal transport options have been considered:

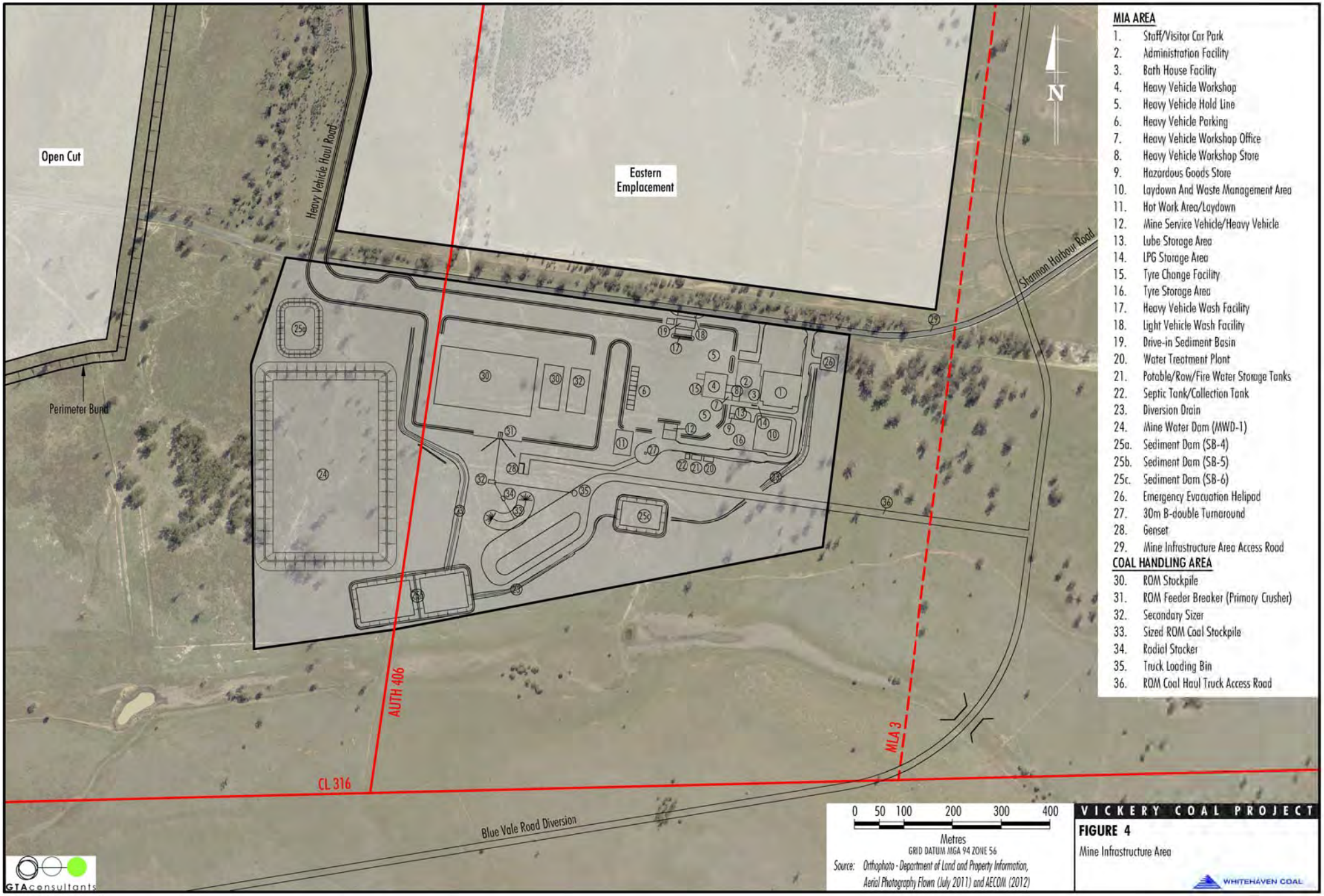
- Road haulage via the southern portion of the existing approved Whitehaven ROM coal road transport route: ROM Coal Haulage Truck Access Road, Blue Vale Road Diversion, Blue Vale Road, Kamilaroi Highway, CHPP Access Road.
- Road haulage via approved Whitehaven ROM coal road transport route and private haul road and Kamilaroi Highway overpass: ROM Coal Haulage Truck Access Road, Blue Vale Road Diversion, Blue Vale Road, private haul road and Kamilaroi Highway overpass, CHPP Access Road.
- Non-road based haulage: ROM coal to be transported to the Whitehaven CHPP by conveyor or similar non-road based method.

Vehicles transporting gravel and domestic specification coal would use the following routes to access the Project:

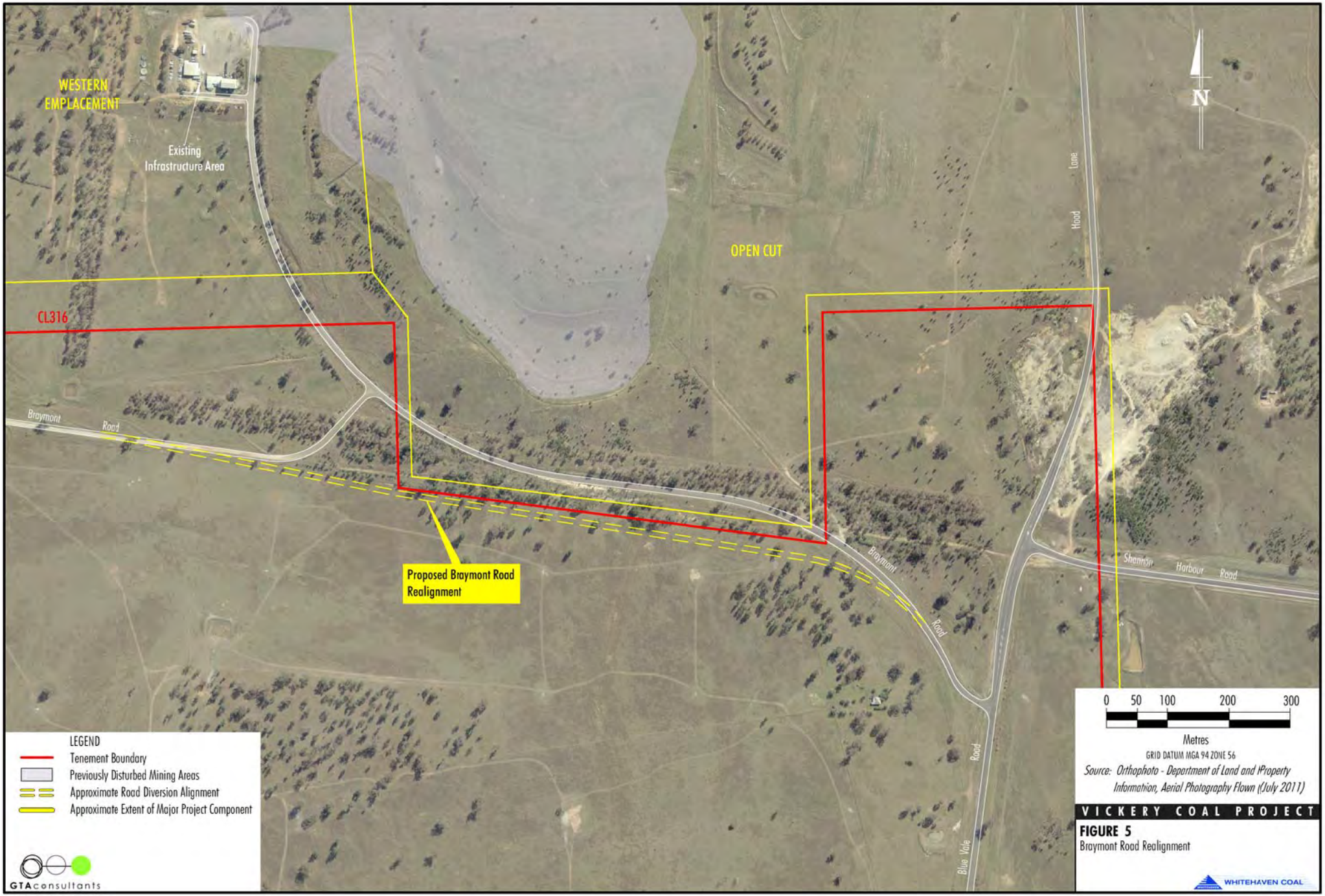
- To/from Gunnedah – Kamilaroi Highway, Blue Vale Road, Blue Vale Road Diversion, ROM Coal Haulage Truck Access Road.
- To/from Narrabri – Kamilaroi Highway, Rangari Road, Whitehaven ROM coal road transport route, Blue Vale Road Diversion, ROM Coal Haulage Truck Access Road.

4.5 Braymont Road Realignment

A small realignment of the southern section of Braymont Road would be required to allow the open cut to reach full extent. According to historical aerial photographs and cadastral information, it appears that the southern extent of Braymont Road has been realigned sometime in the 1990s, likely associated with the historical mining activities at the Vickery Coal Mine. Prior to the open cut impacting on the existing Braymont Road alignment, it would be realigned to the historical road corridor (**Figure 5**).



WHC-10-03_EIS_App RTA_106A



WHC-10-03_EIS_App RTA_105B

4.6 Total Project Traffic Generation and Distribution

Details of the components of the Project traffic as discussed in this section are presented in Attachment B of this report.

Table 4.1 summarises the total Project traffic generation for the future scenarios described in Section 2.3.

Table 4.1: Average Weekday Project Traffic Generation (vehicles/day)

Vehicle Type	Year 1	Years 7 and 17		
		No Overpass	With Overpass	Non-Road Haulage
Light Vehicles				
Construction Workforce	120	0	0	0
Construction Visitors	20	0	0	0
Operational Workforce	133	417	417	417
Operational Visitors	58	178	178	178
Heavy Vehicles				
Construction Deliveries	10	0	0	0
Operational Deliveries	10	32	32	32
ROM Coal Haulage	0	670	670	0
Domestic Coal Haulage	0	24	24	24
Gravel Haulage	0	44	44	44
Total	**351**	**1,365**	**1,365**	**695**

Table 4.1 indicates that with road-based haulage after Year 1, ROM coal haulage would make up the most significant component of the total daily traffic generation of the Project, followed by the movement of employees to and from the site at the start and end of shifts. It is noted that ROM coal haulage would take place 24 hours per day and so would be spread reasonably evenly throughout the day and night, while employee traffic would tend to occur in distinct peaks at the start and end of shifts. Thus while ROM coal haulage makes up the largest component of Project traffic over a 24 hour period, employee traffic would tend to result in short bursts of higher levels of activity with long periods of no activity.

Table 4.2 presents the forecast distribution of the Project traffic on the surrounding road system for the future scenarios described in Section 2.3.

Table 4.2 indicates that for all future scenarios, the largest component of the traffic generated by the Project would use Blue Vale Road to the south of the site. Construction of the private haul road and Kamilaroi Highway overpass would remove a significant volume of Project traffic from Kamilaroi Highway between the Whitehaven CHPP and Blue Vale Road, and from Blue Vale Road between Kamilaroi Highway and the private haul route intersection.

Table 4.2: Average Weekday Daily Project Traffic Distribution (vehicles/day)

Road and Location	Year 1	Years 7 and 17		
		No Overpass	With Overpass	Non-Road Haulage
Barbers Lagoon Rd south of Rangari Rd	0	0	0	0
Blue Vale Rd northeast of Kamilaroi Hwy	219	1,095	425	425
Blue Vale Rd north of Private Haul Route	219	1,095	1,095	425
Blue Vale Rd south of Shannon Harbour Rd	219	1,095	1,095	425
Braymont Rd west of Blue Vale Rd	201	0	0	0
Braymont Rd at Namoi River Bridge	65	111	111	111
CHPP Access Rd southwest of Kamilaroi Hwy	0	670	0	0
CHPP Access Rd west of Private Overpass	0	670	670	0
Hoad Lane west of Haul Route	65	111	111	111
Kamilaroi Hwy btwn Blue Vale Rd and CHPP	219	1,095	425	425
Kamilaroi Hwy south of Rangari Rd	0	0	0	0
Kamilaroi Hwy north of Blue Vale Rd	0	0	0	0
Private Haul Road and Overpass	0	0	670	0
Rangari Rd east of Kamilaroi Hwy	44	120	120	120
Rangari Rd west of Haul Route	0	0	0	0
Rangari Rd east of Haul Route	44	120	120	120
Shannon Harbour Rd east of Blue Vale Rd	162	39	39	39
Wean Rd south of Rangari Rd	23	39	39	39
Blue Vale Rd North of Diversion	219	0	0	0
Temporary Infrastructure Area Access	201	0	0	0
MIA Construction Access off Shannon Harbour	150	0	0	0
MIA Access Road	0	627	627	627
ROM Coal Haul Truck MIA Access	0	738	738	68
Braymont Rd west of Project Access	0	0	0	0

5. Future Road Transport Conditions

The impact of the Project traffic on future road transport conditions has been assessed and the results are discussed in this section.

5.1 Future Traffic Volumes

Table 5.1 summarises the forecast two way daily traffic volumes with the additional traffic generated by the Project on the roads in the vicinity of the Project for the future scenarios described in Section 2.3.

Table 5.1 demonstrates that construction of the private haul road and Kamilaroi Highway overpass would significantly reduce the daily traffic volumes on the sections of road which would be bypassed by the overpass for ROM coal haulage. This includes (refer Table 5.1):

- the CHPP Access Road between the start of the highway overpass and Kamilaroi Highway (*CHPP Access Rd southwest of Kamilaroi Hwy*);
- Kamilaroi Highway between the CHPP Access Road and Blue Vale Road (*Kamilaroi Hwy btwn Blue Vale Rd and CHPP*); and
- Blue Vale Road between Kamilaroi Highway and the end of the private haul road (*Blue Vale Rd northeast of Kamilaroi Hwy*).

Average daily volumes on these roads would be reduced by 670 heavy vehicles per day by the construction of the private haul road and Kamilaroi Highway overpass. Use of an alternative transport method for the ROM coal would have the same result on these roads, as well as an equal reduction in traffic along Blue Vale Road northwards to the ROM Coal Haulage Truck Access Road.

Table 5.2 presents existing and forecast peak hour traffic volumes at the three key locations on Blue Vale Road and Kamilaroi Highway. It is noted that the existing peak hour typically occurred in the late afternoon, sometime between 3.00pm and 5.00pm. With the Project, the peak hour would occur between 7.00am and 8.00am, with the exception of Kamilaroi Highway in Year 1, when the peak hour would remain between 3.00pm and 4.00pm.

The future peaks hours are influenced by the travel patterns of the operational employees travelling to and from the Project at the start and end of shifts. The peaks in Project traffic do not therefore tend to overlap with existing peak hours on these roads.

With regard to hourly traffic volumes, it is noted that Project ROM coal haulage would generate an average of 28 trips per hour over the proposed 24 hour haulage period on Blue Vale Road between the Project site and the Whitehaven CHPP. This increase in heavy vehicle traffic would however be partly offset by the removal of the coal haulage truck trips generated by the Tarrawonga Coal Mine between the Tarrawonga Coal Mine and the Whitehaven CHPP after Year 1. The Tarrawonga Coal Mine currently generates an average of 22 trips per hour on Blue Vale Road between the Tarrawonga Coal Mine and the Whitehaven CHPP over the current 14.25 hour haulage period on weekdays. The increase in coal haulage trips associated with the Project would therefore be an average of six trips per hour above the existing volumes.

Table 5.1: Average Weekday Daily Traffic Volumes With Project (vehicles/day)

Road and Location	Existing	Year 1	No Overpass		With Overpass		No Road ROM Haulage	
			Year 7	Year 17	Year 7	Year 17	Year 7	Year 17
Barbers Lagoon Rd south of Rangari Rd	51	128	64	68	64	68	64	68
Blue Vale Rd northeast of Kamilaroi Hwy	1,515	1,962	2,444	2,548	1,774	1,878	1,774	1,878
Blue Vale Rd north of Private Haul Route	1,515	1,962	2,444	2,548	2,444	2,548	1,774	1,878
Blue Vale Rd south of Shannon Harbour Rd	480	896	1,317	1,317	1,317	1,317	647	647
Braymont Rd west of Blue Vale Rd	273	483	298	325	298	325	298	325
Braymont Rd at Namoi River Bridge	122	196	248	260	248	260	248	260
CHPP Access Rd southwest of Kamilaroi Hwy	673	684	1,064	1,100	394	430	394	430
CHPP Access Rd west of Private Overpass	673	684	1,064	1,100	1,064	1,100	394	430
Hoad Lane west of Haul Route	49	116	165	170	165	170	165	170
Kamilaroi Hwy btwn Blue Vale Rd and CHPP	3,188	3,687	4,269	4,540	3,599	3,870	3,599	3,870
Kamilaroi Hwy south of Rangari Rd	2,028	2,430	2,540	2,739	2,540	2,739	2,540	2,739
Kamilaroi Hwy north of Blue Vale Rd	2,488	2,749	2,974	3,223	2,974	3,223	2,974	3,223
Private Haul Route Overpass	0	0	0	0	670	670	0	0
Rangari Rd east of Kamilaroi Hwy	369	891	1,017	1,048	1,017	1,048	1,017	1,048
Rangari Rd west of Haul Route	637	812	969	1,027	969	1,027	969	1,027
Rangari Rd east of Haul Route	67	150	183	189	183	189	183	189
Shannon Harbour Rd east of Blue Vale Rd	217	386	276	297	276	297	276	297
Wean Rd south of Rangari Rd	49	74	93	98	93	98	93	98
Blue Vale Rd North of Diversion	480	896	222	222	222	222	222	222
Temporary Infrastructure Area Access	0	201	0	0	0	0	0	0
MIA Construction Access off Shannon Harbour	0	150	0	0	0	0	0	0
MIA Access Road	0	0	627	627	627	627	627	627
ROM Coal Haul Truck MIA Access	0	0	738	738	738	738	68	68
Braymont Rd west of Project Access	273	282	298	325	298	325	298	325

Includes surveyed traffic, background growth, Boggabri Coal Mine, Maules Creek Project, Tarrawonga Coal Project, and Project traffic.

Table 5.2: Average Weekday Peak Hour Traffic Volumes With Project (vehicles/hour)

Site	Road and Location	Existing	Year 1	No Overpass		With Overpass		No Road ROM Haulage	
				Year 7	Year 17	Year 7	Year 17	Year 7	Year 17
2	Blue Vale Rd northeast of Kamilaroi Hwy	114[A]	151	194	201	166	174	166	174
3	Blue Vale Rd south of Shannon Harbour Rd	43[B]	79	117	117	117	117	89	89
8	Kamilaroi Hwy btwn Blue Vale Rd and CHPP	244[A]	272	289	306	261	278	261	278

Includes surveyed traffic, background growth, Boggabri Coal Mine, Maules Creek Project, Tarrawonga Coal Project, and Project traffic.

A = 3.00pm to 4.00pm, B = 6.00am to 7.00am and 4.00pm to 5.00pm, All others 7.00am to 8.00am.

Table 5.2 indicates that while the peak hourly volumes would vary under the different scenarios, in the longer term, the peak hour volumes on Blue Vale Road would be between approximately 90 and 200 vehicles per hour, and on Kamilaroi Highway would be between approximately 280 and 310 vehicles per hour between the Whitehaven CHPP and Blue Vale Road. Volumes on Kamilaroi Highway to the north of Blue Vale Road and to the south of the Whitehaven CHPP would be lower.

5.2 Roadway Capacity

As described in the Baseline Assessment report (Halcrow, 2012), the Austroads (2009) *Guide to Traffic Management Part 3: Traffic Studies and Analysis* and the 200 edition of the *Highway Capacity Manual* (HCM) (Transportation Research Board, 2000) provide guidelines for the capacity of two lane, two way rural roads and methods for assessing the Level of Service (LoS)experienced by drivers on a road.

It is noted that the unsealed roads providing access for the Project would have lower capacities than the typical sealed roads addressed by the HCM assessment methods, however these are considered below as a guide to the future Levels of Service on these roads.

LoS is defined as a qualitative measure describing the operational conditions within a traffic stream as perceived by drivers and/or passengers. An 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 to D describes 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.

The HCM 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. The LoS for Class I roads is defined in terms of both percent-time-spent-following (PTSF) and average travel speed. On Class II roads, LOS is defined only in terms of PTSF. It is noted that the unsealed roads providing access for the Project would have lower capacities than the typical Class II sealed roads addressed by the HCM assessment methods, however these are considered below as a guide to the current LoS on these roads.

The PTSF is a measure of the level of opportunities to overtake. The LoS criteria for Class I and Class II two-lane highways are as shown in Table 5.3.

Table 5.3: Level of Service Criteria for Class I and Class II Two Lane Highways

Level of Service	Average Travel Speed (km/h)	Percent-Time-Spent-Following	
	Class I	Class I	Class II
A	> 90	35	40
B	> 80 – 90	> 35 – 50	> 40 – 55
C	> 70 – 80	> 50 – 65	> 55 – 70
D	> 60 – 70	> 65 – 80	> 70 – 85
E	60	> 80	> 85

Note: Average Travel Speed thresholds are based on free flow speed of 110 kilometres per hour (km/h).

The HCM 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 600 vehicles per hour, the PTSF would typically be below 35 percent, and LoS would be A on a Class I road (refer to Table 5.3). 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 on a Class II road (refer to Table 5.3). Comparing this against the peak hourly volumes presented in Table 5.2, it is clear that the forecast peak hourly volumes on Blue Vale Road and Kamilaroi Highway are well below these thresholds, with peaks of around 200 and 300 vehicles per hour respectively in the worst case. The future LoS at those sites is therefore considered to be A. More detailed analysis is not considered warranted in this case, as the peak hourly volumes are well below the volume threshold where poorer service levels would result.

More detailed analysis of other locations on the surrounding road network is also not warranted, as daily traffic volumes (refer to Table 5.1) are sufficiently low that peak hour volumes would remain well below the threshold levels above which LoS may be expected to decline.

The road network would thus have adequate capacity to accommodate the increases in traffic resulting from the Project without any specific management or mitigation measures.

5.3 Road Realignments

The proposed realignments of roads to the east of the Project would maintain all existing access for through traffic, as well as access for the Project itself. The new sections of road and intersections would be designed to the same standard as the existing roads, and in accordance with the requirements of the Gunnedah and Narrabri Shire Councils and the Austroads *Guide to Road Design* series.

The new intersections formed between the MIA Access Road, the ROM Coal Truck Haulage Access Road and the Blue Vale Road diversion would be three way intersections, with traffic on the Blue Vale Road diversion having right of way (**Figure 4**). The volume of traffic turning into and out of the MIA Access Road and ROM Coal Truck Haulage Access Road would not warrant additional turn bays on capacity grounds, however to take into account the greater acceleration and deceleration requirements of the trucks used for hauling coal and delivery vehicles, it is recommended that a suitable acceleration lane be provided for the loaded vehicles turning right out of the site, and a suitable deceleration lane be provided for the returning empty vehicles turning left into the site. The use of the "Trucks Entering" warning sign (AS1742.1 sign W5-22) may also be appropriate on the Blue Vale Road diversion on both approaches to the intersection.

The new intersection formed between Blue Vale Road and the private haul road would be a three way intersection, with traffic on Blue Vale Road having right of way. Access to the private haul road and Kamilaroi Highway overpass would be controlled with gates. This is similar to the current arrangement used on the private road section of the Whitehaven ROM coal road transport route. The use of the "Trucks Entering" warning sign (AS1742.1 sign W5-22) may be appropriate on both Blue Vale Road approaches to the intersection.

5.4 Road Safety

The review of crash data in the region for a five year period (Halcrow, 2012) identified no particular causation factors on the local roads. The review of crashes which occurred on roads of likely interest to the Project found 17 crashes over the five year period, of which 13 were single vehicle crashes. With the exception of one single vehicle crash in which the vehicle struck an animal on the road on Kamilaroi Highway, all the single vehicle crashes involved some degree of loss of control of the vehicle, with the vehicle leaving the carriageway. Of the 12 vehicles which left the carriageway, 7 struck a roadside object.

Given the crash history of the road network, maintenance of the road and its environs is considered to be an effective means of maintaining and/or improving the safety of the road network in the surrounding area. Such maintenance would include not only the roadway surface and traffic control infrastructure, but also the roadway verges, including upkeep of the clear zones on either side of the road to reduce the risk on occasions when vehicles leave the carriageway for any reason.

As noted by Halcrow (2012), there is a road maintenance agreement with Gunnedah Shire Council which covers the maintenance of roads used by Whitehaven in association with their mines and facilities in the region, e.g. the Tarrawonga Coal Mine, the Whitehaven CHPP at Gunnedah, Canyon Coal Mine (under closure), and Rocglen Coal Mine. Under this agreement, Whitehaven is required to pay 95% of road maintenance costs incurred by Gunnedah Shire Council for Hoad Lane and Blue Vale Road. A similar arrangement is in place with the Narrabri Shire Council for maintenance of roads used for ROM coal haulage within the Narrabri Shire Council area. The maintenance requirements are determined through an annual joint inspection. The Project traffic would continue to use the same routes covered by the existing maintenance agreement, which is an appropriate method of ensuring that the roads are maintained to the standard required for safe operation.

5.5 Road-Rail Impacts

The impacts of the Project on the rail system are discussed in Section 4 of the Main Report of the EIS.

5.6 School Bus Routes

The Baseline Assessment (Halcrow, 2012) identified school buses which operate in the vicinity of the Project. Based on shift times, the busiest hours for traffic generated by the Project would be 6.00am to 7.00am, and 6.00pm to 7.00pm. These times are outside the periods that school buses operate, minimising the potential for conflict between Project traffic and school buses. Notwithstanding, some Project traffic would be present on the local road network during the school bus operating hours.

The road diversions resulting from the Project would not affect the operation of school buses in the area, as all through access by public vehicles would be maintained.

5.7 Blasting

During mining operations there would be occasions when blasting would be required within 500 metres of Blue Vale Road, Hoad Lane, Braymont Road, and the Blue Vale Road and Shannon Harbour Road diversions. Approvals would be sought from the Gunnedah Shire Council and Narrabri Shire Council to temporarily close sections of the local roads to allow blasting to occur, typically for periods of approximately 15 minutes.

It is recommended that a Road Closure Management Plan be established in consultation with the Gunnedah Shire Council and Narrabri Shire Council defining:

- method of road closure;
- signage providing advance warning and at the end of the road closure;
- review of traffic volumes;
- period of closure and expected queue lengths;
- access for emergency services during closure periods;
- notification process; and
- monitoring and reporting requirements.

5.8 Car Parking

During the construction stage, car parking facilities at the existing infrastructure area and temporary parking in the vicinity would be utilised.

Car parking for employees and visitors during operational stages would be located in the new MIA (**Figure 4**).

5.9 Oversize Vehicles

A number of oversize vehicle movements may be generated on an occasional basis during the life of the Project. These oversize vehicle movements would be associated with the transport of mining equipment and infrastructure to and from the Project.

Although the number of oversize vehicle movements associated with the Project is anticipated to be small, the requirement for each proposed oversize vehicle movement would be reviewed and alternative transport options, such as rail, would be considered prior to the movement.

The proposed movement for any oversize vehicles would be negotiated with Roads and Maritime Services and relevant local councils on a case-by-case basis. All oversize loads would be transported with the relevant permits obtained in accordance with *Operating Conditions: specific permits for oversize and over-mass vehicles and loads* (RTA, 2007), and any other licences and escorts as required by the regulatory authorities.

6. Conclusions

This study has found that the recommencement of open cut mining operations at the Project would have acceptable impacts on the operation of the surrounding road system.

The use of an alternative form of coal transport such as the use of conveyors to connect with proposed rail facilities to the south would result in 670 fewer heavy vehicle trips per day or an average of 28 fewer heavy vehicle trips per hour being generated by the Project. These trips would otherwise occur on the haul route to the south of the Project, primarily Blue Vale Road, and either a short section of Kamilaroi Highway or the private haul road and Kamilaroi Highway overpass.

No significant impacts on the performance, capacity, efficiency and safety of the road network are expected to arise as a result of the Project.

No specific management or mitigation measures are considered to be warranted by the Project, noting that proposed intersections and roads would be designed in accordance with standard guidelines, and that an existing maintenance agreement is in place between Whitehaven and Gunnedah Shire Council.

.

Attachment A

Non-Project Traffic Generation

The following tables summarise the forecast increases in average weekday traffic above the conditions surveyed in 2010 and 2011. The cumulative results of these non-Project traffic changes are presented in Table 3.1 in the main text of this report.

Additional Average Weekday Daily Traffic Boggabri Coal Mine (vehicles/day)

Site	Road and Location	Year 2013	Year 2019	Year 2029
1	Barbers Lagoon Rd south of Rangari Rd	0	0	0
2	Blue Vale Rd northeast of Kamilaroi Hwy	0	0	0
3	Blue Vale Rd south of Shannon Harbour Rd	0	0	0
4	Braymont Rd west of Blue Vale Rd	0	0	0
5	Braymont Rd at Namoi River Bridge	0	0	0
6	CHPP Access Rd	0	0	0
7	Hoad Lane west of Haul Route	0	0	0
8	Kamilaroi Hwy btwn Blue Vale Rd and CHPP	0	0	0
9	Kamilaroi Hwy south of Rangari Rd	188	264	264
10	Kamilaroi Hwy north of Blue Vale Rd	188	264	264
11	Rangari Rd east of Kamilaroi Hwy	263	369	369
12	Rangari Rd west of Haul Route	75	105	105
13	Rangari Rd east of Haul Route	75	105	105
14	Shannon Harbour Rd east of Blue Vale Rd	0	0	0
15	Wean Rd south of Rangari Rd	0	0	0

Additional Average Weekday Daily Traffic Maules Creek Project (vehicles/day)

Site	Road and Location	Year 2013	Year 2019	Year 2029
1	Barbers Lagoon Rd south of Rangari Rd	70	4	4
2	Blue Vale Rd northeast of Kamilaroi Hwy	70	4	4
3	Blue Vale Rd south of Shannon Harbour Rd	70	4	4
4	Braymont Rd west of Blue Vale Rd	0	0	0
5	Braymont Rd at Namoi River Bridge	0	0	0
6	CHPP Access Rd	0	0	0
7	Hoad Lane west of Haul Route	0	0	0
8	Kamilaroi Hwy btwn Blue Vale Rd and CHPP	70	4	4
9	Kamilaroi Hwy south of Rangari Rd	136	62	62
10	Kamilaroi Hwy north of Blue Vale Rd	0	0	0
11	Rangari Rd east of Kamilaroi Hwy	163	74	74
12	Rangari Rd west of Haul Route	0	0	0
13	Rangari Rd east of Haul Route	0	0	0
14	Shannon Harbour Rd east of Blue Vale Rd	0	0	0
15	Wean Rd south of Rangari Rd	0	0	0

Additional Average Weekday Daily Traffic Tarrawonga Coal Project (vehicles/day)

Site	Road and Location	Year 2013	Year 2019	Year 2029
1	Barbers Lagoon Rd south of Rangari Rd	5	5	5
2	Blue Vale Rd northeast of Kamilaroi Hwy	127	-265	-265
3	Blue Vale Rd south of Shannon Harbour Rd	127	-265	-265
4	Braymont Rd west of Blue Vale Rd	0	0	0
5	Braymont Rd at Namoi River Bridge	5	5	5
6	CHPP Access Rd	0	-312	-312
7	Hoad Lane west of Haul Route	0	0	0
8	Kamilaroi Hwy btwn Blue Vale Rd and CHPP	129	-263	-263
9	Kamilaroi Hwy south of Rangari Rd	19	6	6
10	Kamilaroi Hwy north of Blue Vale Rd	-2	-2	-2
11	Rangari Rd east of Kamilaroi Hwy	44	60	60
12	Rangari Rd west of Haul Route	39	56	56
13	Rangari Rd east of Haul Route	6	6	6
14	Shannon Harbour Rd east of Blue Vale Rd	0	0	0
15	Wean Rd south of Rangari Rd	0	0	0

Additional Average Weekday Daily Background Traffic Growth (vehicles/day)

Site	Road and Location	Year 2013	Year 2019	Year 2029
1	Barbers Lagoon Rd south of Rangari Rd	1	4	8
2	Blue Vale Rd northeast of Kamilaroi Hwy	31	93	197
3	Blue Vale Rd south of Shannon Harbour Rd	0	0	0
4	Braymont Rd west of Blue Vale Rd	8	25	52
5	Braymont Rd at Namoi River Bridge	3	10	21
6	CHPP Access Rd	11	33	69
7	Hoad Lane west of Haul Route	1	4	9
8	Kamilaroi Hwy btwn Blue Vale Rd and CHPP	81	244	515
9	Kamilaroi Hwy south of Rangari Rd	60	180	379
10	Kamilaroi Hwy north of Blue Vale Rd	75	224	472
11	Rangari Rd east of Kamilaroi Hwy	9	28	59
12	Rangari Rd west of Haul Route	18	53	111
13	Rangari Rd east of Haul Route	2	5	10
14	Shannon Harbour Rd east of Blue Vale Rd	7	20	41
15	Wean Rd south of Rangari Rd	1	4	9

Attachment B

Project Traffic Generation

Project Average Weekday Traffic Generation Year 1 (vehicles/day)

Road and Location	Light Vehicles				Heavy Vehicles		Total Vehicles
	Construction Workforce	Construction Visitors	Operational Workforce	Operational Visitors	Construction Delivery	Operational Delivery	
Barbers Lagoon Rd south of Rangari Rd	0	0	0	0	0	0	0
Blue Vale Rd northeast of Kamilaroi Hwy	67	16	74	46	8	8	219
Blue Vale Rd north of Private Haul Route	67	16	74	46	8	8	219
Blue Vale Rd south of Shannon Harbour Rd	67	16	74	46	8	8	219
Braymont Rd west of Blue Vale Rd	0	0	133	58	0	10	201
Braymont Rd at Namoi River Bridge	26	2	29	6	1	1	65
CHPP Access southwest of Kamilaroi Hwy	0	0	0	0	0	0	0
CHPP Access west of Private Overpass	0	0	0	0	0	0	0
Hoad Lane west of Haul Route	26	2	29	6	1	1	65
Kamilaroi Hwy btwn Blue Vale Rd and CHPP	67	16	74	46	8	8	219
Kamilaroi Hwy south of Rangari Rd	0	0	0	0	0	0	0
Kamilaroi Hwy north of Blue Vale Rd	0	0	0	0	0	0	0
Private Haulage Route Overpass	0	0	0	0	0	0	0
Rangari Rd east of Kamilaroi Hwy	16	2	18	6	1	1	44
Rangari Rd west of Haul Route	0	0	0	0	0	0	0
Rangari Rd east of Haul Route	16	2	18	6	1	1	44
Shannon Harbour Rd east of Blue Vale Rd	120	20	12	0	10	0	162
Wean Rd south of Rangari Rd	11	0	12	0	0	0	23
Blue Vale Rd North of Diversion	67	16	74	46	8	8	219
Temporary Infrastructure Area Access	0	0	133	58	0	10	201
MIA Construction Access off Shannon Harbour	120	20	0	0	10	0	150
MIA Access Road	0	0	0	0	0	0	0
ROM Coal Haul Truck MIA Access	0	0	0	0	0	0	0
Braymont Rd west of Project Access	0	0	0	0	0	0	0

Project Average Weekday Traffic Generation Years 7 and 17 – No Private Haul Road and Highway Overpass (vehicles/day)

Road and Location	Light Vehicles		Heavy Vehicles				Total Vehicles
	Workforce	Visitors	Delivery	ROM Coal Haulage	Domestic Coal Haulage	Gravel Haulage	
Barbers Lagoon Rd south of Rangari Rd	0	0	0	0	0	0	0
Blue Vale Rd northeast of Kamilaroi Hwy	232	142	26	670	21	4	1,095
Blue Vale Rd north of Private Haul Route	232	142	26	670	21	4	1,095
Blue Vale Rd south of Shannon Harbour Rd	232	142	26	670	21	4	1,095
Braymont Rd west of Blue Vale Rd	0	0	0	0	0	0	0
Braymont Rd at Namoi River Bridge	90	18	3	0	0	0	111
CHPP Access southwest of Kamilaroi Hwy	0	0	0	670	0	0	670
CHPP Access west of Private Overpass	0	0	0	670	0	0	670
Hoad Lane west of Haul Route	90	18	3	0	0	0	111
Kamilaroi Hwy btwn Blue Vale Rd and CHPP	232	142	26	670	21	4	1,095
Kamilaroi Hwy south of Rangari Rd	0	0	0	0	0	0	0
Kamilaroi Hwy north of Blue Vale Rd	0	0	0	0	0	0	0
Private Haulage Route Overpass	0	0	0	0	0	0	0
Rangari Rd east of Kamilaroi Hwy	56	18	3	0	3	40	120
Rangari Rd west of Haul Route	0	0	0	0	0	0	0
Rangari Rd east of Haul Route	56	18	3	0	3	40	120
Shannon Harbour Rd east of Blue Vale Rd	39	0	0	0	0	0	39
Wean Rd south of Rangari Rd	39	0	0	0	0	0	39
Blue Vale Rd North of Diversion	0	0	0	0	0	0	0
Temporary Infrastructure Area Access	0	0	0	0	0	0	0
MIA Construction Access off Shannon Harbour	0	0	0	0	0	0	0
MIA Access Road	417	178	32	0	0	0	627
ROM Coal Haul Truck MIA Access	0	0	0	670	24	44	738
Braymont Rd west of Project Access	0	0	0	0	0	0	0

Project Average Weekday Traffic Generation Years 7 and 17 – With Private Haul Road and Highway Overpass (vehicles/day)

Road and Location	Light Vehicles		Heavy Vehicles				Total Vehicles
	Workforce	Visitors	Delivery	ROM Coal Haulage	Domestic Coal Haulage	Gravel Haulage	
Barbers Lagoon Rd south of Rangari Rd	0	0	0	0	0	0	0
Blue Vale Rd northeast of Kamilaroi Hwy	232	142	26	0	21	4	425
Blue Vale Rd north of Private Haul Route	232	142	26	670	21	4	1,095
Blue Vale Rd south of Shannon Harbour Rd	232	142	26	670	21	4	1,095
Braymont Rd west of Blue Vale Rd	0	0	0	0	0	0	0
Braymont Rd at Namoi River Bridge	90	18	3	0	0	0	111
CHPP Access southwest of Kamilaroi Hwy	0	0	0	0	0	0	0
CHPP Access west of Private Overpass	0	0	0	670	0	0	670
Hoad Lane west of Haul Route	90	18	3	0	0	0	111
Kamilaroi Hwy btwn Blue Vale Rd and CHPP	232	142	26	0	21	4	425
Kamilaroi Hwy south of Rangari Rd	0	0	0	0	0	0	0
Kamilaroi Hwy north of Blue Vale Rd	0	0	0	0	0	0	0
Private Haulage Route Overpass	0	0	0	670	0	0	670
Rangari Rd east of Kamilaroi Hwy	56	18	3	0	3	40	120
Rangari Rd west of Haul Route	0	0	0	0	0	0	0
Rangari Rd east of Haul Route	56	18	3	0	3	40	120
Shannon Harbour Rd east of Blue Vale Rd	39	0	0	0	0	0	39
Wean Rd south of Rangari Rd	39	0	0	0	0	0	39
Blue Vale Rd North of Diversion	0	0	0	0	0	0	0
Temporary Infrastructure Area Access	0	0	0	0	0	0	0
MIA Construction Access off Shannon Harbour	0	0	0	0	0	0	0
MIA Access Road	417	178	32	0	0	0	627
ROM Coal Haul Truck MIA Access	0	0	0	670	24	44	738
Braymont Rd west of Project Access	0	0	0	0	0	0	0

Project Average Weekday Traffic Generation Years 7 and 17 – With Non-Road-Based ROM Coal Transport (vehicles/day)

Road and Location	Light Vehicles		Heavy Vehicles				Total Vehicles
	Workforce	Visitors	Delivery	ROM Coal Haulage	Domestic Coal Haulage	Gravel Haulage	
Barbers Lagoon Rd south of Rangari Rd	0	0	0	0	0	0	0
Blue Vale Rd northeast of Kamilaroi Hwy	232	142	26	0	21	4	425
Blue Vale Rd north of Private Haul Route	232	142	26	0	21	4	425
Blue Vale Rd south of Shannon Harbour Rd	232	142	26	0	21	4	425
Braymont Rd west of Blue Vale Rd	0	0	0	0	0	0	0
Braymont Rd at Namoi River Bridge	90	18	3	0	0	0	111
CHPP Access southwest of Kamilaroi Hwy	0	0	0	0	0	0	0
CHPP Access west of Private Overpass	0	0	0	0	0	0	0
Hoad Lane west of Haul Route	90	18	3	0	0	0	111
Kamilaroi Hwy btwn Blue Vale Rd and CHPP	232	142	26	0	21	4	425
Kamilaroi Hwy south of Rangari Rd	0	0	0	0	0	0	0
Kamilaroi Hwy north of Blue Vale Rd	0	0	0	0	0	0	0
Private Haulage Route Overpass	0	0	0	0	0	0	0
Rangari Rd east of Kamilaroi Hwy	56	18	3	0	3	40	120
Rangari Rd west of Haul Route	0	0	0	0	0	0	0
Rangari Rd east of Haul Route	56	18	3	0	3	40	120
Shannon Harbour Rd east of Blue Vale Rd	39	0	0	0	0	0	39
Wean Rd south of Rangari Rd	39	0	0	0	0	0	39
Blue Vale Rd North of Diversion	0	0	0	0	0	0	0
Temporary Infrastructure Area Access	0	0	0	0	0	0	0
MIA Construction Access off Shannon Harbour	0	0	0	0	0	0	0
MIA Access Road	417	178	32	0	0	0	627
ROM Coal Haul Truck MIA Access	0	0	0	0	24	44	68
Braymont Rd west of Project Access	0	0	0	0	0	0	0

Melbourne

A 87 High Street South
PO Box 684
KEW VIC 3101
P +613 9851 9600
F +613 9851 9610
E melbourne@gta.com.au

Canberra

A Unit 4, Level 1, Sparta Building, 55 Woolley Street
PO Box 62
DICKSON ACT 2602
P +612 6263 9400
F +612 6263 9410
E canberra@gta.com.au

Townsville

A Level 1, 25 Sturt Street
PO Box 1064
TOWNSVILLE QLD 4810
P +617 4722 2765
F +617 4722 2761
E townsville@gta.com.au

Sydney

A Level 2, 815 Pacific Highway
CHATSWOOD NSW 2067
PO Box 5254
WEST CHATSWOOD NSW 1515
P +612 8448 1800
F +612 8448 1810
E sydney@gta.com.au

Adelaide

A Suite 4, Level 1, 136 The Parade
PO Box 3421
NORWOOD SA 5067
P +618 8334 3600
F +618 8334 3610
E adelaide@gta.com.au

Brisbane

A Level 3, 527 Gregory Terrace
BOWEN HILLS QLD 4006
PO Box 555
FORTITUDE VALLEY QLD 4006
P +617 3113 5000
F +617 3113 5010
E brisbane@gta.com.au

Gold Coast

A Level 9, Corporate Centre 2
Box 37
1 Corporate Court
BUNDALL QLD 4217
P +617 5510 4800
F +617 5510 4814
E goldcoast@gta.com.au

www.gta.com.au

GTAconsultants

Vickery Coal Project

Road Transport Assessment
Baseline Assessment

27 March 2012

Prepared for

Whitehaven Coal Pty Ltd

Halcrow

Vickery Coal Project
Road Transport Assessment Baseline Assessment

Prepared for
Whitehaven Coal Pty Ltd

This report has been issued and amended as follows:

Rev	Description	Date	Prepared by	Approved by
1	Draft for client review	16/03/2012	PJD	KJH
2	Final	27/03/2012	PJD	KJH

Halcrow
Suite 20, 809 Pacific Highway, Chatswood, NSW 2067 Australia
Tel +61 2 9410 4100 Fax +61 2 9410 4199
www.halcrow.com/australasia

Contents

List of Tables

List of Figures

References

Austroads (2004) *Vehicle Classification System.*

Austroads (2009) *Guide to Traffic Management Part 3: Traffic Studies and Analysis.*

Tarrawonga Coal Pty Ltd (2005) *Transport Construction Management Plan for the East Boggabri Coal Mine.*

Traffic Authority of NSW (1978) *Functional Classification of Roads.*

Transportation Research Board (2000) *Highway Capacity Manual.*

1 Introduction

This report has been prepared on behalf of Whitehaven Coal Pty Ltd (Whitehaven) to present the results of a baseline assessment of the road transport environment in the vicinity of the Vickery Coal Mine (VCM). The baseline assessment information will be used in a subsequent assessment of the proposed development known as the Vickery Coal Project (the Project).

An appreciation of the existing traffic situation around the VCM can be gained by examining the existing road network, traffic volumes on the existing road network, observed growth in background traffic, traffic expected to be generated by the planned or approved developments in the vicinity, and safety aspects of the road system. These aspects are discussed in this report, along with potential impacts from the Project.

The remainder of the report is set out as follows:

- Section 2 describes the history of the VCM.
- Section 3 describes the road network serving the VCM and the local region.
- Section 4 presents quantitative traffic data collected for roads in the local region.
- Section 5 describes the operating characteristics of the road system, including mid-block Levels of Service and a review of road safety in the region.

2 Vickery Coal Mine Operations

The VCM is owned by Whitehaven, and is located in the Gunnedah Basin, approximately 25 kilometres (km) north of Gunnedah and 18 km southeast of Boggabri in NSW.

The VCM was previously owned and operated by Namoi Valley Coal Pty Limited, which undertook small scale mining operations during the 1980s and 1990s. There were three major modifications to the consent involving coal handling and road works conducted on behalf of the Council to manage local traffic impacts over the period 1987 to 1990. No mining has been conducted on the site since 1998. Whitehaven purchased the VCM in 2009.

Whitehaven also owns and operates the nearby Tarrawonga Coal Mine (TCM), Rocglen Coal Mine (RCM), and the Canyon Coal Mine (CCM) which is currently under care and maintenance. The TCM currently utilises an approved haul route between the TCM and the Whitehaven Coal Handling and Preparation Plan (CHPP) at Gunnedah, which includes a combination of public and private roads. The haul route passes the CCM and VCM, and provides the shortest and least trafficked route between the TCM and the CHPP. The haul route was constructed in 2006 in accordance with the approved *Transport Route Construction Management Plan for the East Boggabri Coal Mine* (Tarrawonga Coal Pty Ltd, 2005).

Whitehaven has entered into road maintenance agreements with both Narrabri Shire Council and Gunnedah Shire Council. The road maintenance agreement with Narrabri Shire Council covers the section of the haul route within the Narrabri Local Government Area, and requires the road and intersections to be maintained in good condition at all times at Whitehaven's cost. Maintenance requirements are determined through joint inspections carried out every four months.

The road maintenance agreement with Gunnedah Shire Council covers the maintenance of roads used by Whitehaven in association with the Whitehaven mines and facilities in the region, e.g., the CHPP at Gunnedah, TCM, Canyon Coal Mine (under closure), and

Rocglen Coal Mine. Under this agreement, Whitehaven is required to pay 95% of road maintenance costs incurred by Gunnedah Shire Council for Hoad Lane and Blue Vale Road. The maintenance requirements are determined through an annual joint inspection.

Vehicular site access to the VCM is via Blue Vale Road.

3 Road System

An appreciation of the existing road transport conditions can be gained by examining the road network, existing traffic volumes, past growth in traffic volumes, and the safety history of the locality. These aspects are discussed below.

3.1 Road Hierarchy

It is usual to classify roads according to a road hierarchy, in order to determine their functional role within the road network. Changes to traffic flows on the roads can then be assessed within the context of the road hierarchy. Roads are classified according to the role they fulfil and the volume of traffic they should appropriately carry given their classification. There are various classification systems used by local authorities and the Roads and Maritime Services (RMS), formerly Roads and Traffic Authority (RTA). The RTA (1978) has set down the following guidelines for the functional classification of roads:

- Arterial Road – typically a main road carrying over 15,000 vehicles per day (vehicles/day) and fulfilling a role as a major inter-regional link (over 1,500 vehicles per hour [vehicles/hour]).
- Sub-arterial Road – defined as secondary inter-regional links, typically carrying volumes between 5,000 and 20,000 vehicles/day (500 to 2,000 vehicles/hour).
- Collector Road – provides a link between local roads and regional roads, typically carrying between 2,000 and 10,000 vehicles/day (250 to 1,000 vehicles/hour). At volumes greater than 5,000 vehicles/day, residential amenity begins to decline noticeably.
- Local Road – provides access to individual allotments, carrying low volumes, typically less than 2,000 vehicles/day (250 vehicles/hour).

In recent years the RMS has adopted a classification system relating to funding purposes. It defines roads as:

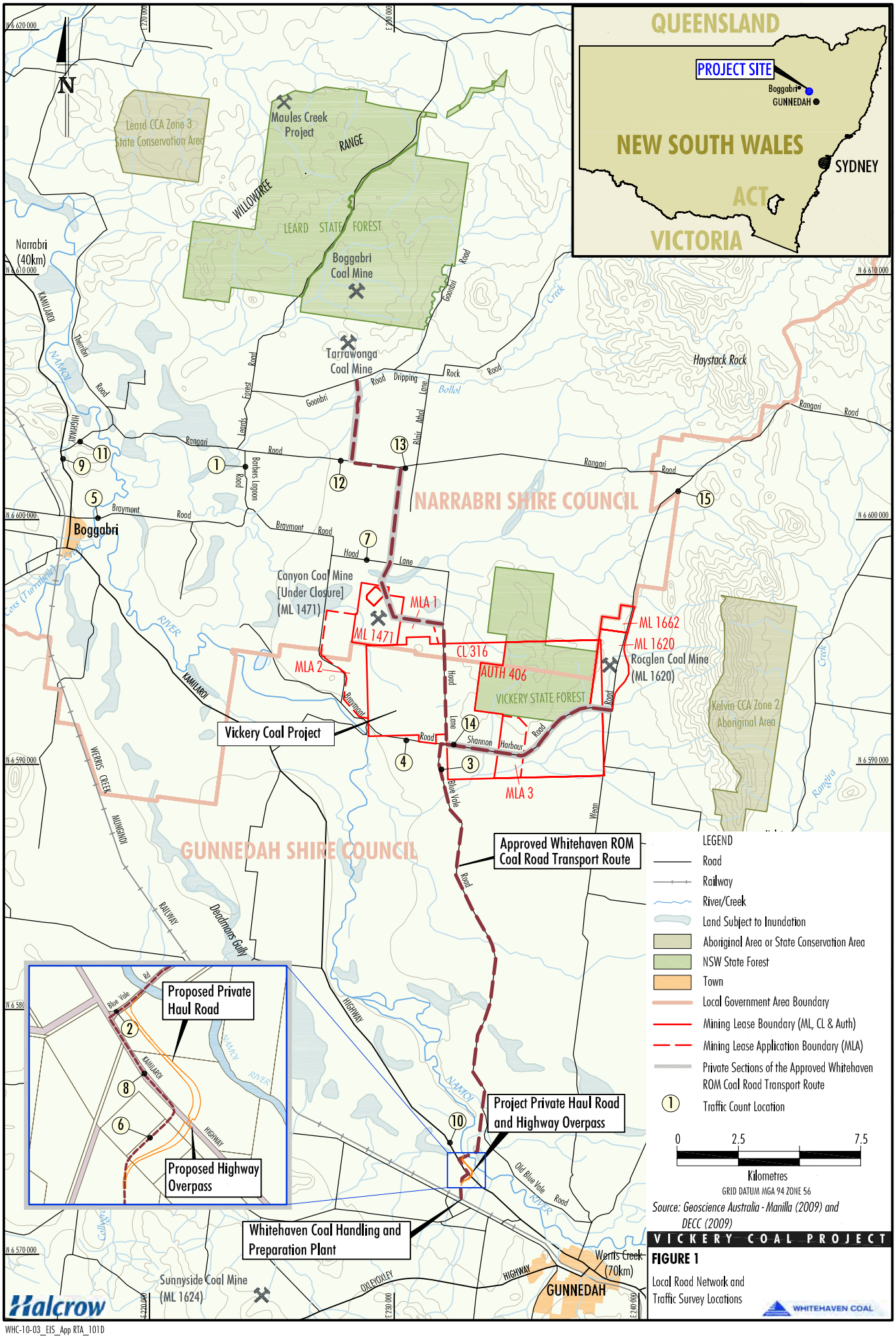
- State Roads – performing an important state function for which the RMS funds 100% of the maintenance cost. State roads are essentially arterial roads, and include Freeways, State Highways, and many Main Roads.
- Regional Roads – roads performing a significant regional function and for which the RMS and Council contribute 50% each towards maintenance. Regional roads are essentially sub-arterial roads, and include some lesser Main Roads.
- Local Roads – roads performing a local or collector function and for which the Council funds 100% of the maintenance cost.

VCM extends across the boundary between Narrabri Shire Council and Gunnedah Shire Council areas. The haul route from the VCM to the CHPP is wholly located within the Gunnedah Shire Council area.

3.2 Existing Road Network

The existing road network in the vicinity of the VCM is described below and presented on **Figure 1**.

Kamilaroi Highway (State Highway 29) is a State Road which runs generally north-south to the west of the VCM, and provides a link between the upper Hunter region and the north-west of NSW, providing access to regional centres such as Gunnedah, Boggabri, Narrabri and Bourke. In the vicinity of the VCM, Kamilaroi Highway has a single travel lane in each direction, with auxiliary turn lanes at some intersections, and a posted speed limit of 100 kilometres per hour (km/hr). At its intersection with Rangari Road, a separate right turn lane and a left turn deceleration lane are provided in Kamilaroi Highway. The intersection with Blue Vale Road has separate deceleration and acceleration lanes to accommodate the slower moving coal trucks on the haul route with minimum disruption to the through traffic.



WHC-10-03_EIS_App RTA_101D

Rangari Road (Main Road 357) is a Regional Road which runs approximately east-west to the north of the VCM, and links between Kamilaroi Highway to the west and Manilla to the east. Rangari Road typically has a single travel lane in each direction, and a posted speed limit of 80km/hr. Rangari Road crosses the Namoi River about 1.6km to the east of its intersection with Kamilaroi Highway. At this bridge, Rangari Road is narrowed to a single lane with a 10km/hr speed limit, and eastbound traffic is required to give way to westbound traffic. Rangari Road is also known as Boggabri-Manilla Road and Manilla Road.

Hoad Lane provides a local road connection northwards from Blue Vale Road at Braymont Road/Shannon Harbour Road to north of the Canyon Coal Mine, then an east-west connection to Braymont Road. A private road access to the Canyon Coal Mine intersects with Hoad Lane at a tee intersection. South of the Canyon Coal Mine access road, Hoad Lane has a sealed surface, with a single travel lane in each direction, and centre road markings along most of its length. A right turn lane is provided in Hoad Lane for vehicles turning into Shannon Harbour Road, and an acceleration lane is provided for vehicles turning left into Hoad Lane/Blue Vale Road from Shannon Harbour Road. To the north of the Canyon Coal Mine access road, and to the east of Braymont Road, Hoad Lane has an unsealed surface.

Blue Vale Road is a local road that provides a north-south connection from Kamilaroi Highway to the north-west of Gunnedah to the intersection of Hoad Lane, Shannon Harbour Road and Braymont Road. At this intersection, Hoad Lane and Blue Vale Road form the main road, with Shannon Harbour Road and Braymont Road being staggered tee intersections. Blue Vale Road has a sealed surface with a single travel lane in each direction and centre line marking along much of its length.

Braymont Road provides a local road link from the township of Boggabri east and south-east to meet with Blue Vale Road some 20km north of Gunnedah township. Braymont Road crosses the Namoi River via a bridge to the east of Boggabri. To the west of the river, Braymont Road has a sealed surface with a single travel lane in each direction, and to the east of the river, it has an unsealed surface, and follows a straight east-west alignment for about 6km, before a 90 degree bend where it intersects with Barbers Lagoon Road at a three way intersection.

Barbers Lagoon Road is a local road and extends in a north-south direction between Braymont Road in the south and Rangari Road in the north. The northernmost 700 metres (m) of Barbers Lagoon Road has a sealed surface, with a single travel lane in each direction and a marked centre line on its approach to Rangari Road. The remaining length of Barbers Lagoon Road has an unsealed surface and follows a reasonably straight north-south alignment, with the exception of a dog-leg about 1.2km north of Braymont Road.

3.3 School Bus Routes

School buses operate in the local area, providing access for students to the local schools, including primary schools in Gunnedah and Boggabri, and a high school in Gunnedah. The school buses are run by numerous operators, and the majority do not operate close to the haul route. A school bus route, Blue Vale to Gunnedah, operates along and across the haul route. This route operates between 7.50am and 8.40am, and between 3.20pm and 3.58pm on school days.

This school bus route starts/ends on Hoad Lane west of the haulage route, and crosses the haul route in an east-west direction on Hoad Lane, where the haul route operates north-south from the northern Canyon Coal Mine road. At this location, the buses have right of way. The buses travel along Hoad Lane, and operate along the haul route between Hoad Lane at the eastern Canyon Coal Mine access road, and Blue Vale Road at the Old Blue Vale Road intersection.

Currently this route stops at five properties near the haul route, four of which are on the length of Hoad Lane which is not the approved haul route. The bus stops at these properties between 7.50am and 7.56am on the way to St Xavier's School, St Mary's School and Gunnedah South School, and between 3.52pm and 3.58pm on the return journey in the afternoon. The fifth property is on Old Blue Vale Road near Gunnedah, which is also not on the haul route, and the bus stops here at 8.20am and 3.30pm. It is understood from the operator that until recently, this route also stopped at a property on Blue Vale Road, however those residents have since moved. There may soon be another stop at another property on Hoad Lane, also not on the haul route.

In accordance with Condition 38(b) of Development Consent (DA 88-4-2005 MOD 1) for the TCM, coal trucks must reduce speed to 40km/hr in the vicinity of the school bus when it is operating on Hoad Lane. A similar condition is likely to be imposed on the Project coal trucks.

4 Traffic Data

4.1 Historic Annual Average Daily Traffic on RMS Roads

The RMS publishes traffic volume data at selected locations on its roads. Available data on roads in the vicinity of the TCM was collated. Table 4.1 presents historic annual average daily traffic (AADT) data for the RMS's surveyed locations in the local area, and shows how changes in daily traffic volumes have occurred on these roads over that period. It should be noted that the AADT represents the average number of axle pairs (rather than vehicles) passing in both directions during a 24 hour period, estimated over a period of one year.

Table 4.1 – Historic Annual Average Daily Traffic Data (1992 to 2005)

Location	1992	1996	1999	2002	2005
Kamilaroi Highway SH29					
92.227 11km West of SH17 Newell Hwy	1,636	1,623	-	-	-
92.289 5km South of SH17 Newell Hwy	1,750	1,903	2,309	2,240	-
92.293 South of MR357 Rangari Road	1,867	-	2,163	2,232	1,832
Rangari Road MR357					
92.168 East of MR72 Narrabri Rd	153	-	138	162	175

The historic AADT data indicates that while there have been some fluctuations in daily AADT, these have not resulted in significant increases or decreases in volumes over the period 1992 to 2005.

4.2 Traffic Surveys

Traffic survey data has been collated on roads around the VCM (**Figure 1**). At each location, hourly traffic volumes were recorded by direction. At some locations, the classification of vehicles was also undertaken using the Austroads (2004) Vehicle Classification System, which is presented in **Attachment A**.

The majority of the surveys were conducted over one week during November-December 2010, with some exceptions, namely two locations surveyed during February 2011, and three during October-November 2011.

4.3 Traffic Volumes

The daily traffic volume results of the traffic surveys are summarised in Table 4.2 and full results are presented in **Attachment A**.

Table 4.2 – Surveyed Daily Two Way Traffic Volumes (vehicles/day)

Site	Road and Location	Average Weekday	Saturday	Sunday
1	Barbers Lagoon Rd south of Rangari Rd	51	37	40
2	Blue Vale Rd northeast of Kamilaroi Hwy[D]	1,515	997	145
3	Blue Vale Rd south of Shannon Harbour Rd[C]	480	244	72
4	Braymont Rd west of Blue Vale Rd[D]	273	118	14
5	Braymont Rd at Namoi River Bridge[C]	122	-	-
6	CHPP Access Rd	673	193	10
7	Hoad Lane west of Haul Route[D]	49	32	49
8	Kamilaroi Hwy between Blue Vale Rd and CHPP	3,188	2,226	1,702
9	Kamilaroi Hwy south of Rangari Rd	2,028	1,391	1,325
10	Kamilaroi Hwy north of Blue Vale Rd	2,488	1,946	1,762
11	Rangari Rd east of Kamilaroi Hwy	369	105	117
12	Rangari Rd west of Haul Route	637	344	132
13	Rangari Rd east of Haul Route	67	50	37
14	Shannon Harbour Rd east of Blue Vale Rd[A]	217	74	31
15	Wean Rd south of Rangari Rd[D]	49	56	29

[A] Survey 8-14 February 2011; [B] Survey 4-10 November 2010; [C] Data available for Tuesday to Friday only [D]Survey 27 October-2 November 2011

The surveys indicate that generally, weekday traffic volumes are the most significant, with Saturdays typically being busier than Sundays.

Table 4.3 presents the average weekday peak hourly volume measured at each of the survey locations. The peak hourly volume is the maximum volume recorded in any one hour period throughout the day. The time of each peak volume is therefore not necessarily the same at each location, and at some locations, the peak volume occurred during more than one hour. The peak hour volumes are typically in the range of 8 to 12 percent of the daily volumes.

Table 4.3 – Surveyed Average Weekday Peak Hour Two Way Traffic (vehicles/hour)

Site	Road and Location	Peak Hourly Volume	Time of Peak Hour
1	Barbers Lagoon Rd south of Rangari Rd	5	3pm-4pm, 5pm-6pm
2	Blue Vale Rd northeast of Kamilaroi Hwy[D]	114	3pm-4pm
3	Blue Vale Rd south of Shannon Harbour Rd[C]	43	6am-7am, 6pm-7pm
4	Braymont Rd west of Blue Vale Rd[D]	52	2pm-3pm
5	Braymont Rd at Namoi River Bridge[C]	15	4pm-5pm, 5pm-6pm
6	CHPP Access Rd	55	12pm-1pm, 5pm-6pm
7	Hoad Lane west of Haul Route[D]	7	5pm-6pm
8	Kamilaroi Hwy between Blue Vale Rd and CHPP	244	3pm-4pm
9	Kamilaroi Hwy south of Rangari Rd	154	4pm-5pm
10	Kamilaroi Hwy north of Blue Vale Rd	202	4pm-5pm
11	Rangari Rd east of Kamilaroi Hwy	43	5am-6am
12	Rangari Rd west of Haul Route	60	4pm-5pm
13	Rangari Rd east of Haul Route	8	6am-7am
14	Shannon Harbour Rd east of Blue Vale Rd[A]	18	9am-10am
15	Wean Rd south of Rangari Rd[D]	7	4pm-5pm

[A] Survey 8-14 February 2011; [B] Survey 4-10 November 2010; [C] Data available for Tuesday to Friday only
[D]Survey 27 October-2 November 2011

4.4 Traffic Composition

The surveys described in Section 4.2 also provided data on the composition of traffic on the key roads. Light vehicles include motorcycles, cars, vans, 4WDs, and utes (including those towing a trailer or caravan). Heavy vehicles include single unit trucks and buses with two to four axles and articulated vehicles such as semi-trailers, rigid trucks with trailers and B Doubles.

Table 4.4 summarises the composition of the traffic on the average weekday over the survey period.

Table 4.4 – Average Weekday Traffic Composition

Site	Road and Location	Percent	
		Light	Heavy
1	Barbers Lagoon Rd south of Rangari Rd	90.2	9.8
2	Blue Vale Rd northeast of Kamilaroi Hwy[D]	61.2	38.8
3	Blue Vale Rd south of Shannon Harbour Rd[C]	43.3	56.7
4	Braymont Rd west of Blue Vale Rd[D]	56.7	43.3
5	Braymont Rd at Namoi River Bridge[C]	93.6	6.4
6	CHPP Access Rd	19.9	80.1
7	Hoad Lane west of Haul Route[D]	85.0	15.0
8	Kamilaroi Hwy between Blue Vale Rd and CHPP	68.1	31.9
9	Kamilaroi Hwy south of Rangari Rd	81.2	18.8
10	Kamilaroi Hwy north of Blue Vale Rd	45.1	54.9
11	Rangari Rd east of Kamilaroi Hwy	89.9	10.1
12	Rangari Rd west of Haul Route	47.7	52.3
13	Rangari Rd east of Haul Route	94.0	6.0
14	Shannon Harbour Rd east of Blue Vale Rd[A]	38.5	61.5
15	Wean Rd south of Rangari Rd[D]	66.7	33.3

[A] Survey 8-14 February 2011; [B] Survey 4-10 November 2010; [C] Data available for Tuesday to Friday only [D]Survey 27 October-2 November 2011

The proportional contribution to total daily traffic varies significantly on the roads in the local region.

5 Road System Operation

5.1 Roadway Capacity

The Austroads (2009) *Guide to Traffic Management Part 3: Traffic Studies and Analysis* provides guidelines for the capacity of two lane, two way rural roads, which in turn, refers to the *Highway Capacity Manual* (Transportation Research Board, 2000), known as HCM 2000. 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 to D describes 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.

HCM 2000 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. The LOS for Class I roads is defined in terms of both percent-time-spent-following (PTSF) and average travel speed. On Class II roads, LOS is defined only in terms of PTSF. It is noted that the unsealed roads providing access for the VCM would have lower capacities than the typical Class II sealed roads addressed by the HCM assessment

methods, however these are considered below as a guide to the current Levels of Service on these roads.

The PTSF is a measure of the level of opportunities to overtake. The LOS criteria for Class II two-lane highways are as shown in Table 5.1.

Table 5.1 – Level of Service Criteria for Two Lane Highways in Class II

Level of Service	Percent Time-Spent-Following
A	≤ 40
B	> 40-55
C	> 55-70
D	> 70-85
E	> 85

HCM 2000 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 (refer to Table 5.1). Comparing this against the peak hourly volumes presented in Table 4.3, it is clear that the existing peak hourly volumes are well below 650 vehicles per hour at all of the surveyed sites. The LOS at each of the surveyed sites is therefore considered to be A. More detailed analysis is not considered warranted in this case, as the peak hourly volumes are so far below the volume threshold where higher service levels would result.

5.2 Road Safety

Validated crash data was obtained from the RMS for the most recent five year period available, being from 1 October 2005 to 30 September 2010. The data is presented in **Attachment B**.

The data is based on crashes reported to the Police, and included the area approximately bounded by the Mudgee-Werris Creek railway line to the west, north to Baan Baa, east to Wean Road and south to the boundary of Gunnedah township. There were 63 reported crashes in the study area, which included one fatal crash, 29 injury crashes, and 33 non-injury tow-away crashes. The RMS data nominates speed as a factor in 18 of the

crashes, fatigue as a factor in ten of the crashes, and alcohol as a factor in four of the crashes. No factors were nominated for the remaining 31 crashes.

The data was reviewed with regard to crashes which occurred on roads of likely direct interest to the VCM, notably along the approved TCM haul route and on roads likely to be used by employees and visitors to access the VCM. It is noted that some of the descriptions of the location of crashes are fairly broad, e.g. "5km north of Gunnedah township" thus the exact location of the crash cannot be clearly identified from the data provided. The following summary of crashes in Table 5.2 includes those which occurred on the haul route, or nearby to the haul route, and on the roads likely used by employees and delivery vehicles to access the VCM, with the exception of those parts of Kamilaroi Highway not on the haul route. Data for all crashes is presented in **Attachment B.**

Table 5.2 – Summary of Crashes (1 Oct 2005 - 30 Sep 2010)

Date	Location	Description	Factors
6.30am Thu 3/4/2006	Kamilaroi Hwy 5km north of Gunnedah township	618584 southbound car struck an animal on the road	Fine weather Dry road
3.30pm Sat 29/4/2006	Rangari Rd 2km west of Wean Racecourse	518820 westbound car left the carriageway to the left on a straight section	Fine weather Dry road
11.00am Sat 8/7/2006	Rangari Rd 5.39km east of Boggabri township	528464 eastbound four wheel drive left the carriageway to the right on a left hand bend and struck an object	Speed Fine weather Dry road
12.25pm Sat 8/7/2006	Wean Rd 25km north of Gunnedah town	528498 northbound car left the carriageway to the left on a straight section and struck an object	Fine weather Dry road
7.30am Sun 9/7/2006	Rangari Rd 5km east of Blue Vale Rd	528532 eastbound car left the carriageway on a straight section to the left	Fatigue Dry road
2.10am Sat 19/8/2006	Blue Vale Rd 2km north of Whitehaven Mine Rd	532816 northbound car left the carriageway on a left hand bend and struck an object	Fine weather Dry road
1.00pm Mon 2/11/2006	Blue Vale Rd 640m south of Vickery Rd	554911 southbound semitrailer left the carriageway to the left on a left hand bend and struck an object	Fine weather Dry road
8.00am Thu 10/7/2008	Wean Rd 26km north of Gunnedah town	630782 southbound car out of control on carriwageway	Fine weather Dry road
5.05pm Wed 10/12/2008	Blue Vale Rd 8km north of Gunnedah township	649912 northbound B-double pulled out to the right overtaking a light truck which was also turning right	Fine weather Dry road
2.20pm Tue 5/5/2009	Blue Vale Rd 9.725km north of Kamilaroi Hwy	660016 northbound large rigid truck on the incorrect side of the road collided head on with a southbound B-double which was in its lane	Fine weather Dry road
3.20pm Fri 14/8/2009	Braymont Rd 12km east of Boggabri town	678846 eastbound large rigid truck left the carriageway to the left on a left hand bend	Speed Fine weather Dry road
1.10pm Fri 25/9/2009	Rangari Rd 16km east of Kamilaroi Hwy	686531 southbound B-double moving forward in a driveway left the carriageway to the left on a left hand bend	Speed Fine weather Dry road
12.30pm Sun 10/1/2010	Braymont Rd 80m east of Hull Rd	696487 westbound light truck left the carriageway to the right on a right hand bend and struck an object	Speed Fine weather Dry road

4.45pm Wed 19/5/2010	Rangari Rd 5.44km east of Kamilaroi Hwy	710481 westbound large rigid truck lost control and left the carriageway on a curve	Speed Fine weather Dry road
6.50pm Thu 18/2/2010	Rangari Rd 110m west of the iron bridge	699410 northbound motorcycle moving forward in a driveway collided with a westbound light truck	Fine weather Dry road
5.15pm Wed 21/7/2010	Braymont Rd 5km north of Blue Vale Rd	719525 southbound light truck left the carriageway to the left on a straight section and struck an object	Fine weather Dry road
6.25pm Mon 9/8/2010	Kamilaroi Hwy 50m south of Blue Vale Rd	720826 southbound car collided with northbound large rigid truck at temporary roadworks, one injury	Fine weather Dry road

Review of the crash data has identified no particular causation factors on the local roads. The majority of the reported crashes involved loss of control of the vehicle, causing the vehicle to leave the carriageway. The reported crashes occurred in fine weather on dry road surfaces, thus it is considered that local weather and road surface conditions do not adversely contribute to the crash history of the area.

Attachment A. Traffic Survey Data

Site 1: Barbers Lagoon Road - South of Rangari Road

Day	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*	*Sun*	*W/Day*	*W/End*	*7 Day*
Time	6-Dec-10	30-Nov-10	1-Dec-10	2-Dec-10	3-Dec-10	4-Dec-10	5-Dec-10	*Ave.*	*Ave.*	*Ave*
0:00	0	0	0	0	0	0	0	0	0	0
1:00	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	0	0	0	0	0	0
5:00	3	1	3	2	3	0	0	2	0	2
6:00	1	0	2	0	2	3	0	1	2	1
7:00	2	3	3	0	6	2	2	3	2	3
8:00	2	3	4	3	10	6	0	4	3	4
9:00	4	3	4	1	4	6	3	3	5	4
10:00	2	0	0	2	4	2	4	2	3	2
11:00	4	2	4	0	4	3	2	3	3	3
12:00	8	3	2	1	1	0	1	3	1	1
13:00	2	0	3	2	7	0	9	3	5	4
14:00	4	4	4	6	4	2	1	4	2	4
15:00	8	4	8	4	3	1	0	5	1	3
16:00	6	6	2	4	2	4	3	4	4	4
17:00	9	3	1	6	8	1	8	5	5	5
18:00	3	3	2	4	4	2	1	3	2	3
19:00	2	1	1	3	3	3	2	2	3	2
20:00	1	1	1	0	3	0	3	1	2	1
21:00	0	2	1	1	0	1	0	1	1	1
22:00	1	1	0	0	0	0	0	0	0	0
23:00	1	0	0	0	0	1	1	0	1	0
Total	**63**	**40**	**45**	**39**	**68**	**37**	**40**	**51**	**39**	**45**

Site 2: Bluevale Road - Northeast of Kamilaroi Highway

Day	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*	*Sun*	*W/Day*	*W/End*	*7 Day*
Time	8-Nov-10	9-Nov-10	10-Nov-10	4-Nov-10	5-Nov-10	6-Nov-10	7-Nov-10	*Ave.*	*Ave.*	*Ave*
0:00	0	1	5	2	1	0	1	2	1	1
1:00	0	1	3	1	0	1	0	1	1	1
2:00	0	11	9	10	14	11	0	9	6	9
3:00	1	5	2	4	5	3	0	3	2	3
4:00	5	8	11	3	4	2	0	6	1	2
5:00	40	42	39	38	42	31	3	40	17	29
6:00	33	46	51	54	51	45	7	47	26	39
7:00	70	120	117	89	149	90	8	109	49	84
8:00	86	89	104	133	117	94	7	106	51	88
9:00	78	103	94	95	93	100	5	93	53	73
10:00	99	90	88	98	105	94	10	96	52	77
11:00	87	88	100	99	124	103	5	100	54	83
12:00	107	96	72	115	92	81	14	96	48	76
13:00	85	106	121	106	102	86	5	104	46	75
14:00	98	103	93	122	93	106	8	102	57	82
15:00	102	135	102	115	116	80	17	114	49	82
16:00	105	95	85	105	91	39	15	96	27	63
17:00	104	123	116	96	86	11	11	105	11	51
18:00	56	68	58	82	96	10	17	72	14	51
19:00	76	80	52	73	81	1	9	72	5	41
20:00	84	92	85	57	63	5	1	76	3	32
21:00	43	54	43	53	66	3	1	52	2	31
22:00	11	10	8	12	12	1	1	11	1	7
23:00	4	1	0	3	7	0	0	3	0	3
Total	**1374**	**1567**	**1458**	**1565**	**1610**	**997**	**145**	**1515**	**571**	**1079**

Site 3: Bluevale Road - South of Shannon Harbour Road

Day	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*	*Sun*	*W/Day*	*W/End*	*7 Day*
Time	14-Feb-11	08-Feb-11	9-Feb-11	10-Feb-11	11-Feb-11	12-Feb-11	13-Feb-11	*Ave.*	*Ave.*	*Ave*
0:00	0	0	0	0	0	1	2	0	2	1
1:00	1	0	0	0	0	1	3	0	2	1
2:00	0	7	7	7	7	6	0	6	3	6
3:00	1	0	0	0	0	0	0	0	0	0
4:00	5	6	4	5	5	2	1	5	2	4
5:00	11	18	25	25	21	19	7	20	13	19
6:00	55	31	37	46	48	22	11	43	17	33
7:00	55	19	24	40	57	25	4	39	15	28
8:00	41	22	12	32	36	8	2	29	5	19
9:00	44	12	12	30	45	10	3	29	7	19
10:00	37	17	24	22	55	36	5	31	21	27
11:00	33	10	18	18	65	22	4	29	13	23
12:00	44	20	11	17	42	5	5	27	5	17
13:00	40	21	17	14	43	10	5	27	8	18
14:00	51	17	13	22	49	12	4	30	8	20
15:00	51	20	26	29	47	12	1	35	7	23
16:00	50	34	40	38	52	6	6	43	6	29
17:00	47	29	35	30	48	9	8	38	9	27
18:00	27	12	11	19	38	12	5	21	9	16
19:00	14	6	6	9	22	3	4	11	4	8
20:00	18	1	2	2	19	3	0	8	2	5
21:00	15	3	2	5	7	4	0	6	2	4
22:00	1	4	1	1	2	2	0	2	1	2
23:00	1	1	0	3	1	0	0	1	0	1
Total	**642**	**310**	**327**	**414**	**709**	**230**	**80**	**480**	**155**	**345**

Site 4: Braymont Road – West of Blue Vale Road

Day	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*	*Sun*	*W/Day*	*W/End*	*7 Day*
Time	31-Oct-11	1-Nov-11	2-Nov-11	27-Oct-11	28-Oct-11	29-Oct-11	30-Oct-11	*Ave.*	*Ave.*	*Ave*
0:00	0	0	0	2	1	0	0	1	0	0
1:00	0	0	1	0	2	0	0	1	0	0
2:00	1	4	2	5	4	4	0	3	2	3
3:00	0	2	1	1	1	3	0	1	2	1
4:00	0	0	2	5	0	2	0	1	1	1
5:00	15	21	19	18	22	13	0	19	7	15
6:00	28	37	38	37	29	13	2	34	8	26
7:00	11	6	9	6	8	7	3	8	5	7
8:00	8	7	10	6	5	7	0	7	4	6
9:00	3	7	7	5	4	4	0	5	2	4
10:00	6	5	9	5	8	6	1	7	4	6
11:00	10	5	7	9	8	6	1	8	4	7
12:00	12	3	8	6	3	2	0	6	1	5
13:00	33	25	34	27	21	6	2	28	4	21
14:00	34	60	57	58	50	11	2	52	7	39
15:00	14	10	20	12	8	25	2	13	14	13
16:00	11	11	12	6	11	2	0	10	1	8
17:00	15	12	15	7	6	3	0	11	2	8
18:00	8	21	15	8	9	2	1	12	2	9
19:00	7	3	8	6	9	1	0	7	1	5
20:00	6	3	6	12	11	1	0	8	1	6
21:00	16	19	22	18	19	0	0	19	0	13
22:00	9	15	18	12	7	0	0	12	0	9
23:00	2	2	2	1	0	0	0	1	0	1
Total	**249**	**278**	**322**	**272**	**246**	**118**	**14**	**273**	**66**	**214**

Site 5: Braymont Road - at Namoi River Bridge

Day	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*	*Sun*	*W/Day*	*W/End*	*7 Day*
Time	6-Dec-10	30-Nov-10	1-Dec-10	2-Dec-10	3-Dec-10	4-Dec-10	5-Dec-10	*Ave.*	*Ave.*	*Ave*
0:00		0	0	0	0			0		
1:00		0	0	0	0			0		
2:00		0	0	0	0			0		
3:00		0	0	0	0			0		
4:00		0	0	0	0			0		
5:00		5	8	3	1			4		
6:00		2	2	1	4			2		
7:00		3	8	15	5			8		
8:00		10	17	16	10			13		
9:00		3	7	10	2			6		
10:00		6	2	4	5			4		
11:00		7	3	3	15			7		
12:00		9	4	7	5			6		
13:00		2	5	11	1			5		
14:00		10	11	10	7			10		
15:00		10	19	18	2			12		
16:00		14	21	19	6			15		
17:00		20	15	13	12			15		
18:00		4	8	13	2			7		
19:00		0	5	7	5			4		
20:00		4	4	3	1			3		
21:00		2	2	0	1			1		
22:00		0	0	0	0			0		
23:00		0	0	0	0			0		
Total		**111**	**141**	**153**	**84**			**122**		

Site 6: CHPP Access Road

Day	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*	*Sun*	*W/Day*	*W/End*	*7 Day*
Time	6-Dec-10	30-Nov-10	1-Dec-10	2-Dec-10	3-Dec-10	4-Dec-10	5-Dec-10	*Ave.*	*Ave.*	*Ave*
0:00	0	0	0	0	0	0	0	0	0	0
1:00	0	0	0	2	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0
3:00	2	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	0	0	0	0	0	0
5:00	0	0	2	1	1	0	0	1	0	1
6:00	3	0	11	7	9	2	0	6	1	5
7:00	60	12	72	60	55	21	0	52	11	37
8:00	44	68	55	34	37	25	0	48	13	37
9:00	42	66	62	41	45	24	1	51	13	40
10:00	52	37	64	48	45	23	3	49	13	37
11:00	40	59	47	46	35	18	2	45	10	35
12:00	48	64	72	47	45	22	0	55	11	42
13:00	54	57	57	42	43	24	1	51	13	37
14:00	40	51	51	33	40	22	1	43	12	33
15:00	42	63	52	34	39	12	1	46	7	34
16:00	31	59	47	38	43	0	1	44	1	31
17:00	59	58	56	57	45	0	0	55	0	36
18:00	40	41	32	36	31	0	0	36	0	23
19:00	37	35	28	25	36	0	0	32	0	21
20:00	38	27	27	32	22	0	0	29	0	18
21:00	32	31	26	33	20	0	0	28	0	18
22:00	0	0	1	0	1	0	0	0	0	0
23:00	2	0	0	2	0	0	0	1	0	0
Total	**666**	**728**	**762**	**618**	**592**	**193**	**10**	**673**	**102**	**484**

Site 7: Hoad Lane – West of Blue Vale Road

Day	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*	*Sun*	*W/Day*	*W/End*	*7 Day*
Time	31-Oct-11	1-Nov-11	2-Nov-11	27-Oct-11	28-Oct-11	29-Oct-11	30-Oct-11	*Ave.*	*Ave.*	*Ave*
0:00	0	0	0	0	0	1	0	0	1	0
1:00	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	1	0	0	0	0	0
4:00	0	0	0	1	0	1	0	0	1	0
5:00	4	5	3	4	4	2	2	4	2	3
6:00	4	5	6	6	6	7	1	5	4	5
7:00	6	2	3	3	1	0	4	3	2	3
8:00	2	2	0	5	1	1	0	2	1	2
9:00	2	0	2	1	1	1	4	1	3	2
10:00	3	1	4	3	2	1	2	3	2	2
11:00	2	1	2	2	2	0	4	2	2	2
12:00	3	1	1	4	1	4	2	2	3	2
13:00	2	2	3	1	2	1	3	2	2	2
14:00	2	0	0	2	0	1	2	1	2	1
15:00	3	0	6	3	7	3	8	4	6	4
16:00	4	3	1	3	3	1	5	3	3	3
17:00	8	7	3	8	10	3	3	7	3	6
18:00	7	6	8	5	5	2	6	6	4	6
19:00	1	3	1	6	1	1	0	2	1	2
20:00	1	0	0	1	2	1	0	1	1	1
21:00	1	1	2	0	0	0	1	1	1	1
22:00	0	0	0	0	0	1	2	0	2	0
23:00	0	0	0	1	0	0	0	0	0	0
Total	**55**	**39**	**45**	**59**	**49**	**32**	**49**	**49**	**41**	**47**

Site 8: Kamilaroi Highway - between Blue Vale Road & CHPP

Day	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*	*Sun*	*W/Day*	*W/End*	*7 Day*
Time	6-Dec-10	7-Dec-10	1-Dec-10	2-Dec-10	3-Dec-10	4-Dec-10	5-Dec-10	*Ave.*	*Ave.*	*Ave*
0:00	9	9	8		14	6	9	10	9	9
1:00	2	6	8		9	3	5	6	5	6
2:00	3	17	15		15	18	7	13	7	14
3:00	3	11	7		12	7	5	8	5	8
4:00	9	18	26		27	9	10	20	10	18
5:00	70	105	85		89	38	14	87	14	57
6:00	109	106	126		109	46	33	113	33	79
7:00	165	188	234		196	91	46	196	46	142
8:00	218	232	235		248	164	83	233	83	183
9:00	192	203	231		219	191	82	211	82	181
10:00	199	193	262	233	210	258	136	219	136	220
11:00	190	204	207	201	216	187	138	204	138	190
12:00	190	192	212	201	208	174	123	201	123	184
13:00	231	204	217	224	212	154	132	218	132	188
14:00	219	211	274	236	240	181	148	236	148	216
15:00	248	222	252	236	263	164	115	244	115	206
16:00	250	229	231	236	243	125	177	238	177	202
17:00	235	244	208	236	245	140	137	234	137	193
18:00	174	153	155	174	183	106	105	168	105	145
19:00	112	107	105	114	139	60	85	115	85	101
20:00	80	74		93	82	28	45	82	45	62
21:00	76	68		72	68	35	29	71	29	51
22:00	35	28		38	53	25	25	39	25	35
23:00	16	15		28	32	16	13	23	13	22
Total	**3035**	**3039**	**3098**	**2322**	**3332**	**2226**	**1702**	**3188**	**1702**	**2709**

Site 9: Kamilaroi Highway - South of Rangari Road

Day	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*	*Sun*	*W/Day*	*W/End*	*7 Day*
Time	6-Dec-10	30-Nov-10	1-Dec-10	2-Dec-10	3-Dec-10	4-Dec-10	5-Dec-10	*Ave.*	*Ave.*	*Ave*
0:00	4	10	13	7	11	7	13	9	10	10
1:00	4	7	4	6	6	4	5	5	5	5
2:00	5	10	5	6	15	6	1	8	4	7
3:00	2	19	7	6	7	7	3	8	5	8
4:00	7	17	18	16	25	3	10	17	7	15
5:00	59	66	72	78	86	28	12	72	20	57
6:00	103	76	98	94	102	49	29	95	39	75
7:00	123	118	117	119	131	75	51	122	63	102
8:00	133	156	132	158	153	93	61	146	77	126
9:00	129	134	137	146	142	102	75	138	89	123
10:00	104	152	159	130	134	125	83	136	104	131
11:00	132	157	125	127	125	101	94	133	98	122
12:00	108	128	127	125	154	108	96	128	102	123
13:00	105	148	118	149	132	120	91	130	106	126
14:00	134	130	154	137	134	99	100	138	100	126
15:00	148	151	121	147	154	82	94	144	88	125
16:00	125	159	158	164	163	89	139	154	114	145
17:00	134	170	145	151	167	121	115	153	118	145
18:00	99	121	104	120	120	75	90	113	83	105
19:00	53	53	62	70	64	32	62	60	47	57
20:00	33	43	36	46	47	26	50	41	38	41
21:00	31	30	44	29	33	14	23	33	19	29
22:00	24	28	26	16	19	19	17	23	18	21
23:00	14	11	22	27	32	6	11	21	9	18
Total	**1813**	**2094**	**2004**	**2074**	**2156**	**1391**	**1325**	**2028**	**1358**	**1841**

Site 10: Kamilaroi Highway - North of Blue Vale Road

Day	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*	*Sun*	*W/Day*	*W/End*	*7 Day*
Time	11-Oct-10	12-Oct-10	13-Oct-10	7-Oct-10	8-Oct-10	9-Oct-10	10-Oct-10	*Ave.*	*Ave.*	*Ave*
0:00	17	7	12	6	11	12	5	11	9	9
1:00	5	3	8	8	7	10	6	6	8	8
2:00	6	6	6	9	4	13	5	6	9	8
3:00	13	10	17	12	13	8	8	13	8	10
4:00	21	23	25	20	22	19	10	22	15	18
5:00	74	86	98	98	85	43	26	88	35	63
6:00	128	115	118	93	96	53	34	110	44	69
7:00	147	150	168	140	133	107	59	148	83	110
8:00	146	190	185	164	156	132	87	168	110	135
9:00	169	172	167	203	184	167	126	179	147	170
10:00	160	158	162	177	164	146	142	164	144	157
11:00	172	151	186	189	166	166	132	173	149	163
12:00	151	125	157	201	168	157	178	160	168	176
13:00	159	181	171	178	181	171	149	174	160	170
14:00	153	159	161	174	203	126	166	170	146	167
15:00	186	160	216	177	213	143	157	190	150	173
16:00	203	166	217	229	194	122	123	202	123	167
17:00	179	180	195	206	196	110	108	191	109	155
18:00	109	107	118	133	131	87	85	120	86	109
19:00	80	64	55	68	89	55	56	71	56	67
20:00	49	46	35	31	60	45	50	44	48	47
21:00	32	30	41	34	36	23	26	35	25	30
22:00	18	20	24	33	25	24	17	24	21	25
23:00	22	12	18	22	20	7	7	19	7	14
Total	**2399**	**2321**	**2560**	**2605**	**2557**	**1946**	**1762**	**2488**	**1854**	**2218**

Site 11: Rangari Road - East of Kamilaroi Highway

Day	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*	*Sun*	*W/Day*	*W/End*	*7 Day*
Time	6-Dec-10	30-Nov-10	1-Dec-10	2-Dec-10	3-Dec-10	4-Dec-10	5-Dec-10	*Ave.*	*Ave.*	*Ave*
0:00	0	1	1	5	0	0	2	1	1	2
1:00	0	5	3	0	0	1	0	2	1	2
2:00	0	10	5	3	9	4	0	5	2	5
3:00	0	14	0	0	1	0	0	3	0	3
4:00	2	8	7	14	17	0	0	10	0	8
5:00	0	52	55	51	58	10	3	43	7	38
6:00	12	33	31	38	36	6	6	30	6	25
7:00	0	19	24	26	26	0	12	19	6	18
8:00	2	19	13	18	28	5	6	16	6	15
9:00	2	30	23	20	20	0	10	19	5	17
10:00	12	16	19	21	18	4	6	17	5	14
11:00	2	30	18	10	21	8	7	16	8	16
12:00	8	21	23	8	27	6	3	17	5	15
13:00	2	27	15	19	24	15	6	17	11	18
14:00	0	13	21	21	19	8	2	15	5	14
15:00	0	30	21	22	34	8	6	21	7	20
16:00	2	52	48	55	44	7	4	40	6	35
17:00	0	39	45	56	53	12	12	39	12	36
18:00	0	25	25	26	26	9	9	20	9	20
19:00	0	10	4	8	12	0	15	7	8	8
20:00	0	6	1	3	5	0	6	3	3	4
21:00	0	11	5	2	1	0	0	4	0	3
22:00	0	4	5	0	3	2	2	2	2	3
23:00	0	0	2	0	2	0	0	1	0	1
Total	**44**	**475**	**414**	**426**	**484**	**105**	**117**	**369**	**111**	**337**

Site 12: Rangari Road - West of Haul Route

Day	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*	*Sun*	*W/Day*	*W/End*	*7 Day*
Time	31-Jan-11	1-Feb-11	2-Feb-11	3-Feb-11	28-Jan-11	29-Jan-11	30-Jan-11	*Ave.*	*Ave.*	*Ave*
0:00	0	1	4	0	0	1	2	1	2	1
1:00	0	0	0	1	1	0	3	0	2	1
2:00	0	10	10	10	13	12	1	9	7	9
3:00	1	0	0	1	2	0	1	1	1	1
4:00	2	6	10	11	7	5	2	7	4	5
5:00	19	17	23	23	14	12	8	19	10	11
6:00	45	45	55	43	46	32	8	47	20	29
7:00	35	52	39	53	34	18	6	43	12	19
8:00	39	36	43	31	31	30	11	36	21	24
9:00	38	44	42	29	22	32	7	35	20	20
10:00	39	38	40	38	30	27	8	37	18	22
11:00	52	34	45	35	40	31	6	41	19	26
12:00	39	48	34	36	37	17	2	39	10	19
13:00	37	34	38	31	35	28	7	35	18	23
14:00	38	33	24	25	40	27	8	32	18	25
15:00	41	41	48	32	39	21	7	40	14	22
16:00	66	61	63	55	56	3	11	60	7	23
17:00	58	61	62	61	44	18	11	57	15	24
18:00	45	43	39	37	34	12	12	40	12	19
19:00	23	28	25	31	27	7	5	27	6	13
20:00	16	25	30	19	20	8	2	22	5	10
21:00	8	9	6	11	6	3	3	8	3	4
22:00	0	1	1	2	0	0	1	1	1	0
23:00	0	0	1	0	0	0	0	0	0	0
Total	**641**	**667**	**682**	**615**	**578**	**344**	**132**	**637**	**238**	**351**

Site 13: Rangari Road - East of Haul Route

Day	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*	*Sun*	*W/Day*	*W/End*	*7 Day*
Time	6-Dec-10	7-Dec-10	01-Dec-10	2-Dec-10	3-Dec-10	4-Dec-10	5-Dec-10	*Ave.*	*Ave.*	*Ave*
0:00	0	0	0	0	0	0	0	0	0	0
1:00	0	1	1	0	0	1	1	0	1	1
2:00	0	2	2	2	2	2	0	2	1	2
3:00	0	0	0	1	0	0	0	0	0	0
4:00	1	1	0	0	2	0	0	1	0	0
5:00	1	3	2	3	4	1	0	3	1	2
6:00	7	5	9	8	9	6	0	8	3	6
7:00	4	5	2	5	3	0	1	4	1	2
8:00	4	1	3	5	3	4	0	3	2	3
9:00	3	2	4	5	4	3	3	4	3	4
10:00	3	2	3	2	4	4	2	3	3	3
11:00	4	1	2	4	2	3	3	3	3	3
12:00	3	2	4	2	1	5	5	2	5	3
13:00	3	1	3	4	8	2	1	4	2	4
14:00	1	1	3	3	2	2	1	2	2	2
15:00	9	1	5	9	2	4	5	5	5	5
16:00	6	7	7	8	4	1	2	6	2	4
17:00	8	6	6	6	8	2	7	7	5	6
18:00	7	4	5	8	10	5	1	7	3	6
19:00	2	1	3	2	1	3	2	2	3	2
20:00	1	3	1	2	0	0	2	1	1	1
21:00	0	0	1	0	0	1	0	0	1	0
22:00	0	0	2	0	2	0	0	1	0	1
23:00	0	1	0	0	0	1	1	0	1	0
Total	**67**	**50**	**68**	**79**	**71**	**50**	**37**	**67**	**44**	**61**

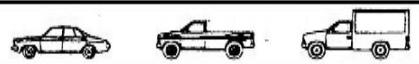
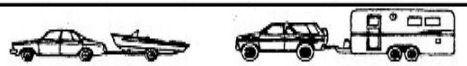
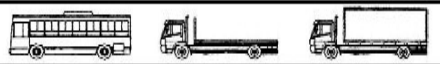
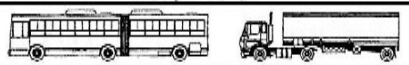
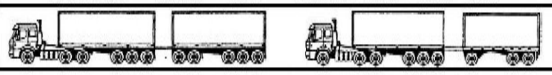
Site 14: Shannon Harbour Road - East of Blue Vale Road

Day	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*	*Sun*	*W/Day*	*W/End*	*7 Day*
Time	14-Feb-11	08-Feb-11	9-Feb-11	10-Feb-11	11-Feb-11	12-Feb-11	13-Feb-11	*Ave.*	*Ave.*	*Ave*
0:00	0	0	0	0	0	0	1	0	1	0
1:00	0	0	1	0	0	0	1	0	1	0
2:00	0	1	1	1	1	1	0	1	1	1
3:00	0	1	1	1	1	1	0	1	1	1
4:00	0	1	0	0	0	0	0	0	0	0
5:00	3	4	6	5	5	1	1	5	1	4
6:00	14	11	11	14	15	7	6	13	7	11
7:00	22	7	7	9	28	4	1	15	3	9
8:00	30	5	6	8	22	2	2	14	2	8
9:00	40	6	8	13	25	4	3	18	4	10
10:00	30	2	9	12	33	13	2	17	8	12
11:00	30	3	5	8	36	17	0	16	9	12
12:00	31	2	4	11	17	4	1	13	3	7
13:00	32	1	5	4	19	3	6	12	5	6
14:00	18	6	1	6	21	5	5	10	5	7
15:00	27	8	6	11	27	3	2	16	3	10
16:00	30	10	5	15	26	3	0	17	2	10
17:00	31	3	3	5	20	0	0	12	0	5
18:00	34	8	6	6	19	4	0	15	2	7
19:00	15	2	1	2	12	1	0	6	1	3
20:00	33	0	1	0	14	0	0	10	0	3
21:00	16	0	0	1	5	1	0	4	1	1
22:00	0	0	0	2	0	0	0	0	0	0
23:00	1	0	0	0	1	0	0	0	0	0
Total	**437**	**81**	**87**	**134**	**347**	**74**	**31**	**217**	**53**	**126**

Site 15: Wean Road – South of Rangari Road

Day	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*	*Sun*	*W/Day*	*W/End*	*7 Day*
Time	31-Oct-11	1-Nov-11	2-Nov-11	27-Oct-11	28-Oct-11	29-Oct-11	30-Oct-11	*Ave.*	*Ave.*	*Ave*
0:00	0	0	0	0	0	0	0	0	0	0
1:00	0	0	0	0	0	0	1	0	1	0
2:00	0	1	1	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	1	0	1	0
4:00	1	0	0	0	0	0	0	0	0	0
5:00	1	0	0	2	2	2	0	1	1	1
6:00	0	6	6	2	2	1	0	3	1	2
7:00	6	5	9	3	6	0	1	6	1	4
8:00	3	3	4	3	5	1	0	4	1	3
9:00	4	4	3	3	3	1	7	3	4	4
10:00	3	3	5	0	7	2	3	4	3	3
11:00	3	0	2	4	2	5	2	2	4	3
12:00	2	3	2	3	2	5	2	2	4	3
13:00	4	1	3	2	0	0	2	2	1	2
14:00	2	2	0	2	3	5	0	2	3	2
15:00	4	3	4	2	3	2	3	3	3	3
16:00	6	5	9	7	7	8	1	7	5	6
17:00	5	3	0	3	1	7	1	2	4	3
18:00	4	3	2	1	4	2	1	3	2	2
19:00	1	5	2	1	1	2	3	2	3	2
20:00	1	1	0	0	0	0	0	0	0	0
21:00	1	0	0	2	1	7	0	1	4	2
22:00	1	1	1	0	0	4	1	1	3	1
23:00	2	1	0	0	0	2	0	1	1	1
Total	**54**	**50**	**53**	**40**	**49**	**56**	**29**	**49**	**43**	**47**

AUSTROADS Vehicle Classification System

Level 1	Level 2		Level 3	AUSTROADS Classification		
Length (Indicative)	**Axles and Axle Groups**		**Vehicle Type**			
Type	**Axles**	**Groups**	**Typical Description**	**Class**	**Parameters**	**Typical Configuration**
	LIGHT VEHICLES					
Short up to 5.5m		1 or 2	**Short** Sedan, Wagon, 4WD, Utility, Light Van, Bicycle, Motorcycle, etc	1	d(1) ≤ 3.2m and axles = 2	
Medium 5.5m to 14.5m	3, 4 or 5	3	**Short - Towing** Trailer, Caravan, Boat, etc	2	groups = 3 d(1) ≥ 2.1m, d(1) ≤ 3.2m, d(2) ≥ 2.1m and axles = 3, 4 or 5	
	HEAVY VEHICLES					
	2	2	**Two Axle Truck or Bus**	3	d(1) > 3.2m and axles = 2	
	3	2	**Three Axle Truck or Bus**	4	axles = 3 and groups = 2	
	> 3	2	**Four Axle Truck**	5	axles > 3 and groups = 2	
Long 11.5m to 19.0m	3	3	**Three Axle Articulated** Three axle articulated vehicle, or Rigid vehicle and trailer	6	d(1) > 3.2m, axles = 3 and groups = 3	
	4	> 2	**Four Axle Articulated** Four axle articulated vehicle, or Rigid vehicle and trailer	7	d(2) < 2.1m or d(1) < 2.1m or d(1) > 3.2m axles = 4 and groups > 2	
	5	> 2	**Five Axle Articulated** Five axle articulated vehicle, or Rigid vehicle and trailer	8	d(2) < 2.1m or d(1) < 2.1m or d(1) > 3.2m axles = 5 and groups > 2	
	≥ 6	> 2	**Six Axle Articulated** Six axle articulated vehicle, or Rigid vehicle and trailer	9	axles = 6 and groups > 2 or axles > 6 and groups = 3	
Medium Combination 17.5m to 36.5m	> 6	4	**B Double** B Double, or Heavy truck and trailer	10	groups = 4 and axles > 6	
	> 6	5 or 6	**Double Road Train** Double road train, or Medium articulated vehicle and one dog trailer (M.A.D.)	11	groups = 5 or 6 and axles > 6	
Large Combination Over 33.0m	> 6	> 6	**Triple Road Train** Triple road train, or Heavy truck and three trailers	12	groups > 6 and axles > 6	

Definitions:
Group: Axle group, where adjacent axles are less than 2.1m apart
Groups: Number of axle groups
Axles: Number of axles (maximum axle spacing of 10.0m)

d(1): Distance between first and second axle
d(2): Distance between second and third axle

Attachment B. Roads and Maritime Services Crash Data

Summary Crash Report

# Crash Type		
Car Crash	34	54.0%
Light Truck Crash	16	25.4%
Rigid Truck Crash	6	9.5%
Articulated Truck Crash	16	25.4%
'Heavy Truck Crash	(21)	(33.3%)
Bus Crash	0	0.0%
"Heavy Vehicle Crash	(21)	(33.3%)
Emergency Vehicle Crash	0	0.0%
Motorcycle Crash	4	6.3%
Pedal Cycle Crash	0	0.0%
Pedestrian Crash	0	0.0%

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

Location Type		
*Intersection	6	9.5%
Non intersection	57	90.5%

* Up to 10 metres from an intersection
~ 07:30-09:30 or 14:30-17:00 on school days

Collision Type		
Single Vehicle	46	73.0%
Multi Vehicle	17	27.0%

Road Classification		
Freeway/Motorway	0	0.0%
State Highway	35	55.6%
Other Classified Road	6	9.5%
Unclassified Road	22	34.9%

Contributing Factors		
Speeding	18	28.6%
Fatigue	10	15.9%
Alcohol	4	6.3%

Weather		
Fine	54	85.7%
Rain	2	3.2%
Overcast	5	7.9%
Fog or mist	1	1.6%
Other	0	0.0%

Road Surface Condition		
Wet	5	7.9%
Dry	58	92.1%
Snow or ice	0	0.0%

Natural Lighting		
Dawn	2	3.2%
Daylight	36	57.1%
Dusk	6	9.5%
Darkness	19	30.2%

Crash Movement		
Intersection, adjacent approaches	3	4.8%
Head-on (not overtaking)	3	4.8%
Opposing vehicles; turning	1	1.6%
U-turn	0	0.0%
Rear-end	4	6.3%
Lane change	0	0.0%
Parallel lanes; turning	0	0.0%
Vehicle leaving driveway	1	1.6%
Overtaking; same direction	1	1.6%
Hit parked vehicle	1	1.6%
Hit railway train	0	0.0%
Hit pedestrian	0	0.0%
Permanent obstruction on road	0	0.0%
Hit animal	8	12.7%
Off road, on straight	7	11.1%
Off road on straight, hit object	9	14.3%
Out of control on straight	1	1.6%
Off road, on curve	8	12.7%
Off road on curve, hit object	10	15.9%
Out of control on curve	2	3.2%
Other crash type	4	6.3%

CRASHES	63	
Fatal crash	1	1.6%
Injury crash	29	46.0%
Non-casualty crash	33	52.4%

CASUALTIES	38	
Killed	5	13.2%
Injured	33	86.8%
^ Unrestrained	1	2.6%

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

Time Group		% of Day	
00:01 - 02:59	3	4.8%	12.5%
03:00 - 04:59	2	3.2%	8.3%
05:00 - 05:59	1	1.6%	4.2%
06:00 - 06:59	2	3.2%	4.2%
07:00 - 07:59	2	3.2%	4.2%
08:00 - 08:59	4	6.3%	4.2%
09:00 - 09:59	1	1.6%	4.2%
10:00 - 10:59	1	1.6%	4.2%
11:00 - 11:59	2	3.2%	4.2%
12:00 - 12:59	5	7.9%	4.2%
13:00 - 13:59	4	6.3%	4.2%
14:00 - 14:59	6	9.5%	4.2%
15:00 - 15:59	4	6.3%	4.2%
16:00 - 16:59	6	9.5%	4.2%
17:00 - 17:59	3	4.8%	4.2%
18:00 - 18:59	5	7.9%	4.2%
19:00 - 19:59	4	6.3%	4.2%
20:00 - 21:59	6	9.5%	8.3%
22:00 - 24:00	2	3.2%	8.3%

Crashes		Casualties
11	2010	7
17	2009	9
9	2008	4
10	2007	11
16	2006	7

~ School Travel Time		
Involvement	13	20.6%

Speed Limit					
40 km/h or less	1	1.6%	~ 40km/h or less	1	7.7%
50 km/h zone	7	11.1%	80 km/h zone	5	7.9%
60 km/h zone	1	1.6%	90 km/h zone	0	0.0%
70 km/h zone	0	0.0%	100 km/h zone	49	77.8%
			110 km/h zone	0	0.0%

Street Lighting Off/Nil			% of Dark
17	of	19 in Dark	89.5%

McLean Periods			% Week
A	8	12.7%	17.9%
B	3	4.8%	7.1%
C	14	22.2%	17.9%
D	3	4.8%	3.5%
E	2	3.2%	3.6%
F	9	14.3%	10.7%
G	9	14.3%	7.1%
H	7	11.1%	7.1%
I	4	6.3%	12.5%
J	4	6.3%	10.7%

Day of the Week						# Holiday Periods					
Monday	8	12.7%	Thursday	10	15.9%	Sunday	10	15.9%	New Year	0	0.0%
Tuesday	10	15.9%	Friday	9	14.3%	WEEKDAY	45	71.4%	Aust. Day	0	0.0%
Wednesday	8	12.7%	Saturday	8	12.7%	WEEKEND	18	28.6%	Easter	0	0.0%
									Anzac Day	0	0.0%

Queen's BD	1	1.6%	Easter SH	3	4.8%			
Labour Day	1	1.6%	June/July SH	7	11.1%			
Christmas	0	0.0%	Sept./Oct. SH	1	1.6%			
January SH	1	1.6%	December SH	0	0.0%			

Crashid dataset Gunnedah - Boggabri Coal Project Crash Data 1/10/2005 to 30/9/2010

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

Brief Crash Report

Crash No	Date	Day	Time	Dist		ID Feature	Loc	Alg	Lgt	Wth	Sfc	SL	DCA	Tus	TU1	S1	D	Manoeuvre1	TU2	S2	D	Manoeuvre2	K	I	Fac
																									S F
Northern Region																									
Gunnedah LGA																									
Boggabri																									
Kamilaroi Hwy																									
508841	13/02/2006	Mon	00:01	15 km	S	BOGGABRI TN	2WY	STR	Nil	Overcast	Dry	100	609	1	CAR	1	N	Proceeding in lane					0	0	
Emerald Hill																									
Kamilaroi Hwy																									
603794	14/12/2007	Fri	15:00	15 km	S	BOGGABRI TN	2WY	CRV	Nil	Fine	Dry	100	803	L 1	4WD	1	E	Proceeding in lane					0	1	S
587887	16/08/2007	Thu	19:45		at	GOOLHI RD	TJN	CRV	Nil	Raining	Wet	100	804	L 1	CAR	1	S	Proceeding in lane					0	0	S
645705	12/11/2008	Wed	05:15	15 km	N	GUNNEDAH TN	2WY	CRV	Nil	Fine	Dry	100	801	L 1	BDBL	1	N	Proceeding in lane					0	0	S
Gunnedah																									
Blue Vale Rd																									
666016	05/05/2009	Tue	14:20	9.725 k	N	KAMILAROI HWY	2WY	CRV	Nil	Fine	Dry	100	201	2	LOR	1	N	Incorrect side	BDBL	1	S	Proceeding in lane	0	0	
554911	27/11/2006	Mon	13:00	640 m	S	VICKERY RD	2WY	CRV	Nil	Fine	Dry	100	804	L 1	SEM	1	S	Proceeding in lane					0	0	
532816	19/08/2006	Sat	02:10	2 km	N	WHITEHAVEN MIN RD	2WY	CRV	Nil	Fine	Dry	100	804	R 1	CAR	1	N	Proceeding in lane					0	0	
Bluevale Rd																									
649912	10/12/2008	Wed	17:05	8 km	N	GUNNEDAH TN	2WY	STR	Nil	Fine	Dry	100	506	2	BDBL	1	N	Pull out opposite	TRT	1	N	Turning right	0	0	
Farrar Rd																									
633001	15/07/2008	Tue	07:00		at	UNNAMED RD	TJN	STR	Nil	Fog or mi	Wet	80	202	2	UTE	1	W	Turning right	M/C	1	E	Proceeding in lane	0	1	
Kamilaroi Hwy																									
675454	16/07/2009	Thu	18:45	2 km	N	BLUE VALE RD	2WY	STR	Nil	Fine	Dry	100	703	1	CAR	1	E	Proceeding in lane					0	0	
720826	09/08/2010	Mon	18:25	50 m	S	BLUE VALE RD	2WY	STR	On	Fine	Dry	60	606	2	CAR	1	S	Proceeding in lane	LOR	1	N	Proceeding in lane	0	1	
618584	03/04/2008	Thu	06:30	5 km	N	GUNNEDAH TN	2WY	STR	Nil	Fine	Dry	100	609	1	CAR	1	S	Proceeding in lane					0	0	
693102	14/12/2009	Mon	14:40	10 km	N	GUNNEDAH TN	2WY	CRV	Nil	Fine	Dry	100	803	R 1	SEM	1	N	Proceeding in lane					0	0	
Old Blue Vale Rd																									
720103	24/07/2010	Sat	19:00	2 km	W	KELVIN RD	2WY	STR	Nil	Fine	Dry	100	609	1	TRK	1	W	Proceeding in lane					0	0	
Quia Rd																									
673102	14/05/2009	Thu	06:45	550 m	W	KAMILAROI HWY	2WY	STR	Nil	Fine	Dry	80	600	1	LOR	1	W	Proceeding in lane					0	1	
Wean Rd																									
710166	11/05/2010	Tue	18:00	1.55 km	N	KELVIN RD	2WY	CRV	Nil	Overcast	Dry	100	804	R 1	TRK	1	N	Proceeding in lane					0	2	S F
587966	27/08/2007	Mon	20:30	7 km	N	KELVIN RD	2WY	STR	Nil	Fine	Dry	100	609	1	CAR	1	S	Proceeding in lane					0	0	

Brief Crash Report

Crash No	Date	Day	Time	Dist		ID Feature	Loc	Alg	Lgt	Wth	Sfc	SL	DCA	Tus	TU1	S1	D	Manoeuvre1	TU2	S2	D	Manoeuvre2	K	I	Fac	
																									S	F
596334	31/10/2007	Wed	20:00	2 km	N	KEPREOTIS RD	2WY	STR	Nil	Fine	Dry	100	609	1	TRK	1	N	Proceeding in lane					0	1		
Wean																										
Wean Rd																										
528498	08/07/2006	Sat	12:25	25 km	N	GUNNEDAH TN	2WY	STR	Nil	Fine	Dry	100	703	1	CAR	1	N	Proceeding in lane					0	0		
630782	10/07/2008	Thu	08:00	26 km	N	GUNNEDAH TN	2WY	STR	Nil	Fine	Dry	100	705	1	CAR	1	S	Proceeding in lane					0	1		
Western Region																										
Narrabri LGA																										
Baan Baa																										
Kamilaroi Hwy																										
579295	15/06/2007	Fri	19:00	2 km	E	BAAN BAA TN	2WY	STR	Nil	Fine	Dry	100	609	1	CAR	1	W	Proceeding in lane					0	0		
691317	28/06/2009	Sun	16:10	2 km	E	BAAN BAA TN	2WY	STR	Nil	Overcast	Dry	100	702	1	CAR	1	E	Proceeding in lane					0	1		F
667082	04/05/2009	Mon	12:25	3 km	E	BAAN BAA TN	2WY	STR	Nil	Fine	Dry	100	704	1	SEM	1	E	Proceeding in lane					0	1		
554221	02/02/2007	Fri	10:40	5 km	N	BAAN BAA TN	2WY	STR	Nil	Fine	Dry	100	701	1	TRK	1	N	Proceeding in lane					0	1		
628344	01/06/2008	Sun	20:20	5 km	N	BAAN BAA TN	2WY	STR	Nil	Fine	Dry	100	703	1	TRK	1	N	Proceeding in lane					0	1		F
597737	16/12/2007	Sun	16:00	6 km	S	BANN BAA TN	2WY	STR	Nil	Fine	Dry	100	201	2	CAR	1	S	Incorrect side	SEM	1	N	Proceeding in lane	5	1		
533581	25/08/2006	Fri	23:55	100 m	N	BARANBAH ST	2WY	STR	Nil	Fine	Dry	80	701	1	CAR	1	S	Proceeding in lane					0	0		
690428	12/11/2009	Thu	08:45	500 m	S	BARANBAH ST	2WY	CRV	Nil	Fine	Dry	100	301	2	SEM	1	S	Proceeding in lane	UTE	1	S	Proceeding in lane	0	0		
720145	27/07/2010	Tue	14:30	100 m	E	HARPARARY RD	2WY	STR	Nil	Fine	Dry	100	704	1	TRK	1	W	Proceeding in lane					0	0		F
619355	27/03/2008	Thu	12:20	29 km	S	NARRABRI TN	2WY	STR	Nil	Fine	Dry	100	610	2	4WD	1	N	Proceeding in lane	OMV	1	S	Proceeding in lane	0	0		
576539	04/06/2007	Mon	21:45	30 km	S	NARRABRI TN	2WY	STR	Nil	Fine	Dry	100	609	1	4WD	1	S	Proceeding in lane					0	0		
526812	10/06/2006	Sat	13:00	45 km	S	NARRABRI TN	2WY	CRV	Nil	Raining	Wet	100	805	2	M/C	1	N	Proceeding in lane	M/C	1	N	Proceeding in lane	0	3	S	
668108	12/05/2009	Tue	08:30	700 m	S	OLD NARRABRI RD	2WY	CRV	Nil	Fine	Dry	100	801	L 1	SEM	1	N	Proceeding in lane					0	1	S	F
661495	24/03/2009	Tue	14:45	100 m	N	WALOWA ST	2WY	STR	Off	Fine	Dry	40	301	2	TRK	1	S	Proceeding in lane	SEM	1	S	Stationary	0	0		
Old Narrabri Rd																										
548559	21/11/2006	Tue	08:10	5 km	N	KAMILAROI HWY	2WY	STR	Nil	Fine	Dry	100	301	2	UTE	1	S	Proceeding in lane	LOR	1	S	Proceeding in lane	0	1		
Boggabri																										
Boggabri Rd																										
518820	29/04/2006	Sat	15:30	2 km	W	WEAN RACECOURS O	2WY	STR	Nil	Fine	Dry	100	702	1	CAR	1	W	Proceeding in lane					0	0		
Boston St																										
538552	01/10/2006	Sun	17:10	3 km	W	WALTON ST	2WY	STR	Nil	Fine	Dry	100	702	1	CAR	1	W	Proceeding in lane					0	1		
Braymont Rd																										

Brief Crash Report

Crash No	Date	Day	Time	Dist		ID Feature	Loc	Alg	Lgt	Wth	Sfc	SL	DCA	Tus	TU1	S1	D	Manoeuvre1	TU2	S2	D	Manoeuvre2	K	I	Fac	
																									S	F
719525	21/07/2010	Wed	17:15	5 km	N	BLUE VALE RD	2WY	STR	Nil	Fine	Dry	100	703	1	TRK	1	S	Proceeding in lane					0	1		
678846	14/08/2009	Fri	15:20	11.935 k	E	BOGGABRI TN	2WY	CRV	Nil	Fine	Dry	100	801	L 1	LOR	1	E	Proceeding in lane					0	1	S	
696487	10/01/2010	Sun	12:30	80 m	E	HULL ST	2WY	CRV	Nil	Fine	Dry	100	803	R 1	TRK	1	W	Proceeding in lane					0	1	S	
	Grantham St																									
711044	19/05/2010	Wed	21:37		at	OAKHAM ST	TJN	STR	On	Fine	Dry	50	707	L 1	SEM	1	E	Turning right					0	1	S	
	Kamilaroi Hwy																									
693355	15/12/2009	Tue	18:30	6.5 km	S	BOGGABRI TN	2WY	CRV	Nil	Fine	Dry	100	801	L 1	TRK	1	N	Proceeding in lane					0	1	S	F
674378	29/06/2009	Mon	22:30	2 km	N	BOSTON ST	DIV	CRV	Nil	Fine	Dry	100	609	1	WAG	1	N	Proceeding in lane					0	0		
682732	11/09/2009	Fri	19:56		at	BRENT ST	XJN	STR	On	Fine	Dry	50	101	2	4WD	2	W	Proceeding in lane	BDBL	1	S	Proceeding in lane	0	1		
535852	10/09/2006	Sun	09:30		at	DEADMANS GULLY BD(	2WY	CRV	Nil	Overcast	Wet	100	803	R 1	CAR	1	S	Proceeding in lane					0	1	S	
534487	03/09/2006	Sun	16:00	3 km	N	GINS LEAP OT	2WY	STR	Nil	Fine	Dry	100	704	1	4WD	1	N	Proceeding in lane					0	0		
520353	14/05/2006	Sun	04:35	35 km	N	GUNNEDAH TN	2WY	CRV	Nil	Fine	Dry	100	802	L 1	4WD	1	W	Proceeding in lane					0	0	S	
575480	26/05/2007	Sat	04:00	1.7 km	N	MANILLA RD	2WY	CRV	Nil	Fine	Dry	100	801	L 1	ATKR	1	S	Proceeding in lane					0	1	S	F
591863	20/07/2007	Fri	15:30	3.7 km	N	MANILLA RD	2WY	CRV	Nil	Fine	Dry	100	201	2	M/C	1	S	Incorrect side	BDBL	1	N	Proceeding in lane	0	1		
671177	16/06/2009	Tue	16:55	350 m	N	MINE ROAD OP	2WY	CRV	Nil	Fine	Dry	100	803	L 1	4WD	1	N	Proceeding in lane					0	0		
718721	20/07/2010	Tue	14:20	500 m	S	RANGARI RD	2WY	STR	Nil	Fine	Dry	100	701	1	TRK	1	S	Proceeding in lane					0	1		
633282	31/07/2008	Thu	16:30	Unk		UNKNOWN UK	2WY	CRV	Nil	Fine	Dry	100	301	2	CAR	1	W	Proceeding in lane	TRK	1	W	Proceeding in lane	0	0		
532979	23/08/2006	Wed	12:48		at	WEE WAA ST	XJN	STR	Nil	Fine	Dry	50	101	2	TRK	2	N	Proceeding in lane	4WD	1	E	Proceeding in lane	0	0		
691215	09/12/2009	Wed	14:45		at	WEE WAA ST	XJN	STR	Nil	Fine	Dry	50	104	2	CAR	1	W	Turning right	TRK	2	S	Proceeding in lane	0	1		
	Manilla Rd																									
710481	19/05/2010	Wed	16:45	5.44 km	E	KAMILAROI HWY	2WY	CRV	Nil	Fine	Dry	80	805	1	LOR	1	W	Proceeding in lane					0	0	S	
686531	25/09/2009	Fri	13:10	16 km	E	KAMILAROY HWY	DIV	STR	Nil	Fine	Dry	80	802	L 1	BDBL	1	S	Forward from drive					0	1	S	
699410	18/02/2010	Thu	18:50	110 m	W	THE IRON BDGE	2WY	STR	Nil	Fine	Dry	100	406	2	M/C	1	N	Forward from drive	TRK	1	W	Proceeding in lane	0	0		
	Mullaley Rd																									
518139	20/04/2006	Thu	13:20	2 km	E	BLAIRMORE RD	2WY	CRV	Nil	Fine	Dry	100	801	L 1	BDBL	1	E	Proceeding in lane					0	1	S	F
	Oakham St																									
717875	16/07/2010	Fri	11:30	30 m	N	CLARE ST	2WY	STR	Nil	Fine	Dry	50	703	1	CAR	1	S	Proceeding in lane					0	0		
623422	13/04/2008	Sun	00:47		at	NUMBER 95 HN	2WY	STR	Nil	Fine	Dry	50	601	2	TRK	1	S	Proceeding in lane	TRK	1	S	Parked	0	1	S	
	Unnamed Lane																									
688409	07/11/2009	Sat	21:15	20 m	N	GRANTHAM ST	2WY	STR	Nil	Overcast	Wet	50	703	1	CAR	1	S	Proceeding in lane					0	0		F
	Wean																									

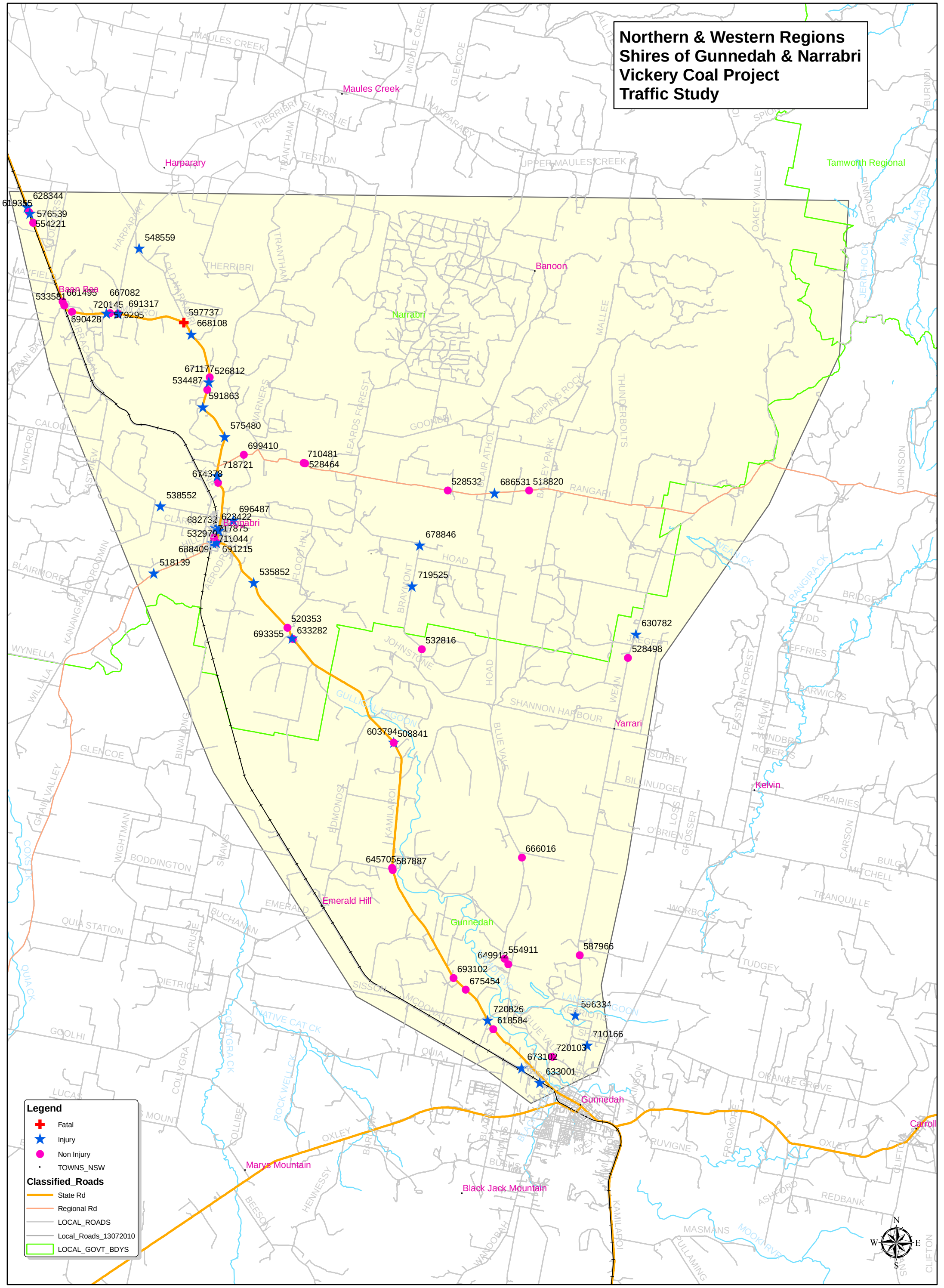
Brief Crash Report

Crash No	Date	Day	Time	Dist		ID Feature	Loc	Alg	Lgt	Wth	Sfc	SL	DCA	Tus	TU1	S1	D	Manoeuvre1	TU2	S2	D	Manoeuvre2	K	I	Fac S	Fac F
Manilla Rd																										
528532	09/07/2006	Sun	07:30	5 km	E	BLUEVALE RD	2WY	STR	Nil	Unk	Dry	100	701	1	CAR	1	E	Proceeding in lane					0	0		F
Wean St																										
528464	08/07/2006	Sat	11:00	5.39 km	E	BOGGABRI TN	2WY	CRV	Nil	Fine	Dry	100	803	R 1	4WD	1	E	Proceeding in lane					0	0	S	

Report Totals: Crashes: 63 Fatal Crashes: 1 Injury Crashes: 29 Non-Casualty Crashes: 33 Traffic Units: 80 Killed: 5 Injured: 33

Crashid dataset Gunnedah - Boggabri Coal Project Crash Data 1/10/2005 to 30/9/2010

Northern & Western Regions
Shires of Gunnedah & Narrabri
Vickery Coal Project
Traffic Study



Prepared By: Jim Synott ..... Date : 16/5/2011 .....

Crash Data Period
1/10/2005 to 30/9/2010

0 1.5 3 6 9 12 Kilometers