

## 13. Infrastructure and Traffic

### 13.1 Existing Environment

#### 13.1.1 Existing Infrastructure and Facilities

Figure 13-1 shows the regional road and rail network surrounding the Project.

##### 13.1.1.1 State-Controlled Roads

Roads in the vicinity of the Project under the jurisdiction of the Department of Main Roads, Mackay District (DMR) are listed in **Table 13-1**. Also listed in the table are the maximum vehicle size permitted in each respective route. They are all two-lane two-way roads, sealed to widths varying from approximately 8.0 m to 9.5 m. The grades are generally level. The general rural speed limit of 100 km/hr applies to these roads.

**Table 13-1 State-Controlled Roads Classification and Multi-Combination Vehicle Permits**

Road	DMR classification	Permitted Maximum Size of Vehicle
Peak Downs Highway- (Clermont to Nebo) <b>(33A)</b>	State strategic road	All multi-combination vehicles
Peak Downs Highway (Nebo to Mackay) <b>(33B)</b>	State strategic road	All multi-combination vehicles
Gregory Highway (Emerald to Clermont) <b>(27B)</b>	State strategic road	All multi-combination vehicles except Type 2 road trains
Gregory Developmental Road (Clermont to Belyando Crossing) <b>(98A)</b>	State strategic road	All multi-combination vehicles
Dysart - Middlemount Road <b>(519)</b>	Regional road	All multi-combination vehicles except Type 2 road trains
Fitzroy Developmental Road <b>(85C)</b>	Regional road	All multi-combination vehicles except Type 2 road trains
Oxford Downs - Sarina Road <b>(514)</b>	District road	All multi-combination vehicles
Marlborough - Sarina Road <b>(512)</b>	District road	All multi-combination vehicles
May Downs Road <b>(5122)</b>	District road	All multi-combination vehicles except Type 2 road trains

Source: DMR Multi-combination Vehicles in Queensland

The principal element of road infrastructure in the Moranbah region is the **Peak Downs Highway**, which connects the towns of Moranbah and Clermont to Mackay and other towns in the Central Highlands district. The Peak Downs Highway intersects with the Gregory Highway and the Gregory Developmental Road in Clermont.

**Gregory Highway** connects the Peak Downs Highway to Emerald and the Springsure Township to the south, whilst the Gregory Developmental Road connects these two highways to Charters Towers.

All multi-combination vehicles are generally permitted on the State roads, as shown in **Table 13-1**, including 23 m and 25 m B-Doubles and Type 1 Road Trains.

### 13.1.1.2 Local Roads

Local roads in the vicinity of the Project are controlled by the Isaac Regional Council. The local roads in the Project area are also shown in **Figure 13-1**.

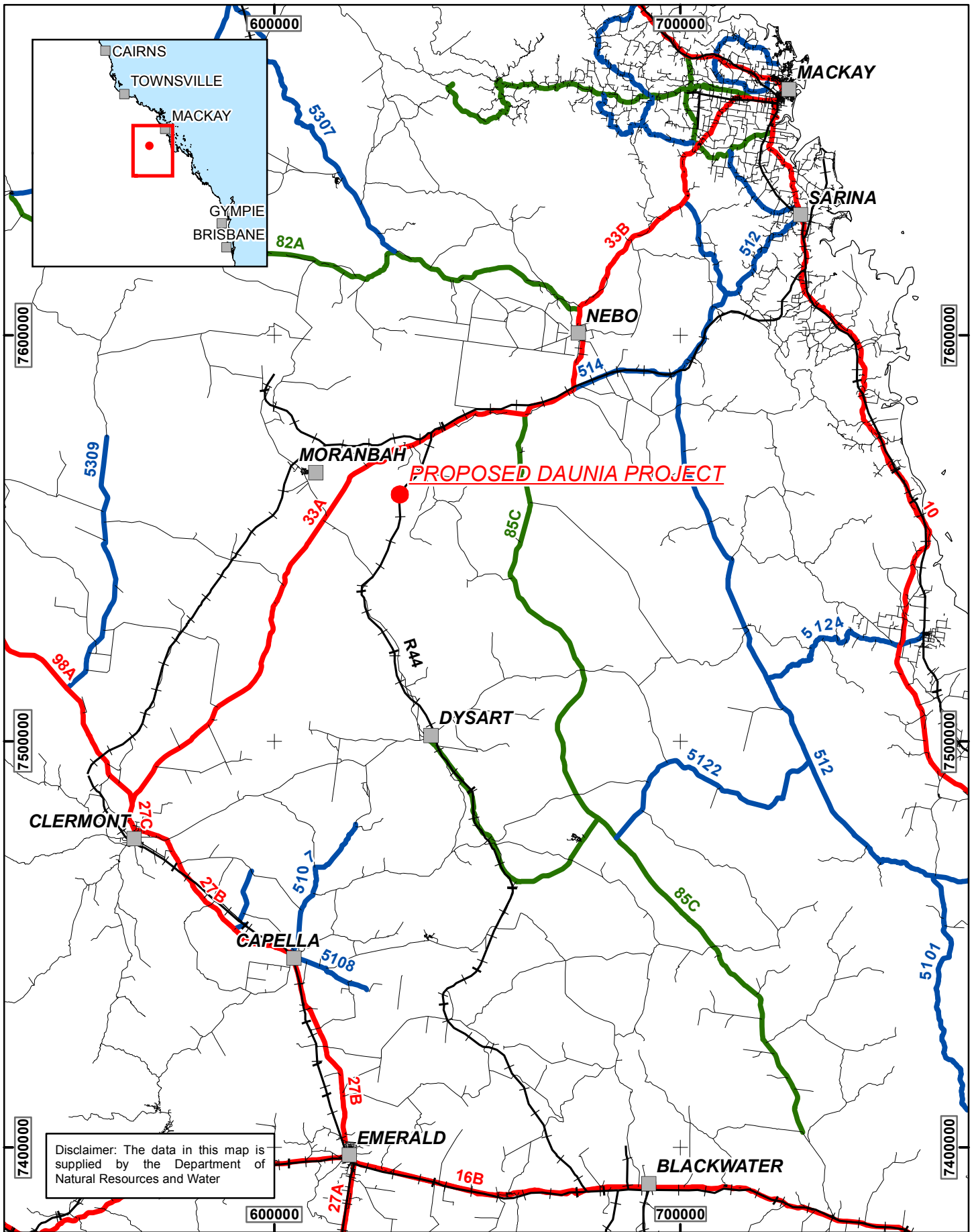
### 13.1.2 Existing Traffic

#### 13.1.2.1 Existing Traffic Volumes

Traffic volumes on roads in the region of the Project were obtained from the DMR. The Average Annual Daily Traffic volumes (AADT) (as vehicle trips per day – vpd) and the percentage of commercial vehicles for year 2007 on the key roads are provided in **Table 13-2**. The stated volumes were obtained from DMR - Mackay District and are the latest available traffic data.

**Table 13-2 2007 (Actual) Traffic Volumes**

Road	Counting Site	Average Annual Daily Traffic Volume (AADT) (vpd)	Commercial (Heavy) Vehicles (% of AADT)
Peak Downs Highway (33A)	East of Coppabella	2,300	15%
	West of Coppabella	2,300	20%
	East of Bee Creek	2,810	18%
	North of Braeside Road	3,050	17%
Peak Downs Highway (33B)	Retreat Hotel	3,520	17%
	East of Walkerston Cemetery	8,825	9%
	West of Walkerston Township	6,000	11%
	West of Benborough Avenue	11,200	14%
	Bernborough Avenue City Gates	10,800	12%
	Eton	3,750	14%
Dysart-Middlemount Road (519)	North of German Creek Mine	2,100	11%
	West of Middlemount	2,100	13%
	South of Sandy Creek	1,070	14%
Fitzroy Developmental Road (85C)	Valkyrie	920	18%
	South of Middlemount Turnoff	600	24%
Oxford Downs - Sarina Road (514)	East of Denison Creek	460	16%
Marlborough - Sarina Road (512)	Range Road, South of Sarina	1,750	8%
	Horse Creek	100	18%
	East of Stony Creek	420	14%
	Sarina	4,400	8%
	Clarke Creek	133	17%

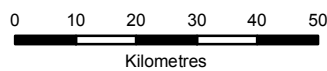


**LEGEND**

- Mines
- Towns
- + Railway
- Regional Road Network**
- Highway
- District
- Regional
- Local Road



**FIGURE 13-1**  
**DAUNIA COAL MINE EIS**  
 REGIONAL ROAD AND RAIL NETWORK



Scale 1:1,250,000 on A4

Projection: Australian Map Grid - Zone 55 (AGD84)



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### 13.1.2.2 Existing Bus Services

No school bus routes pass through the Project area. There are however, four bus routes that pass in the vicinity of the Project (**Figure 13-2**).

- Two bus routes use the Peak Downs Highway to the north of the Project that service the three schools in Moranbah (Moranbah State Primary School, Moranbah East Primary School, and Moranbah State High School). Route P1348 uses the Peak Downs Highway between Moranbah and Wuthung Road in Clermont, and S359 uses the Peak Downs Highway between Coppabella and Moranbah.
- Two other school bus routes pass the Project area servicing Dysart State School (route P1703) and Morpeth State School (SUB36).

## 13.2 Impacts and Mitigation Measures

The Project site is situated approximately 25 km east south-east of Moranbah and approximately 170 km south west of Mackay, Queensland (refer to **Figure 13-1**).

The Daunia deposit is located immediately to the east of the Norwich Park Branch railway line, to the south of the Peak Downs Highway and directly to the east of the existing Poitrel coal mine, which is also managed by BMA.

The Project will be accessed via the Millennium and Poitrel mines access road, which comes off the Peak Downs Highway and periodically via Daunia Road during the construction phase of the Project. (Refer to **Figure 13-3**).

### 13.2.1 Impacts of Construction Traffic

#### 13.2.1.1 Working Hours

Construction work will be undertaken as follows:

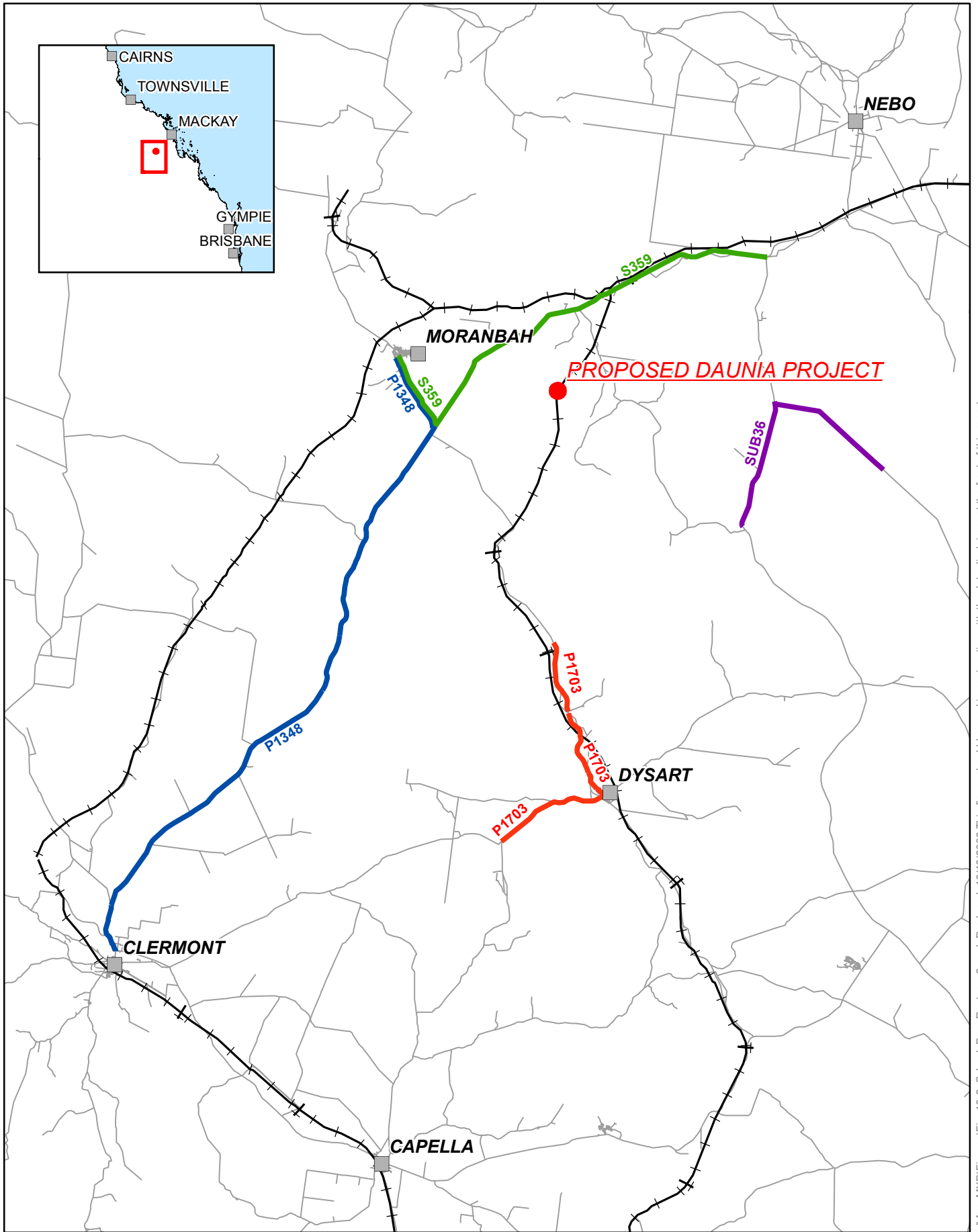
- CHPP Project – one 11 hr shift per day - 7 days a week; and
- Infrastructure and Mine Projects - one 11 hour shift /day - 7 days a week.

#### 13.2.1.2 Construction Period

The construction period is expected to be approximately 16 months.

#### 13.2.1.3 Site Access

Access to the mine site will primarily be via the Poitrel and Millennium mines access road from the northwest off the Peak Downs Highway (**Figure 13-3**). During construction, access to the site may occasionally be sought via Daunia Road and the dirt road that runs parallel to the Norwich Park Railway Line.



**LEGEND**

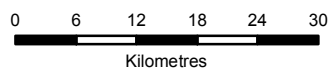
- Mine
- Towns
- +— Railway
- Project Roads**
- P1348
- P1703
- S359
- SUB36

(Source: Queensland Transport)



**FIGURE 13-2**  
**DAUNIA COAL MINE EIS**

SCHOOL BUS ROUTES

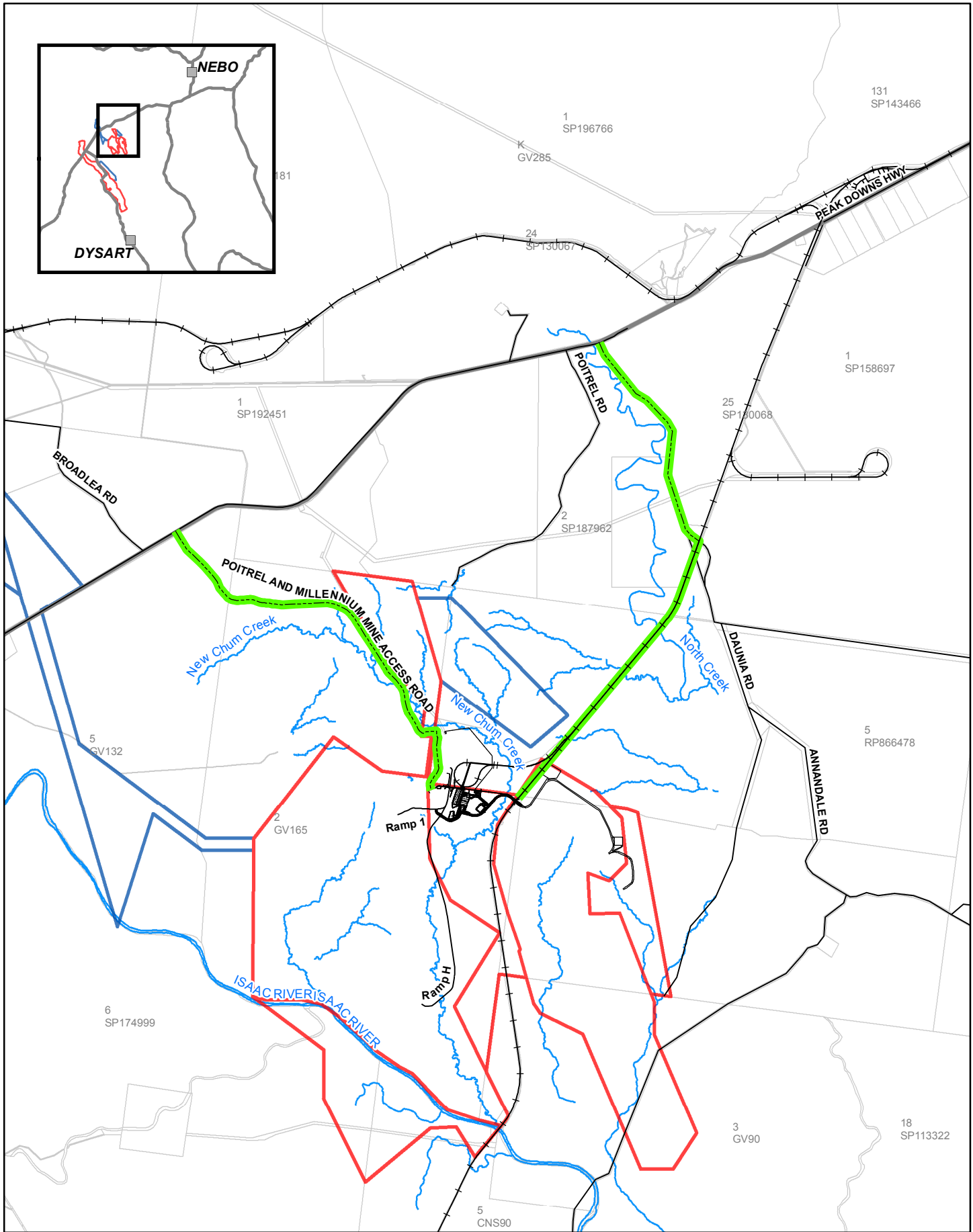


Scale 1:750,000 on A4

Projection: Australian Map Grid - Zone 55 (AGD84)



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**LEGEND**

- Towns
- ▭ Mine Site
- ▬ Access Road
- ▬ Drainage
- ▬ Proposed Mine Infrastructure
- ⊕ Railway
- ▭ Cadastre

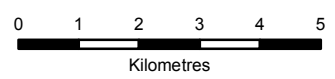
**Road Network**

- ▬ Highway
- ▬ Major Road
- ▬ Access Road
- ▭ Mining Lease
- ▭ Mineral Development Licence



**FIGURE 13-3**

**DAUNIA COAL MINE EIS  
PROJECT SITE LOCATION  
AND ACCESS**



Scale 1:125,000 on A4

Projection: Australian Map Grid - Zone 55 (AGD84)



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### **13.2.1.4 Construction Traffic Generation**

#### **Workforce Traffic Generation**

The BMA and contractor workforce during the construction phase is expected to peak at approximately 450 personnel, including workers involved in the construction of the CHPP and mine infrastructure.

It is proposed that the accommodation village at Coppabella will be used to accommodate the Project workforce. It was assumed for the purpose of this exercise that 90 per cent of the workforce (405 people) will be accommodated in the accommodation village and the rest (45 people) will be housed in the localities surrounding the Project (e.g. Moranbah, Dysart, Clermont, Capella, and Nebo).

Commuting to and from the construction site will be by private cars and buses. Buses will be provided between the accommodation village and the construction site. It is envisaged that 80 per cent of people accommodated at the accommodation village will use the provided shuttle buses and 20 per cent will use private vehicles to commute to/from the construction site. Hence, it was estimated that a total of 325 people will be using shuttle buses and 80 people will be using private vehicle with an average occupancy of 1.5 persons per vehicle.

106 private vehicles trips and 14 bus trips (or 14 services – seven for AM peak and seven for PM peak) will be required daily for workforce commuting. Consequently, a maximum of 53 light vehicles and seven bus services (of 50 people capacity) are required during any of the AM and PM commuter peak hours, to transport the workforce to/from the construction site to/from the construction camp and neighbouring localities.

The resulting number of daily light vehicle trips (106) is assumed to be distributed as follows:

- 40 per cent (42 vehicles per day) - Peak Downs Highway west
- 40 per cent (42 vehicles per day) - Peak Downs Highway east
- 20 per cent (22 vehicles per day) - Saraji – Dysart Road

#### **Equipment and Materials**

Construction equipment is likely be transported by road to the site on standard or over-dimensional loads. Large items of mining equipment that cannot be divided into smaller components will be transported on State roads under permit and, where necessary, accompanied by safety escorts. For the purposes of this impact assessment, the point of origin of these loads has been estimated (on best available information) to be predominantly from Mackay (80 per cent) and the rest from areas to the south.

Deliveries during construction will be limited to mining equipment, building supplies, fuel, additional concrete, steel and items for the construction of mine administration buildings and sundry infrastructure. It is estimated that during the period of peak construction activity, these deliveries will generate up to 5 truckloads per day over a twelve-month period. During this time, approximately half of the heavy vehicle traffic is expected to comprise semi-trailers with the remainder comprising single unit trucks.

It is estimated that 80 per cent of the materials carried by articulated vehicles (including steel and plant items) will be trucked to the site from Mackay and surrounding areas, via the Peak Downs Highway. The remaining 20 per cent will be sourced from further south via the Gregory Highway, Peak Downs-Dysart Road, Dingo-Mount Flora Road and Marlborough-Sarina Road. Of the materials transported by smaller, rigid



bodied trucks (including concrete and fuel), it is estimated that 70 per cent will be sourced from the Mackay region and 30 per cent from further south.

The key construction materials are expected to account for approximately 90 per cent of construction deliveries to the site during the total construction period. It is expected that all roadbase and concrete material will either be obtained local quarries or from within the site, including the box-cut. A temporary concrete batch plant will be established during the construction phase. Fuel will be stored in bunded facilities within the construction laydown area, while a site workshop will be established in order to maintain construction equipment onsite. Based on a standard semi-trailer payload of 20 t, and assuming that the majority of aggregates will be sourced from local quarries, situated within 100 km of the construction site, the movement of key construction materials will contribute approximately 160 vehicle loads over the construction period.

Over the total construction period, deliveries of other materials and plant items are expected to contribute a similar number of articulated vehicle loads as the combined steel and concrete deliveries (approximately an extra 200 loads). It is estimated that approximately twice this number of single unit truck loads will deliver additional materials and plant items.

A number of oversize loads (approximately 60 in total) delivering indivisible construction and mining equipment are also expected during the construction phase. The origin of these loads is likely to be Brisbane or Mackay. Standard permit approval processes and arrangements for these deliveries, such as escorting vehicles, will apply on a case-by-case basis.

The total number of heavy vehicles during the entire construction period is therefore estimated to be in the order of 8 vehicle trips per day.

Mine site construction traffic, once on site, will not affect existing transport routes or local roads. DMR and the Isaac Regional Council will be consulted prior to the movement of any oversized indivisible loads, to minimise disruption caused by these vehicle movements to the site.

### **Service Vehicles**

Service vehicle movements to and from the site during the construction phase are most likely to include postal deliveries, office supplies and waste contractor trucks. Approximately 5 service vehicles per day are expected during this period. These vehicles are expected to originate from Moranbah or Nebo and approach the Project site along the Peak Downs Highway.

### **Dangerous Goods Transport**

Approvals and transport of dangerous materials are the consignor and/or transporter's responsibility and will be made in accordance to the *Australian Dangerous Goods Code, Seventh Edition (ADG Code 2008)*, requirements.

### **Summary of Estimated Vehicle Trips**

The total estimated number of vehicle trips to and from the site during the construction phase is summarised in **Table 13-3**. Daily traffic during the peak construction period is estimated as vehicle trips per day (vpd).

**Table 13-3 Estimated Daily Vehicle Trips Generated During Project Construction (vpd)**

Generation Type	Daily Traffic Generation (vpd) Peak Construction Period		
	Light Vehicles	Single Unit Trucks/Busses	Articulated Vehicles
Workforce	106	14	0
Construction Materials	0	8	8
Service/Visitors Vehicles	3	5	0
<b>Total</b>	<b>109</b>	<b>27</b>	<b>8</b>

The daily traffic volume (AADT), commercial vehicle proportion (CV%) and level of service (LoS) on the road links expected to carry construction traffic (both with and without the proposed Project), are summarised in **Table 13-4**. The directional distribution of traffic generation to the east and west is estimated to be similar to that of Poitrel Mine. Visitor numbers to the Daunia Project are estimated to have a peak volume of 3 vehicles per day and are expected to utilise light vehicles as the principal means of transport.

*Guidelines for Assessment of Road Impacts of Developments* (DMR 2006) stipulate that a road impact assessment is required for State controlled roads where the construction generated traffic equals or exceeds 5 per cent of the existing AADT on a specific section of the road.

The performance criterion for road links is the Level of Service (LoS) as defined in Austroads (1988) *Guide to Traffic Engineering Practice*:

- LoS 'A' – between 0 and 2,400 vehicles per day;
- LoS 'B' – between 2,401 and 4,800 vehicles per day;
- LoS 'C' – between 4,801 and 7,900 vehicles per day;
- LoS 'D' – between 7,901 and 13,500 vehicles per day; and
- LoS 'E' – between 13,501 and 22,900 vehicles per day.

In rural areas, LoS 'C' can be considered the minimum standard. Changes between the LoS ranking below LoS 'C' imply remedial measures to maintain the required LoS.

**Table 13-4 Construction Stage Traffic Impact**

Road	Counting Site	2009 – no construction traffic			2009 – with construction traffic		
		AADT (vpd)	Commercial (Heavy) Vehicles (%/volume)	LoS <sup>1</sup>	AADT (vpd)	Commercial (Heavy) Vehicles (%/volume)	LoS <sup>1</sup>
Peak Downs Highway (33A)	East of Coppabella	2,440	366 (15%)	B	2,552	390 (15%)	B
	West of Coppabella	2,440	488 (20%)	B	2,552	512 (20%)	B
	East of Bee Creek	2,980	536 (18%)	B	3,092	560 (18%)	B
	North of Braeside Rd	3,230	550 (17%)	B	3,342	574 (17%)	B
Peak Downs Highway (33B)	Retreat Hotel <sup>3</sup>	3,730	634 (17%)	B	3,842	658 (17%)	B
	East of Walkerston <sup>3</sup>	9,355	842 (9%)	D	9,467	866 (9%)	D
	West of Walkerston <sup>3</sup>	6,360	700 (11%)	C	6,472	724 (11%)	C
	West of Benborough Ave <sup>3</sup>	11,870	1,661 (14%)	D	11,982	1,685 (14%)	D
	At Bernborough Ave <sup>3</sup>	11,450	1,374 (12%)	D	11,562	1,398 (12%)	D
	Eton <sup>3</sup>	3,980	557 (14%)	B	4,092	581 (14%)	B
Dysart-Middlemount Road (519)	North of German Creek	2,230	245 (11%)	A	2,342	269 (11%)	A
	West of Middlemount	2,230	290 (13%)	A	2,342	314 (13%)	A
	South of Sandy Creek	1,130	158 (14%)	A	1,242	182 (14%)	A
Fitzroy Developmental Road (85C)	Valkyrie	980	176 (18%)	A	1,092	200 (18%)	A
	South of Middlemount	640	153 (24%)	A	752	177 (24%)	A
Oxford Downs - Sarina Road (514)	East of Denison Creek	490	78(16%)	A	602	102 (16%)	A
Marlborough - Sarina Road (512)	Range Road, South of Sarina <sup>3</sup>	1,860	149 (8%)	A	1,972	173 (8%)	A
	At Horse Creek	106	19 (18%)	A	218	43 (18%)	A
	East of Stony Creek	450	63 (14%)	A	562	87 (14%)	A
	Sarina <sup>3</sup>	4,670	374 (8%)	B	4,782	398 (8%)	B
	At Clarke Creek	140	24 (17%)	A	252	48 (17%)	A

<sup>1</sup> Level of Service: A – Excellent; B - Good; C -Satisfactory; D -Tolerable; E – Congested; F – Very Congested

<sup>2</sup> 2009 Background traffic plus construction traffic

<sup>3</sup> Urban Counting Sites

For the purpose of the Project, the following assumptions have been made:

- Annual Average Daily Traffic (AADT) levels for various LoS for rural roads on level terrain, two-lane and two-way roads;
- a ratio between the design hour volume and the AADT of 0.10; and
- average traffic growth of 3 per cent per annum for two years has been applied to the 2007 AADT volumes in order to determine the 2009 (construction year) background traffic volumes.

The construction phase of the Project is not expected to have significant impact on traffic operations of any of the studied road links. The LoS for the construction phase scenario is unchanged for each road section in comparison to the background traffic volumes (**Table 13-4**). The traffic generated during the construction phase of the Project will not significantly impact the capacity of the roads situated on the delivery routes.

The increase in traffic generated by the Project during its peak construction period are minimal and overall, will not affect the LoS experienced by drivers on these roads.

The construction works will not affect the range of vehicle types using these major State-controlled roads, so no change in the geometry of existing roads will be required.

#### **13.2.1.5 Impacts on School Bus Routes and Operation**

Operation of school buses described in **Section 13.1.2.2** will not be directly affected by the Project, except for a potential increase in travel time due to the construction equipment being delivered. Consultation with Queensland Transport Rockhampton Office indicates that the current contractual arrangements with the bus service providers will not need to change. In order to minimise this impact, movements of construction equipment will be scheduled outside the school drop-off and pick-up times.

#### **13.2.1.6 Impacts on Road Pavement during Construction**

The major State-controlled roads in this area are approved road train routes, as discussed in **Section 13.1.1.1**. The small number of additional vehicle trips is not expected to significantly impact on the life of the road pavements.

The total heavy vehicle trips generated during the construction period would represent approximately 0.2 per cent to 0.4 per cent of a standard 20 year design life in Equivalent Standard Axles (ESA) of the affected sections of the Peak Downs Highway.

The increased traffic therefore represents a small net reduction in the design life of less than 1 month. In practice this small change is not expected to affect the timing or cost of pavement maintenance and rehabilitation. In particular, the design, timing and lifespan of the planned pavement rehabilitation and sealing projects on the Peak Downs Highway listed in the current DMR Roads Implementation Program (RIP), will not be materially affected.

To avoid potential pavement damage during wet weather, oversize and over-mass loads will not be delivered to the site on roads affected by flooding or waterlogging as advised by DMR. Heavy materials haulage will also be avoided under these conditions. Due to the small increase in volumes and the normal range of vehicle sizes, construction traffic will not have a significant impact on road safety, including safety of school bus services. Safety during movement of occasional oversized loads will be managed through the normal permit conditions including vehicle escorts as appropriate.

Overall, construction traffic is not expected to have any significant impact on the local traffic infrastructure. As traffic and road conditions will not be significantly affected by the construction of the Project, a Traffic Management Plan is not considered necessary.

### **13.2.1.7 Construction Impact Mitigation Measures**

The potential mitigation measures for transporting people and materials to and from the construction sites include but are not limited to:

- avoiding haulage tasks during peak traffic periods and school drop-off and pick-up times;
- using the established truck routes and arterial roads for the haulage of construction materials in order to minimise truck traffic on local roads;
- minimising congestion effects by effectively staging construction work;
- continually monitoring the construction conditions in order to address any negative impact;
- notifying the local communities about proposed changes to local traffic access due to construction activities and providing clear signage of changed traffic conditions;
- providing traffic control measures designed for the safe movement of vehicles;
- providing adequate on-site parking to accommodate employee vehicles and instructing the commuting employees to use the designated parking facilities to avoid traffic disruptions potentially caused by road side parking;
- providing buses and encouraging car pooling for transportation of the construction workforce; and
- maintaining at least one lane open for traffic at any time near the construction sites.

## **13.2.2 Traffic Impacts of the Operational Phase**

### **13.2.2.1 Operational Traffic Generation**

The operational phase of the Project will start with the mine and CHPP commissioning, and is scheduled for 2010.

#### **Employees and Visitors**

It is estimated the Project will employ a peak of 300 workers, comprising BMA employees and contractors during operation. The workers will be housed either in Moranbah, the camp-style accommodation at Coppabella or surrounding districts. Operational staff will work on a three panel - two shift operation. The operational workforce on-site at any one time will therefore be significantly less than during the construction phase.

For the purpose of assessing the effect of the operational workforce on traffic, it was assumed that the off-site workforce would travel to/from site by light vehicle (50 per cent) and shuttle buses (two buses to be provided). It was also assumed that a certain level of ride sharing would take place. Average vehicle occupancy of approximately 1.5 employees per vehicle was adopted. On this basis, approximately 134 light vehicle trips per day (on average) would be required to transport employees to and from the site. Employee related traffic would be concentrated in the morning and evening shift change periods.

It was estimated that 81 per cent and 9 per cent of the light vehicle traffic will travel to the site from Coppabella and Moranbah respectively. The remaining 10 per cent was equally split from locations to the east and west of the Coppabella / Moranbah area.



During operations, there is likely to be a number of visitors to the site including BMA technical personnel and government regulators. A peak figure of four visitors per day, each driving a light vehicle, has been adopted throughout the analysis period. In practice, visitor numbers are expected to decrease, as the site becomes fully operational.

Visitor traffic is expected to be distributed across normal working hours. The estimated distribution of visitor traffic includes the majority of visitors travelling between the site and Moranbah and Coppabella, with approximately 2 non-local visitors per day from the east and west via the Peak Downs Highway.

### **Service Vehicles**

Workshop, occasional catering and office supplies, fuel and spare parts will be delivered to the operating Project site. It is expected that these deliveries will amount to approximately 5 to 10 single unit trucks per week, and 5 to 10 heavier commercial vehicles (semi-trailers) per week. Single unit trucks are expected to be used for local transport between the site and Moranbah and Coppabella, with heavier vehicles for longer distance transport. It is estimated that an average of 2 semi-trailers per day will travel between the Project site and the east via the Peak Downs Highway, with one semi-trailer per day travelling between the Project site and the south along the Gregory Highway/Peak Downs Highway route. Deliveries to site are expected to occur between 6.00 am and 5.00 pm.

Refuse and general waste will be segregated and collected on-site for recycling or disposal. Regulated wastes, such as oil (hydrocarbon waste) will be collected on-site as required and transported to a licensed recycling or disposal facility.

### **Rail and Port**

The product coal will be railed via the existing Red Mountain rail loop to ship loading facilities at the Hay Point Services Coal Terminal (HPCT) or Dalrymple Bay Coal Terminal (DBCT) over a distance of approximately 172 km.

The total amount of coal railed will be approximately 4 Mt/a over the 21 year life of the Project, requiring about 400 train movements per annum (i.e. return trips, with one way movements double this amount).

The current combined capacity of the HPCT and DBCT is 112 Mt/a, which will increase to 129 Mt/a following an upgrade to DBCT in 2009. The actual combined throughput through HPCT and DBCT was 86 Mt and 80 Mt in 2006/07 and 2007/08, respectively. The Project thus represents an additional utilisation of approximately 3 per cent of the HPCT/DBCT capacity and will increase the current throughput through HPCT/DBCT by approximately 5 per cent.

The coal throughput through HPCT and DBCT indicates that the current utilisation along Queensland Rail's Goonyella System is in the order of 8,000 to 9,000 rail movements per annum. The Project will thus increase the rail movements along the Goonyella System by approximately 5 per cent.

Additional rail track will be constructed on the Red Mountain rail loop to upgrade its capacity to accommodate the Project.

### **Summary of Estimated Vehicle Trips**

The total estimated number of vehicle trips to and from the Project site during operation, and operational traffic impacts is summarised in **Table 13-5** and **Table 13-6**, respectively.

**Table 13-5 Estimated Project Vehicle Trips Generated Per day During Project Operation**

Generation Type	Daily Traffic Generation (vpd)		
	Light Vehicles	Single Unit Trucks	Articulated Vehicles
Employees and Visitors	202	0	0
Service Vehicles	0	10	10
Coal Haulage	0	0	0
Total	202	10	10

### 13.2.2.2 Opening Year Traffic Impact Assessment

A summary of the anticipated traffic volumes and the background volumes (based on 2010, and calculated using DMR's recommended annual growth rate of 3 per cent per annum) are shown in **Table 13-6**.

The traffic increases expected during full operation of the Project are minimal and will not affect the LoS experienced by drivers on any of the assessed roads within the design horizon (**Table 13-6**).

Peak hour volumes on all of the assessed roads are very low and the priority-controlled intersections in the area, including the proposed access intersection, are expected to continue to operate with low delays and a good LoS. The Project operation will not affect the range of vehicle types using these major State-controlled roads, so no change in the geometry of existing roads is anticipated to be required.

Due to the small increase in volumes, the normal range of vehicle sizes, and the design of the main access intersection to the appropriate standards, operational traffic will not have a significant impact on road safety, including safety of school bus services.

Overall, the operational traffic generated by the proposed Project is not expected to have a significant impact on either traffic or road conditions. Again, as the LoS is unaffected by the Project, no Traffic Management Plan is considered necessary.

### 13.2.2.3 Impacts on Road Pavement during Operational Phase

The heavy vehicle traffic during operation is less than that during construction. As the design is capable of handling construction traffic, it will also handle operational traffic. To avoid potential pavement damage during wet weather, heavy materials haulage on roads affected by flooding or waterlogging (as advised by DMR) will be avoided.

On all assessed roads the equivalent standard axles (ESA) generated by the Project will be less than the 5 per cent threshold level for assessment under the DMR (2000) Guidelines. No pavement impacts are expected on the basis of these predicted traffic volumes.

As required by DMR, the effect of heavy vehicle traffic generated by the development on pavement life and maintenance needs will be assessed in detail in accordance with the DMR (2000) Guidelines, and BMA will consult with DMR about mitigation of any effects identified.

**Table 13-6 Operational Stage Traffic Impact**

Road	Counting Site	2010 – no mine traffic			2010 – with mine traffic		
		AADT (vpd)	Commercial (Heavy) Vehicles (%/volume)	LoS <sup>1</sup>	AADT (vpd)	Commercial (Heavy) Vehicles (%/volume)	LoS <sup>1</sup>
Peak Downs Highway (33A)	East of Coppabella	2,513	377 (15%)	B	2,659	387 (15%)	B
	West of Coppabella	2,513	503 (20%)	B	2,659	513 (20%)	B
	East of Bee Creek	3,069	552 (18%)	B	3,215	562 (18%)	B
	North of Braeside Rd	3,327	566 (17%)	B	3,473	576 (17%)	B
Peak Downs Highway (33B)	Retreat Hotel <sup>3</sup>	3,842	653 (17%)	B	3,988	663 (17%)	B
	East of Walkerston <sup>3</sup>	9,636	867 (9%)	D	9,782	877 (9%)	D
	West of Walkerston <sup>3</sup>	6,551	721 (11%)	C	6,597	731 (11%)	C
	West of Benborough Ave <sup>3</sup>	12,226	1,712 (14%)	D	12,372	1,722 (14%)	D
	At Bernborough Ave <sup>3</sup>	11,794	1,415 (12%)	D	11,940	1,425 (12%)	D
	Eton <sup>3</sup>	4,099	574 (14%)	B	4,245	584 (14%)	B
Dysart-Middlemount Road (519)	North of German Creek	2,297	253 (11%)	A	2,443	263 (11%)	A
	West of Middlemount	2,297	299 (13%)	A	2,443	309 (13%)	A
	South of Sandy Creek	1,164	163 (14%)	A	1,310	173 (14%)	A
Fitzroy Developmental Road (85C)	Valkyrie	1,009	182 (18%)	A	1,155	192 (18%)	A
	South of Middlemount	659	158 (24%)	A	805	168 (24%)	A
Oxford Downs - Sarina Road (514)	East of Denison Creek	505	81 (16%)	A	651	91 (16%)	A
Marlborough - Sarina Road (512)	Range Road, South of Sarina <sup>3</sup>	1,916	153 (8%)	A	2,062	163 (8%)	A
	At Horse Creek	109	20 (18%)	A	255	30 (18%)	A
	East of Stony Creek	464	65 (14%)	A	610	75 (14%)	A
	Sarina <sup>3</sup>	4,810	385 (8%)	B	4,956	395 (8%)	B
	At Clarke Creek	144	25 (17%)	A	290	35 (17%)	A

#### 13.2.2.4 Operation Phase Traffic Impact Mitigation Measures

The traffic impact of the operation phase on the surrounding road network will be marginal (140 light vehicles and 5 heavy vehicles per day). In order to limit the impact of light vehicles trips on the surrounding road network, a few mitigation measures are recommended to be implemented:

- providing adequate on-site parking to accommodate employee vehicles and instructing the commuting employees to use the designated parking facilities to avoid traffic disruptions potentially caused by road side parking;
- providing buses and encouraging car pooling for transportation of the construction workforce; and
- providing cycling facilities and encouraging staff to use these facilities.