17 Transport

Section 17 Transport

17.1 Introduction

17.1.1 Scope and Context of this Report

This Traffic Impact Assessment report was prepared to address traffic implications brought about by the construction of the railway on roadway traffic and road closures. Although located across open country for most part of its length, the railway will cross roadways and consequently, temporary lane closures at the road sections may be necessary during construction. During construction, additional traffic is expected to be generated mainly by railway components/material delivery. Once the construction is complete, the railway will not generate additional traffic except for inspection and maintenance vehicles, the incidence of which will be negligible.

The report provides an assessment of traffic impact during the construction stage and identifies mitigating measures to address the impacts. This report investigates the number of vehicles required to transport construction plant and materials, cam and workforce trips, and railway materials. It assesses whether this will create significant impacts on the State Controlled Networks.

17.1.2 Methodology

The methodology employed in this report mainly consisted of desktop studies to establish baseline conditions in the study area. This entailed a review of aerial photography and other mapping information provided by the Client to identify the access roads and other transport infrastructure in the study area.

Existing traffic count data for state-controlled roads was obtained from the Department of Transport and Main Roads (TMR) and for local roads from the relevant Regional Councils. Historical data, where available, was used to inform the study of the potential future growth in traffic along the main corridors. As majority of the State controlled roads had recent 2008 traffic volume data, new traffic counts were not undertaken for the purpose of this study.

The traffic impact assessment has been undertaken with reference to DMR's *Guidelines for Assessment of Road Impacts of Development* (GARID - April 2006). The traffic operation assessment process outlined in the guidelines stipulates that the operating characteristics need to be compared with performance criteria. The main performance criteria adopted for the assessment are detailed in Table 17-1.

Table 17-1: Performance criteria

Performance Measures	Criteria Adopted
Level of Service	LOS C can be considered the minimum standard in a rural context, although LOS D is considered satisfactory in circumstances involving event traffic.
Percentage Increase in existing AADT on the State Controlled Road (SCR) network	Increases within 5% are generally considered acceptable
Percentage Increase on pavements (ESA's)	Increases within 5% are generally considered acceptable

17.1.3 Assumptions and Limitations

A detailed construction plan for the project has not yet been fully developed. However, a Transport Logistic Paper developed by HPPL was provided to GHD and was used to inform this report on potential traffic generation and distribution that may be attributed to the construction of the railway. Where necessary, further assumptions have also been made and the bases of these assumptions are described within this report and where a range of values is possible, the worst-case scenario has been adopted for the impact assessment

This assessment provides an overview of the potential impacts associated with the project. Detailed traffic management plans will be developed and submitted for approval with the relevant authorities for each element of the project during the detailed design phase.

17.1.4 Project Site

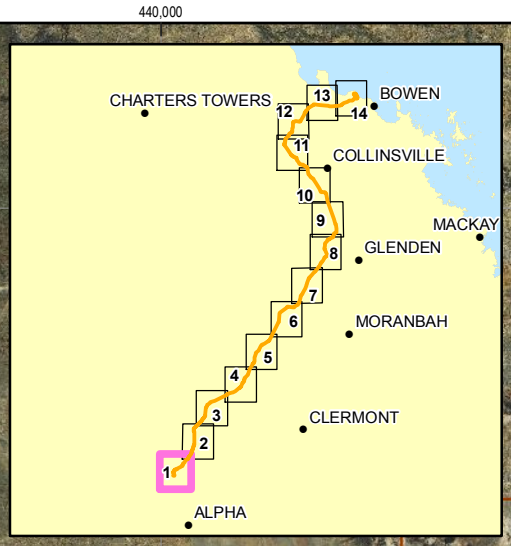
17.1.4.1 Location and Alignment of the Project Site

The project site traverses the Barcaldine Regional Council in the Central West Region, and Isaac and Whitsunday Regional Councils in the Mackay/Whitsunday Region of Queensland.

The railway starts at the Alpha Coal Mine, approximately 38 km north-west of Alpha and 450 km west of Rockhampton. From there, the railway heads in a north-easterly direction and crosses the Gregory Developmental Road north-west the township of Kilcummin at Ch 155 km. The railway maintains a north-easterly path crossing the Suttor Developmental Road at Ch 250 km and the Collinsville-Elphinstone Road at Ch 290 km until reaching the western end of Kangaroo Creek at Ch 300 km. From Ch 310 km the route changes direction and heads north–west crossing the Bowen Developmental Road at Ch 330 km. It continues in the north-west direction up to Ch 405 km after which it shifts to the north-east direction until it reaches the Port of Abbot Point.

This is shown in Figure 17-1 and discussed in detail in Volume 3, Section 2 of this EIS.

The land uses adjoining the project site are predominantly rural, particularly grazing land and open fields, and associated isolated rural residences



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Eulimbie Road

4994PH2232
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3533PH56
ID: 3

30000

25000

20000

15000

Degulla Road

Surbiton Wendouree Road

0

10000

5000

4994PH2232
ID: 2

ALPHA MINE

Lagoon Creek

649PH1981
ID: 1

Clermont Alpha Road

440,000 445,000 450,000 455,000 460,000 465,000

7,450,000 7,445,000 7,440,000 7,435,000 7,430,000 7,425,000 7,420,000

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LEGEND

- Town
- Camp
- Marshalling Yards
- Depot
- House
- Level Crossing
- Level Crossing/Stock Crossing
- Stock Crossing
- Watercourse Bridge
- Road Bridge
- Proposed Alignment
- State Road
- Local Road
- Existing Railway
- Watercourse
- Powerline
- Gas Pipeline
- Water Pipeline
- Impacted Properties
- Waterbody

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Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid of Australia, Zone 55

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HANCOCK PROSPECTING PTY LTD

Alpha Coal Project
Environmental Impact Statement

PROPOSED RAIL ALIGNMENT AND KEY PROJECT COMPONENTS

Job Number	41-22090
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Figure:17-1
Sheet 1 of 14

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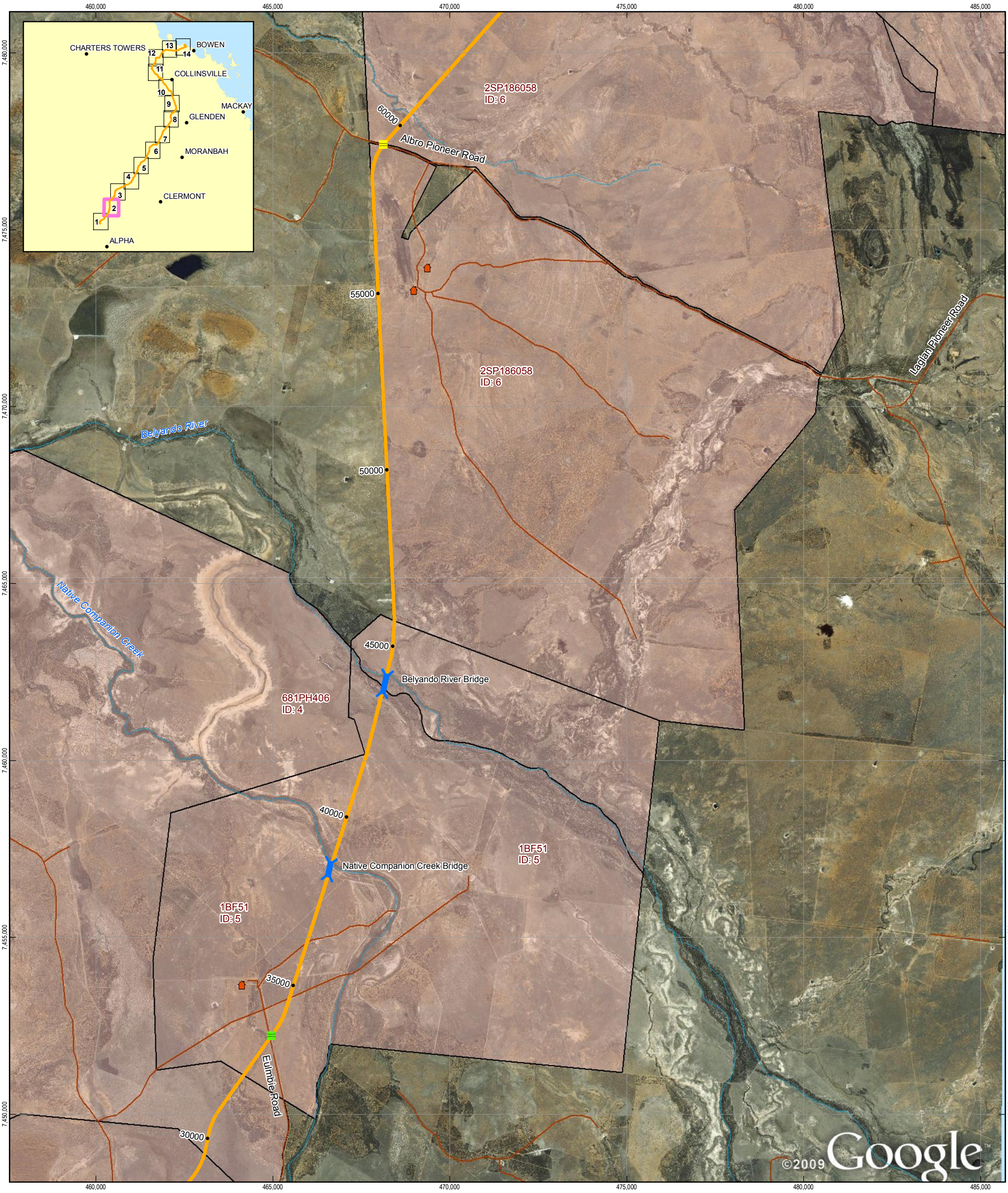

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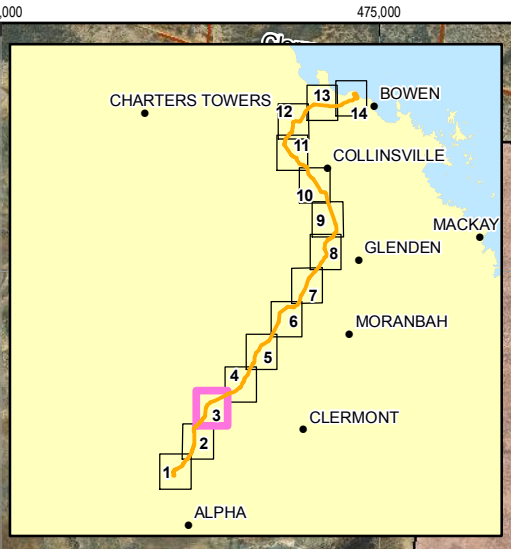

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7,510,000 7,505,000 7,500,000 7,495,000 7,490,000 7,485,000

5RU81
ID: 9

105000

100000

95000

Sixteen Mile Creek Bridge

5RU81
ID: 9

Lasseilas Creek

90000

85000

1RU89
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80000

75000

1SP186058
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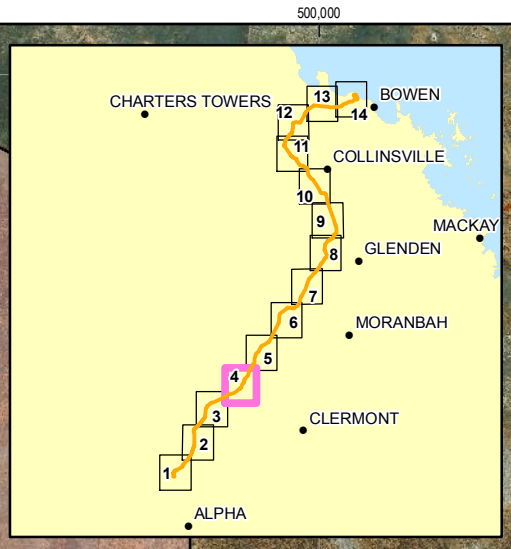

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130000
125000
120000
115000
110000
105000

Piebald Creek Bridge
Mistake Creek
Frankfield Road (South)
Mistake Creek Bridge
Clermont Laglan Road
Clermont Laglan Road

10BL58
ID: 12

17CP866143
ID: 11

3RU5
ID: 10

11RU4
ID: 10

5RU81
ID: 9

5RU73
ID: 10

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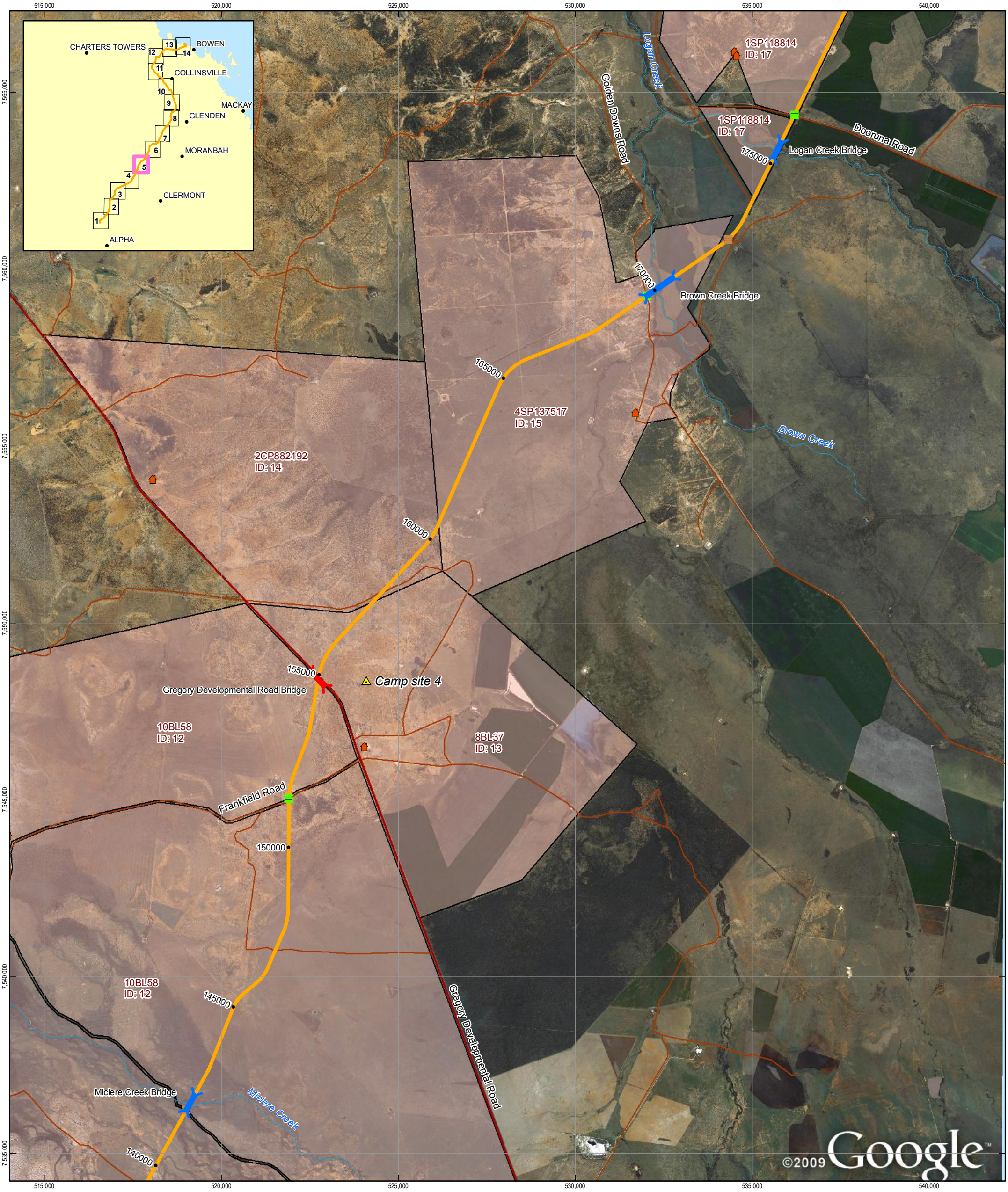

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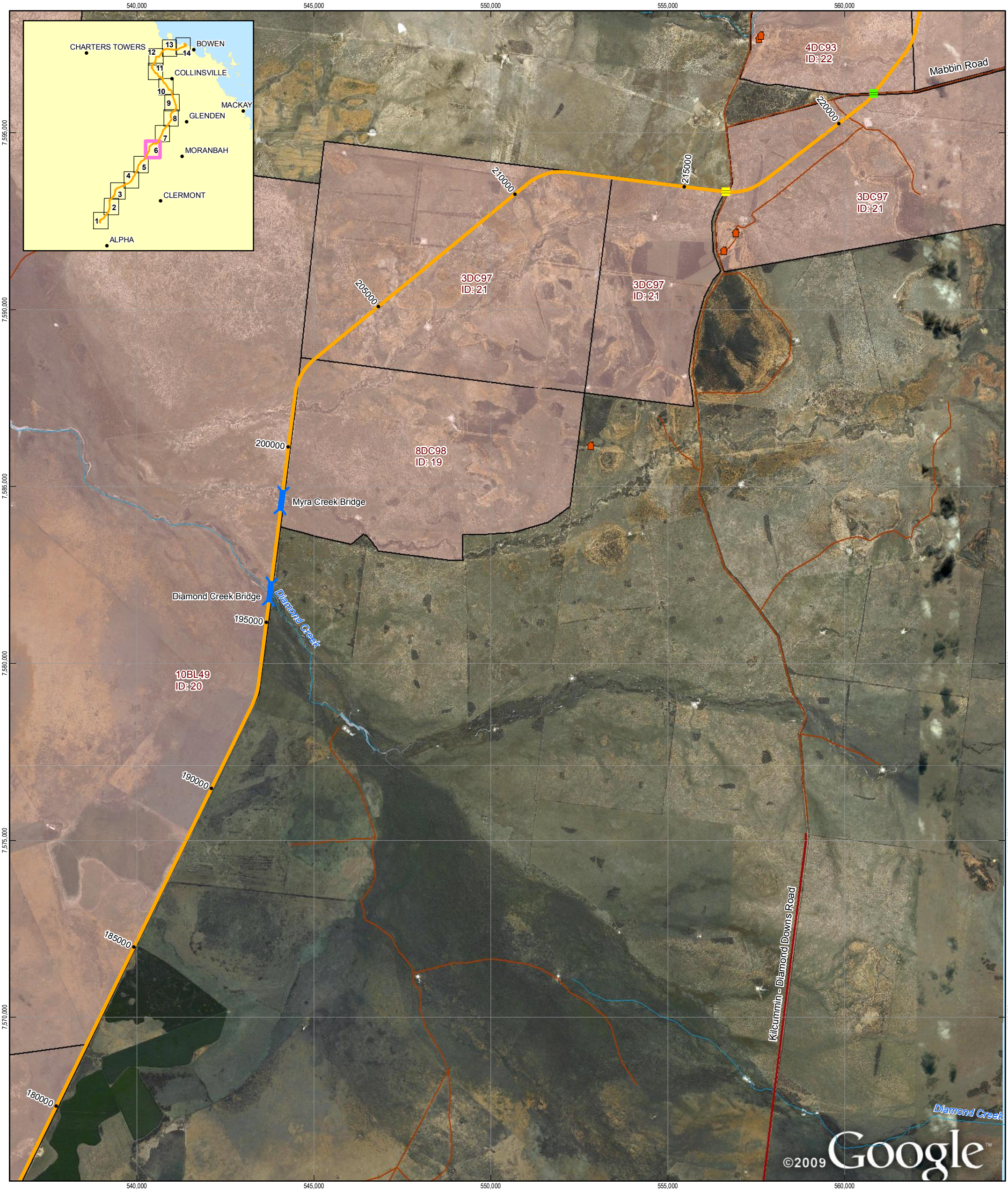

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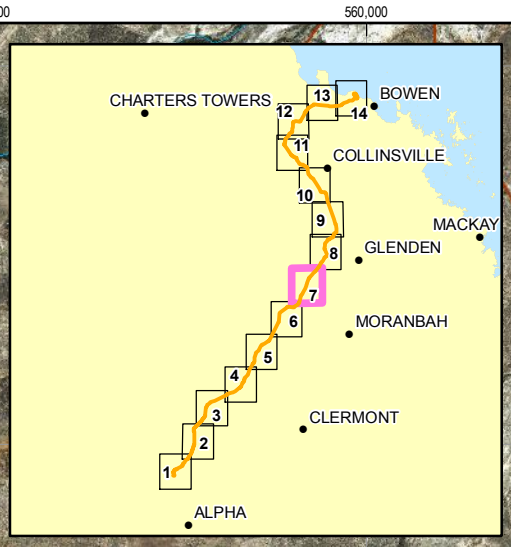

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255000
250000
245000
240000
235000
230000
225000

1816PH1315
ID: 25

1816PH1315
ID: 25

636PH2182
ID: 25

636PH2182
ID: 25

9DK137
ID: 24

10DK138
ID: 23

Suttor River

Suttor Dev Road

Suttor Developmental Road Bridge

Chesterfield Road

Eaglefield Creek

Diamond Downs Eaglefield Road

Eaglefield Creek Bridge

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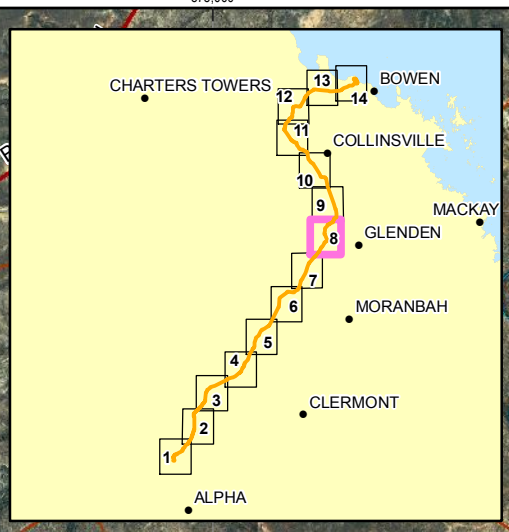

North Queensland Gas Pipeline

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Cerito Road

3SP171922
ID: 28

Cerito Creek

290000

Collinsville

Cerito Development Road Bridge

Elphinstone Road

14SP225054
ID: 28

14SP225054
ID: 28

285000

Suttor River

689PH2015
ID: 27

Collinsville - Elphinstone Road

280000

Wollombi Road

1CP905226
ID: 26

275000

Wollombi Road

Camp site 3

270000

Terang Road

1CP905226
ID: 26

265000

Suttor Creek Bridge

1816PH1315
ID: 25

260000

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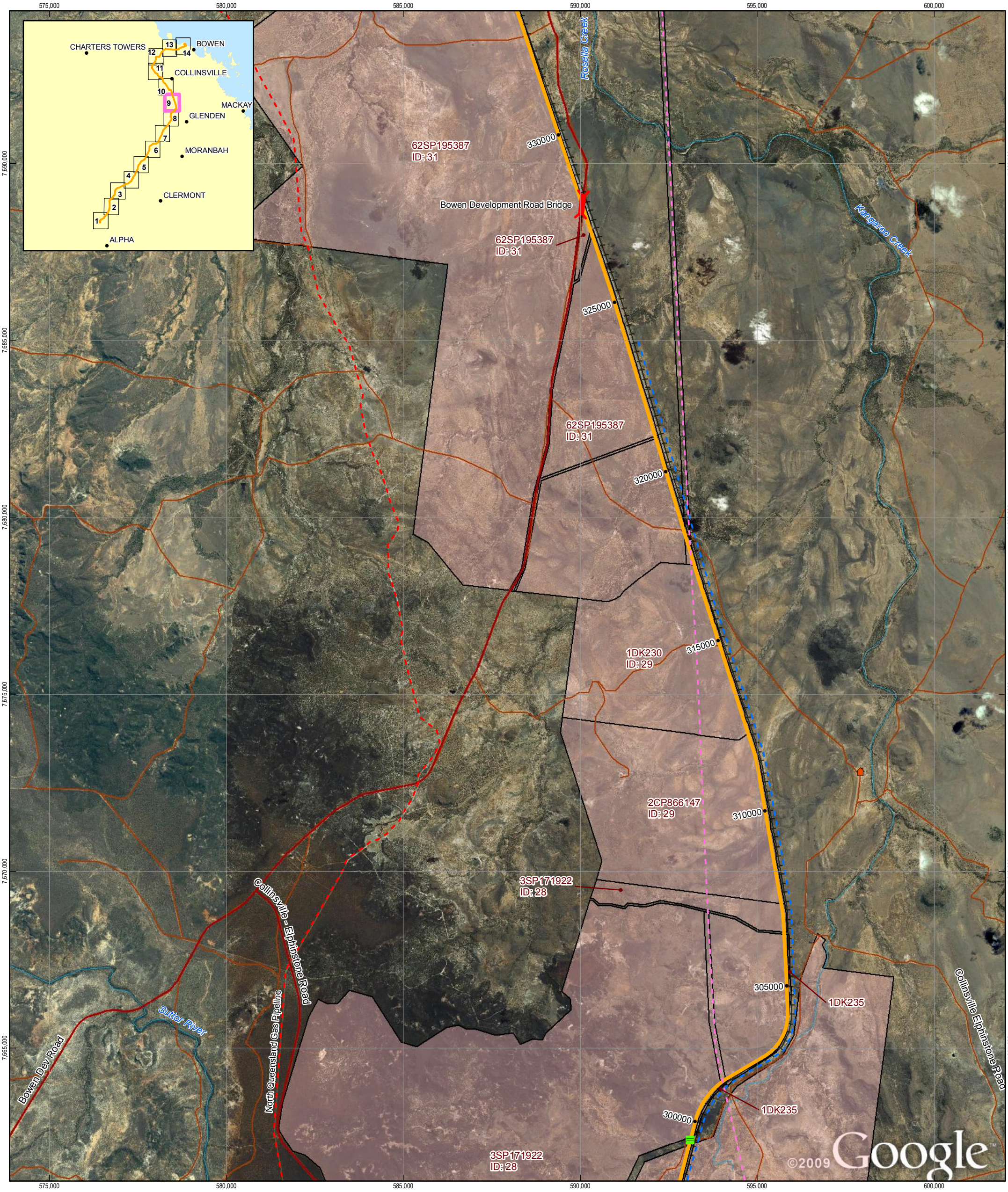

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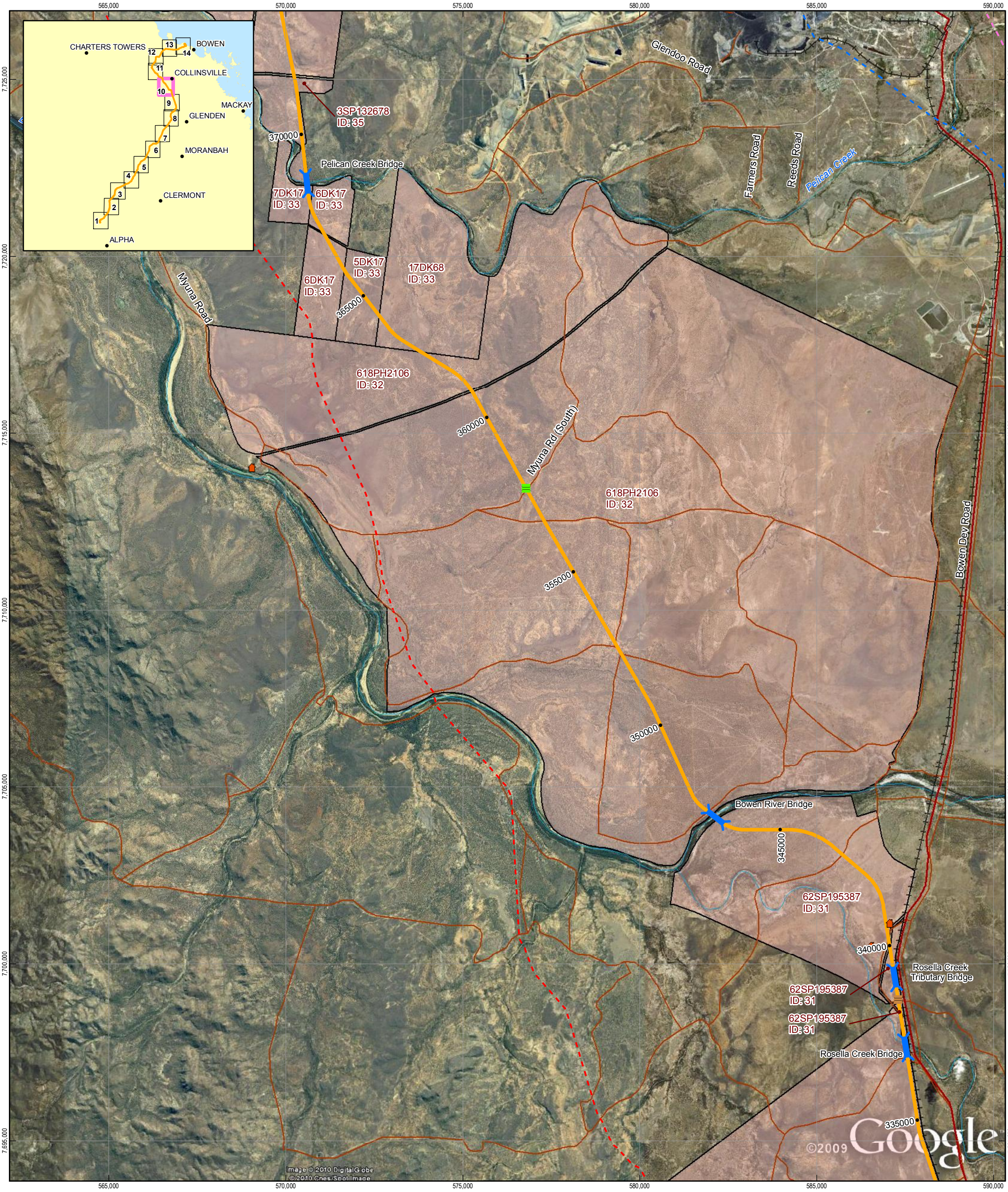

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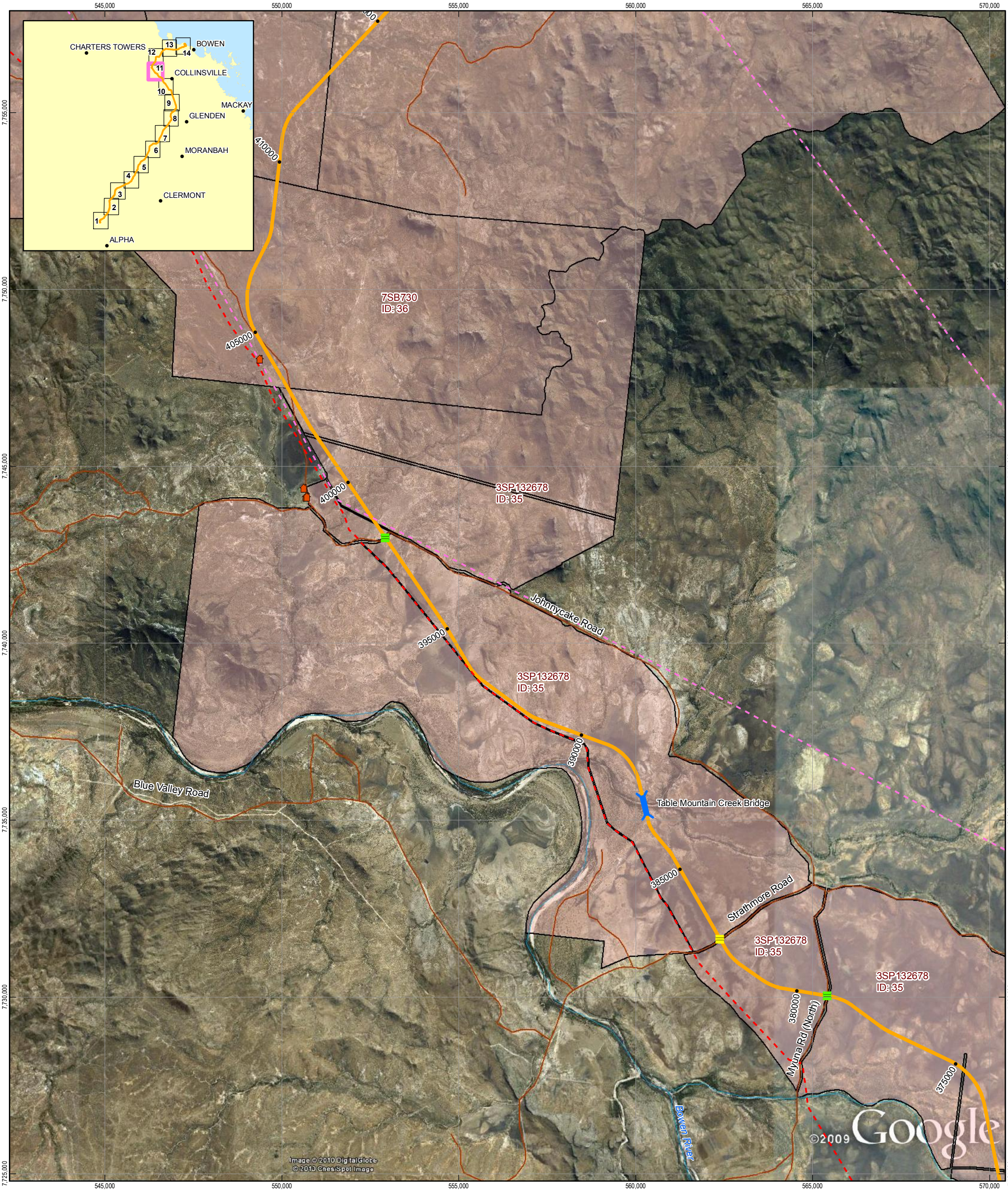

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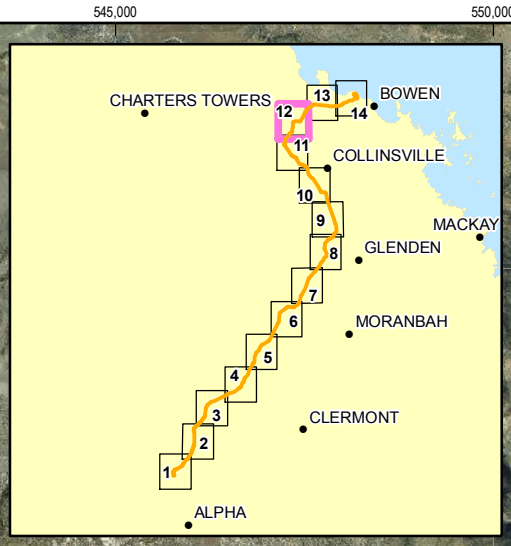

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7,785,000 7,780,000 7,775,000 7,770,000 7,765,000 7,760,000

Bogie River

Tondara Road

1SB752
ID: 38A

450000

445000

440000

Bogie River Bridge

4899SB765
ID: 38

435000

Strathalbyn Rd

430000

Capsize Creek Bridge

425000

Herbert Creek Bridge

4899SB765
ID: 38

5348PH1819
ID: 37

420000

415000

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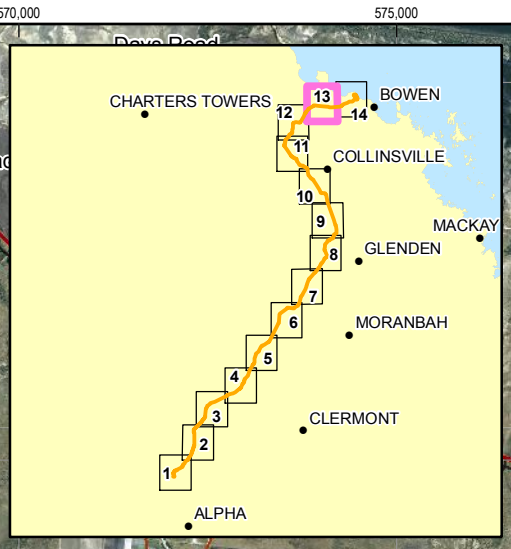

570,000 575,000 580,000 585,000 590,000 595,000

7,805,000 7,800,000 7,795,000 7,790,000 7,785,000 7,780,000 7,775,000

Bruce Highway
NORTH COAST LINE
Ashfields Road
Watts Road
Wally Sproule Road
Nevada Road
Glenore Road
Thurso Road

24RP805036
ID: 42

2SB220
ID: 39

4SB687
ID: 41

455000
460000
465000
470000
475000

Sandy Creek Bridge
Finley Creek Bridge
Elliot River Bridge

Construction depot
Marshalling yards
Camp site 1

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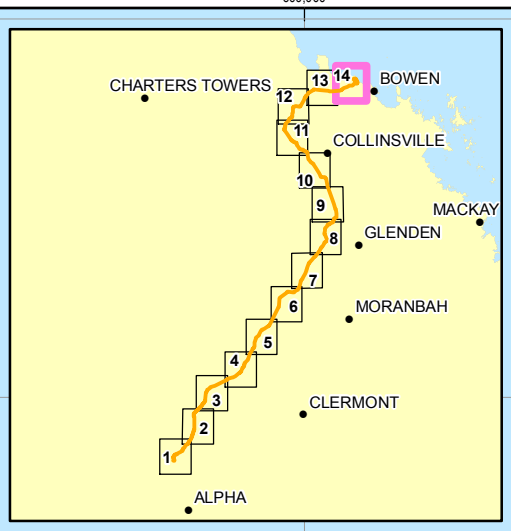

PORT OF ABBOT POINT

32SP124849
46SP156160
3RP748628
56SP112921
1RP745292
505000
335HR1935
Caley Valley Wetlands
2RP745292
510000
6SP194888
4SP194889
3SP194889
80K12450
1RP737838
500000
Saltwater Creek Bridge
3RP748509
1RP705785
495000
152SP122339
3RP748508
Bruce Highway / Rail Bridge
NORTH COAST LINE
Bruce Highway
3HR1711
3HR1711
3HR1711
490000
2HR1724
24RP805036
ID: 42
3HR1712
485000
Splitters Creek Bridge
3HR1686
ID: 44
480000
Earl Road
MERINDA
West Euri Road
East Euri Road
Summer Hills Road
Bowen Dev Road
Don River
©2009 Google

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LEGEND

- Town
- Camp
- Marshalling Yards
- Depot
- House
- Level Crossing
- Level Crossing/Stock Crossing
- Stock Crossing
- Watercourse Bridge
- Road Bridge
- Proposed Alignment
- State Road
- Local Road
- Existing Railway
- Watercourse
- Powerline
- Gas Pipeline
- Water Pipeline
- Impacted Properties
- Waterbody

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1:100,000 (at A3)

0 0.5 1 2 3 4 5

Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid of Australia, Zone 55

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Alpha Coal Project
Environmental Impact Statement

PROPOSED RAIL ALIGNMENT AND KEY PROJECT COMPONENTS

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17.2 Description of Existing Conditions

17.2.1 Existing Road Classification

The classification of roads along the existing road network can be used as an indication of the functional role each road plays with respect to the volume of traffic they should appropriately carry. The Department of Transport and Main Roads (DTMR) has developed a set of road hierarchy classifications detailed in Table 17-2. The table provides typical nominal volumes expressed in terms of average annual daily traffic (AADT) serviced by various classes of roads.

Table 17-2: Functional classification of roads

Type Road		Traffic Volume (vpd)[1]	Peak Hour Volume (vph)[2]
Arterial Road	Highway	Volumes not restricted	>2,000
	Arterial	Volumes not restricted	
	Arterial Main	< 20,000	
Sub-Arterial Road	Traffic Distributor	Volumes not restricted	800 – 1,000
	Controlled Distributor	< 10,000	
	Sub Arterial Main	< 10,000	
Collector Road	Major Collector	< 6,000	300 – 600
	Minor Collector	< 3,000	
Local Road	Access Street	< 750	0 – 200
	Access Place	< 100	

1. vpd = vehicles per day
2. vph = vehicles per hour

DTMR has jurisdiction over roads of State significance and has four administrative classifications in its hierarchy of roads. These are:

- National Highway (NH);
- State Strategic Road (SSR);
- Regional Road (RR); and
- District Road (DR).

17.2.2 Existing Road Network

17.2.2.1 Overview

The project area encompasses several nationally and regionally significant transport routes. Roads under the State Controlled network that serve as key transport routes in the study area are listed in Table 17-3 and further described below.

Table 17-3: Key Roads in the Study Area

Road ID	Road Name	Classification
10K	Bruce Highway (Bowen-Ayr)	National
88B	Bowen Developmental Road (Collinsville – Belyando Crossing)	District
98A	Gregory Developmental Road (Clermont-Belyando Crossing)	State Strategic Road
82A	Suttor Developmental Road (Nebo-Mount Coolon)	Regional Road
5307	Collinsvale Elphinstone Road	District
33A	Peak Downs Highway (Clermont – Nebo)	State Strategic Road
33B	Peak Downs Highway (Nebo – Mackay)	State Strategic Road
16A	Capricorn Highway (Rockhampton – Duaringa)	State Strategic Road
16B	Capricorn Highway (Duaringa– Emerald)	State Strategic Road
16C	Capricorn Highway (Emerald – Alpha)	State Strategic Road
552	Clermont – Alpha Road	Regional Road

17.2.2.2 Bruce Highway

The Bruce Highway forms part of the Australian National Highway Network (AUSLINK) and is a major north-south route along the Brisbane-Cairns corridor. North of Brisbane, the Bruce Highway is a divided multi-lane road but for most of its distance to Cairns, the Bruce Highway is essentially a two lane rural highway with sections of four lanes at the regional centres.

The Bruce Highway links the regional centres of Rockhampton, Mackay and Townsville via Proserpine and Bowen.

17.2.2.3 Bowen Developmental Road

The Bowen Developmental Road is a sealed road and starts in the township of Delta. The Bowen Developmental Road is a State controlled road that connects with the Bruce Highway, the Gregory Developmental Road, the Rutherford Road, the Strathalbyn Road, the Strathmore Road, the Suttor Developmental Road and the Upper Don River Road. Towns, villages and localities on the Bowen Developmental Road include Mount Coolon, Collinsville, Almoola, Briaba, Binbee and Armuna.

Bowen Developmental Road commences from Bowen Town in a T intersection with the Bruce Highway. The road then proceeds in a south western direction passing Bogie and Mt. Coolon and the town of Collinsville. The road also crosses Mt. Wyatt Road, Power House Road, Corduroy Creek Road, Collinsville Elphinstone Road, Cerito Road, Ilamatha Road and culminates in T intersection with the Gregory Developmental Road. It currently carries between 900-1400 vehicles per day between Bowen and Collinsville.

17.2.2.4 Gregory Developmental Road

The Gregory Developmental Road is a two lane undivided sealed road with gravel shoulders. The road was just recently upgraded to almost completely dual-lane bitumen. South of Clermont, the road is known as Gregory Highway which serves the major coal-mining centres of Central Queensland.

The Gregory Developmental Road connects with the Blue Range Road, the Bowen Developmental Road, the Flinders Highway, the Forsayth Einasleigh Road, the Greenvale Camel Creek Road, the Gregory Highway, the Gulf Developmental Road, the Harvest Home Road, the Hervey Range Developmental Road, the Kennedy Developmental Road, the Kennedy Developmental Road - Gregory Developmental Road, the Moray Bulliwallah Road, Mosman Street and the Peak Downs Highway.

The Gregory Development Road currently carries 300-400 vehicles per day and commonly used by road trains.

17.2.2.5 Suttor Developmental Road

The Suttor Developmental Road is a State controlled road under the jurisdiction of the TMR. The road is partly sealed and goes from Mount Coolon to near Nebo.

The Suttor Developmental Road currently carries an average of 50-70 vehicles per day. It stretches from the suburb of Mount Coolon at a T-intersection with Bowen Developmental Road. The road continues east passing Stratford Road and Glenavon Road and Eaglefield. The road continues east passing Red Hill Road, Ellensfield Road, Collinsville Elphinstone Road and Elphinstone Suburb. The road continues east passing Hail Creek Road, Kemmis Creek Road and Turrawilla Road and Leggets Road. Suttor Developmental Road culminates in a T junction with Peak Downs Highway.

17.2.2.6 Collinsville Elphinstone Road

The Collinsville Elphinstone Road is State controlled road that has its northernmost point at a T intersection with Bowden Developmental Road. The road continues in a south eastern direction passing Mount Leslie Road and Cerito Road. The road also passes beside Glenden Town and Glenden Newlands Road and Perry Drive. From Glenden Town, the road passes Mount Goodhart Road and terminates in an intersection with Suttor Developmental Road.

The Collinsville Elphinstone Road is an unsealed road and currently carries an average of 500-700 vehicles per day.

17.2.2.7 Peak Downs Highway

The Peak Downs Highway is a sealed road and goes from near Bathampton to Ooralea. The Peak Downs Highway is hilly along its 265 km length, with about 1.2 km that is steeper in incline/grade than 5%.

The Peak Downs Highway connects with the Annandale Road, the Blue Mountain Road, the Bruce Highway, the Eton - Homebush Road, the Fitzroy Developmental Road, the Gregory Developmental Road, the Gregory Highway, the Mackay - Eungella Road, the Marian - Eton Road, the Moranbah Access Road, the North Eaton Road, the Oxford Downs - Sarina Road, the Suttor Developmental Road and the Winchester Road.

Towns, villages and localities on the Peak Downs Highway include Eton, Drapers, Walkerston and Alexandra.

17.2.2.8 Capricorn Highway

The Capricorn Highway is virtually an eas-west road that links the city of Rockhampton with western Queensland. The highway is approximately 560 kilometres long and joins the Landsborough Highway

at Barcaldine, The Capricorn Highway is a sealed road that services the towns of Gracemere, Westwood, Duaringa, Dingo, Blackwater, Emerald, Bogantungan, Alpha and Jericho

17.2.2.9 Clermont Alpha Road

The Clermont Alpha Road is a partly sealed road and goes from the township of Alpha to the township of Clermont. The Clermont Alpha Road connects with the Capricorn Highway, the Clermont Connection Road, the Clermont Laglan Road, the Craven Road and the Laglan Pioneer Road.

17.2.3 Alpha Rail Crossing Locations

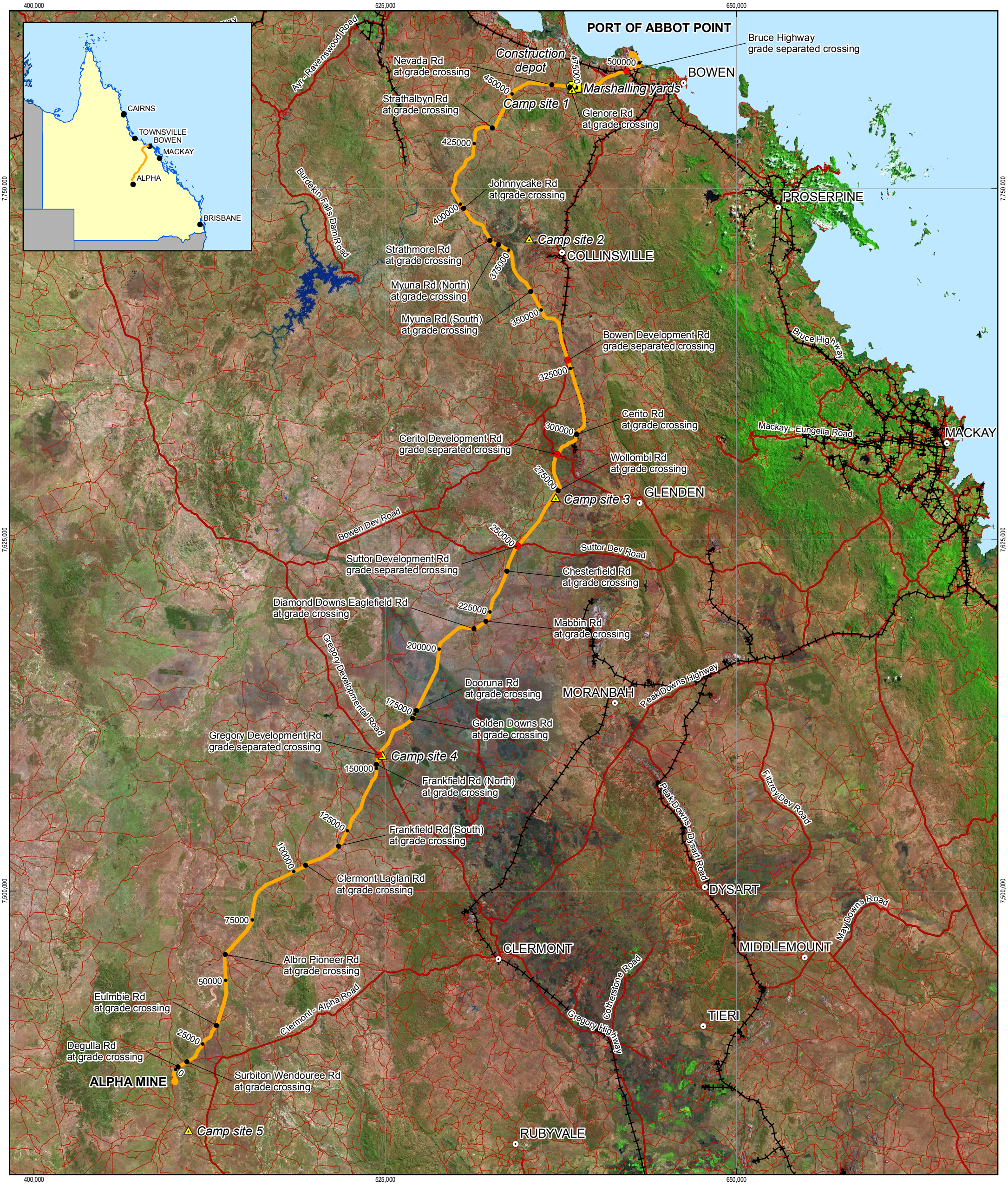
The proposed railway line is expected to intersect with the State Controlled Road (SCR) network as well as local road network. The railway line will cross five SCRs with grade-separated intersections, while the crossing with the Collinsville- Elphinstone road will have an at-grade level crossing. The railway line will cross 21 local roads and at-grade railway crossings are proposed at these locations. The at-grade crossing locations are proposed to be flashing light crossings.

The local roads and SCRs that intersect with the Alpha railway line are shown in Figure 17-2. The local road crossings are indicated as black dots and SCR crossings are indicated as red dots. The affected local roads are located in the Whitsunday Regional Council, Isaac Regional Council and Barcaldine Regional Council.

The SCRs that intersect with the Alpha railway line are summarised in Table 17-4.

Table 17-4: Key Roads to be crossed by the Rail Route

Road ID	Road Name	Classification
10K	Bruce Highway (Bowen-Ayr)	National
88B	Bowen Developmental Road (Collinsville – Belyando Crossing)	District
98A	Gregory Developmental Road (Clermont-Belyando Crossing)	State Strategic Road
82A	Suttor Developmental Road (Nebo-Mount Coolon)	Regional Road
5307	Collinsvale Elphinstone Road	District



LEGEND

- Town
- Camp
- Marshalling Yards
- Depot
- Crossing
  - Local Road
  - State Road
- Proposed Alignment
- State Road
- Local Road
- Existing Railway

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0 5 10 20 30 40 50

Kilometres

Map Projection: Universal Transverse Mercator
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ROAD CROSSINGS

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Date	20-09-2010

Figure: 17-2

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A summary of the local roads that intersect with the Alpha railway line are tabulated in are listed in Table 17-5.

Table 17-5: List of local council roads that intersect with proposed railway line

Crossing No.	Road	Proposed Intersection Type
Whitsunday Regional Council		
1	Glenore Road	Level Crossing
2	Nevada Road	Level Crossing
3	Strathalbyn Road	Level Crossing and Stock Crossing
4	Johnny Cake Road	Level Crossing
5	Strathmore Road	Level Crossing and Stock Crossing
6	Myuna Road (North)	Level Crossing
7	Myuna Road (South)	Level Crossing
8	Cerito Road	Level Crossing
Isaac Regional Council		
9	Wollombi Road	Level Crossing and Stock Crossing
10	Chesterfield Road	Level Crossing
11	Mabbin Road	Level Crossing
12	Diamond Downs Eagle Field Road	Level Crossing and Stock Crossing
13	Dooruna Road	Level Crossing
14	Golden Downs Road	Level Crossing
15	Frankfield Road (North)	Level Crossing
16	Frankfield Road (South)	Level Crossing and Stock Crossing
17	Clermont Laglan Road	Level Crossing and Stock Crossing
18	Albro Pioneer Road	Level Crossing and Stock Crossing
Barcaldine Regional Council		
19	Eulumbie Road	Level Crossing
20	Surbiton Wendourse Road	Level Crossing and Stock Crossing
21	Degula Road	Level Crossing

17.2.4 Existing Traffic Volumes on State-Controlled Roads

Existing traffic count data was obtained from the regional offices of DTMR. These counts were mostly 2008 counts and presented movements in annual average daily traffic (AADT). Data on the percentage of heavy vehicles were available for some road sections. It should be noted that for the road sections with multiple count sites, the highest AADT volume is presented in Table 17-6 below so as to represent the worst-case volumes along the road section.

Table 17-6: Existing AADT Volumes on State-controlled roads

Road ID	Road Name	AADT	Peak Hour[1]	% HV
10K	Bruce Highway (Bowen-Ayr)	2650	265	2.0%
88B	Bowen Developmental Road (Collinsville – Belyando Crossing)	1012	101	2.7%
98A	Gregory Developmental Road (Clermont-Belyando Crossing)	312	31	7.0%
82A	Suttor Developmental Road (Nebo-Mount Coolon)	45	5	20.0%
5307	Collinsvale Elphinstone Road	588	59	1.0%

n.d.a - no data available

[1] highest peak hour percentage for an average weekday

17.2.5 Existing Traffic Volumes on Local Council Roads

No traffic count data is currently available for the affected local roads located in the Barcaldine and Whitsunday Regional Council. Traffic count surveys may need to be conducted as part of the RIA study for these roads. Isaac Regional Council has provided traffic count data for Clermont Laglan Road and Golden Downs Road. The traffic count data provided for Clermont Laglan Road and Golden Downs Road ranged from the year 2000 to 2007 and is more than 3 years old.

A review of the data revealed that the volumes recorded from the previous counts indicate very low traffic levels, mostly under 50 vehicles per day with a small number of count sites registering over a 100 vehicles per day. It is assumed that the majority of the local roads manifest low traffic levels and can be used for access to the proposed railway corridor.

17.2.6 Roadway Capacity for Two-Lane Two-Way Rural Roads

It is noted that majority of the access routes to the project site are two-lane two-way rural roads (one lane per direction), with the exception of the road sections on the state highways that lead into the major urban centres. The AUSTROADS *Guide to Traffic Engineering Practice - Part 2: Roadway Capacity* defines level of service as a qualitative measure describing operational conditions within a traffic stream. The term Level of Service (LOS) and its characteristics for rural roads is defined in Table 17-7.

Table 17-7: Level of Service (LOS) for rural roads

LOS	Description	AADT	Description
A	Free, unrestricted flow	1,100	Very good
B	Mostly free flow, few disruptions	2,800	Very good
C	Stable flow	5,200	Good
D	Mostly stable flow, some delays	8,000	Acceptable
E	Congested flow, delays common	14,800	Bad
F	Forced flow	n/a	Bad

Source: *AUSTROADS Guide to Traffic Engineering Practice Part 2: Roadway Capacity*

The volume and composition of traffic on a given road determines the level of interaction between vehicles and is measured as its LOS. For a particular roadway capacity the LOS deteriorates with increasing traffic volumes. LOS A, LOS B and LOS C in a rural context are all satisfactory. LOS D can be satisfactory in some circumstances.

The AUSTROADS Guide further indicates that two-lane rural highways have a capacity of 2,800 passenger cars per hour total for both directions of flow (1,400 passenger cars per hour per direction), under ideal conditions where there are no restrictive roadway, terrain or traffic conditions.

In cases where traffic, terrain or geometric data may not be precisely known, the AUSTROADS Guide provides planning guidance on maximum AADT values that two-lane, two-way rural roads can accommodate under various terrain conditions.

Table 17-8 shows the values for various Levels of Service for a rural road in level terrain, with varying ratios of design hour volume to AADT.

Table 17-8: Maximum AADTs for various Levels of Service on two-lane two-way rural roads on level terrain, vehicles per day

Design Hour Volume to AADT Ratio	Level of Service (LoS)				
	A	B	C	D	E
0.10	2,400	4,800	7,900	13,500	22,900
0.11	2,200	4,400	7,200	12,200	20,800
0.12	2,000	4,000	6,600	11,200	19,000
0.13	1,900	3,700	6,100	10,400	17,600
0.14	1,700	3,400	5,700	9,600	16,300
0.15	1,600	3,200	5,300	9,000	15,200

Source: *AUSTROADS Guide to Traffic Engineering Practice, Part 2: Roadway Capacity*, Table 3.9, from TRB Highway Capacity Manual (1985) Table 8.10.

17.3 Potential Impacts and Mitigation Measures

17.3.1 Traffic Generation and Distribution

17.3.1.1 Construction Activities

It is anticipated that the construction activity will occur over a period of approximately 36 months. Traffic volumes generated by the construction personnel and by materials delivery will vary depending on the construction timetable. The sequence of activities is as follows:

- investigation works generally include detailed ground breaking geotechnical investigation and possibly water bore drilling;
- pioneering works generally include the clearing of a trace line along the rail centreline, installation of temporary fencing, construction of laydown areas for long lead material delivery and contractor area, and where required, the upgrade of existing tracks and the construction of intersections with public roads nominated to be used for construction works;
- camp construction will be comprised of transportable modules and include accommodation rooms, laundries and central facility buildings;
- culvert manufacturing generally includes the delivery of steel sheets to site and the rolling of corrugated steel pipes on site;
- reinforced concrete box culverts likely be manufactured off-site and transported to site;
- earthworks construction includes site preparation, clearing, topsoil stripping, haul road construction, foundation preparation, drill and blast, material haulage, embankment construction, drainage construction, sub-ballast construction and rehabilitation;
- bridgework include piling, erection of formwork and false work, installation of reinforcement, concrete pours, lifting of precast concrete units and structural steel work, and delivery of material for bridge construction; and
- trackwork will include ballast production, sleeper manufacturing, rail welding, rail supply, turnout supply, level crossing panel supply, and track construction.

17.3.1.2 Construction Hours

Standard hours of construction for the duration of the construction program are anticipated to be 12 hours per day (including travel – 2 hrs for travel & 10 hrs working) 13 day fortnight, 3 weeks on 1 week off RnR roster. Haulage of materials and plant will be on a seven-day-per-week operation, but will not be continuous throughout construction. Material deliveries will be coming from the Port of Mackay and there may be some nighttime haulage to the construction site.

17.3.1.3 Construction Vehicles and Equipment

Various machinery will be necessary for the construction of the railway. Heavy vehicles that will most likely be required at the construction site were identified as follows:

- standard 19-m trucks or extendable tri-axle trailers and where permissible, B-Double transports, to transport plant and material to the site;
- tipper trucks, to transport bedding sand on-site and excavated burden off-site;

- craneage to lift the rail sections into position;
- excavation machinery;
- drill rigs, D10 dozers, backhoes and watercarts; and
- equipment for directional drilling and horizontal boring.

The tipper trucks and the standard trucks are expected to be travelling along the road corridor aside from the vehicles used by the construction personnel. The crane, excavator, bulldozer, drilling and boring machinery will be brought to site but may be stationary in areas where work is being undertaken and transferred between sites along the rail corridor for the duration of the construction.

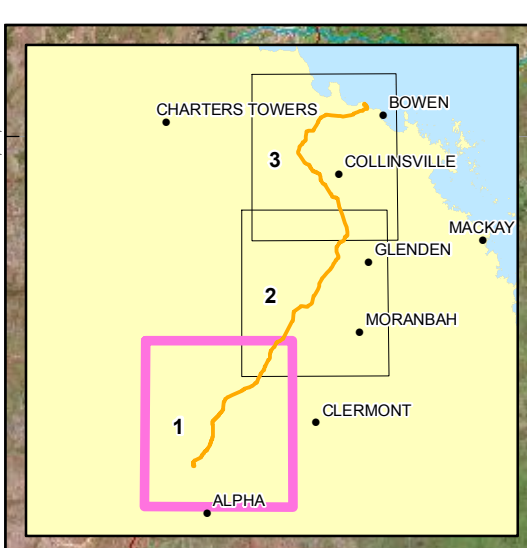
17.3.1.4 Transport Corridors

Transport corridor identifications have been provided by HPPL for the purpose of assessing the anticipated heavy vehicle construction and material transport movements (refer to Figure 17-3). These corridors comprise the major public roads and the relevant minor local roads to be used to access certain sections of the construction site. Table 17-9 lists the key transport corridors that would be used for the project requirements.

Table 17-9: Transport Corridors

Transport Corridor ID	Highway Route	Major Road	Minor Roads	Comments
TC 01	Bruce Highway (Sealed)			Access to Ch 480 – 510 km Access to Camp 1
		-	Glenore Road	Access to Ch 465 – 480 km Track Construction Depot
		-	Nevada Road	Access to Ch 455 – 465 km
TC 02	Bruce Hwy; Bowen Developmental Rd (Sealed)			Access to Ch 320 – 350 km
		Collinsville – Elphinstone Road		Access to Ch 300 – 320 km
		Mynua Road South		Access to Ch 350 – 370 km
		Mynua Road North		Access to Ch 370 – 380 km
		Strathmore Road		Access to Ch 380 – 385 km Access to Camp 2
		Johnny Cake Road		Access to Ch 380 – 415 km
		Strathalbyn Road		Access to Ch 415 – 435 km
		Rangemore Road		Access to Ch 435 – 455 km

Transport Corridor ID	Highway Route	Major Road	Minor Roads	Comments
TC 03	Peak Downs Hwy; Cerito Developmental Road; Newlands Access Road (Sealed)			Access to Ch 280 – 290 km
		Wollombi Road		Access to Ch 260 – 280 km Access to Camp 3
			Cerito Road	Access to Ch 290 – 300 km
TC 04	Peak Downs Hwy; Suttor Developmental Road; (Partly Sealed)			Access to Ch 245 – 265 km
		-	Chesterfield Road	Access to Ch 225 – 245 km
		Mabbin Road		Access to Ch 215 – 225 km
TC 05	Gregory Developmental Road (Sealed)			Access to Ch 150 – 160 km Access to Camp 4
		-	Frankfield Rd	Access to Ch 130 – 150 km
		Diamond Downs – Eaglefield Road		Access to Ch 195 – 215 km
			Dooruna Road	Access to Ch 170 – 195 km
		Golden Downs Road		Access to Ch 160 – 170 km
		Clermont – Lagian Road		Access to Ch 80 – 110 km
			Frankfield Road	Access to Ch 110 – 150 km
		Albor – Pioneer Road		Access to Ch 40 – 170 km
		Lagian – Albor Road		Access to Ch 40 – 110km
TC 06	Capricorn Hwy (Sealed); Clermont – Alpha Road			
			Hobartville Rd	Access to Camp 5
			Degulla Road	Access to Ch 0 – 10km
			Surbiton – Wendouree Road	Access to Ch 10 – 20km
			Eulmbie Road	Access to Ch 20 – 40km



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Camp site 4

Camp site 5

ALPHA MINE

Gregory Developmental Road

Clermont - Alpha Road

Fox Creek

Middle Creek

Fiery Creek

Fiery Creek

Midare Creek

Gregory Creek

Dunda Creek

Belyando River

Sandy Creek

May Creek

Lagoon Creek

Belyando River

Pebbly Creek

Bottle Tree Creek

Theresa Creek

Tomahawk Creek

Jordan Creek

Talarenha Creek

LEGEND

- Town
- Camp
- Marshalling Yards
- Depot
- Proposed Alignment
- State Road
- Local Road
- Existing Railway
- Watercourse
- Waterbody
- Transport Corridors
  - TC1
  - TC2
  - TC3
  - TC4
  - TC5
  - TC6

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Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid of Australia, Zone 55

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Alpha Coal Project
Environmental Impact Statement

INDICATIVE TRANSPORT CORRIDORS

Job Number	41-22090
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Figure: 17-3
Sheet 1 of 3

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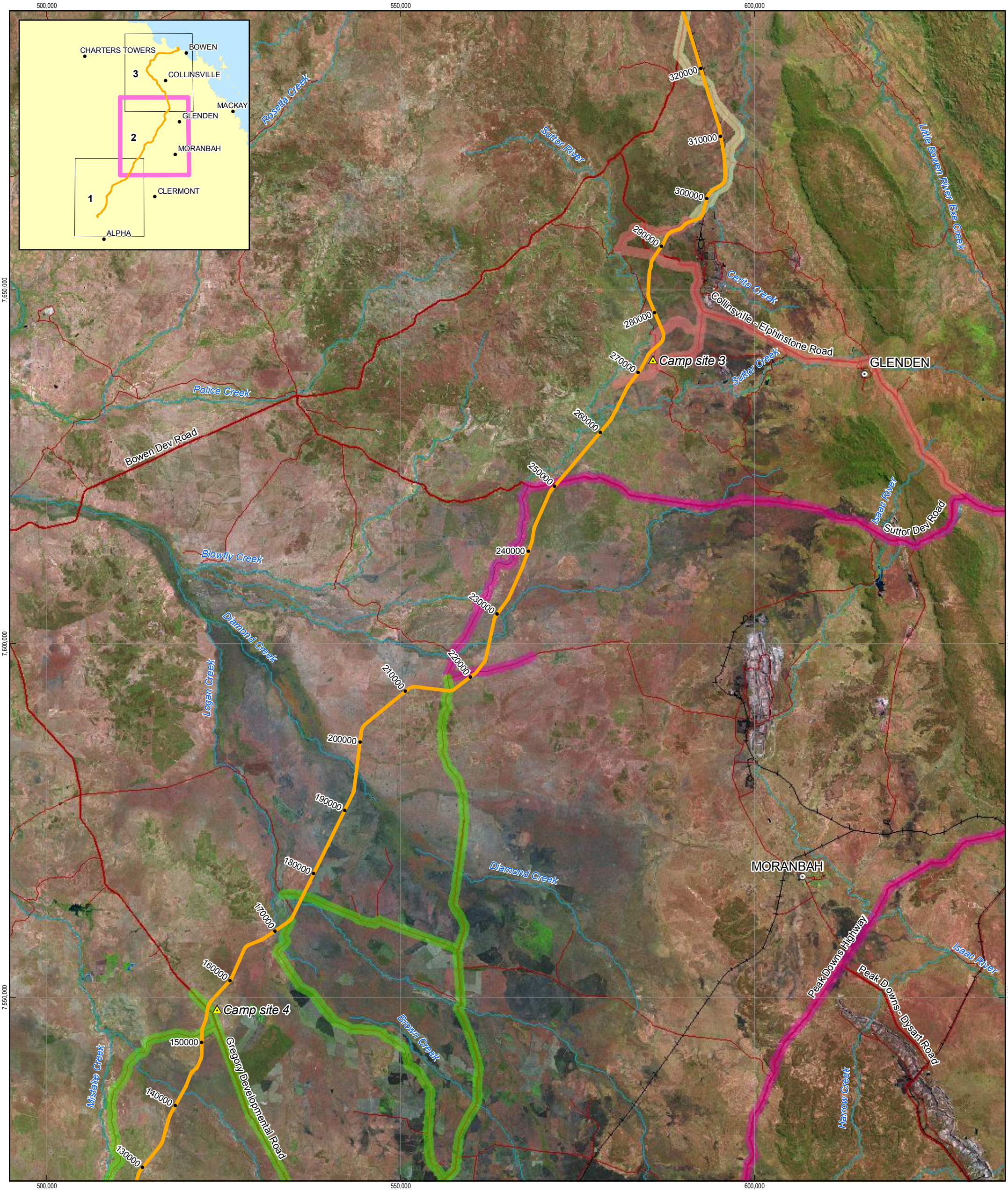

LEGEND

- Town
- Camp
- Marshalling Yards
- Depot
- Proposed Alignment
- State Road
- Local Road
- Existing Railway
- Watercourse
- Waterbody
- Transport Corridors: TC1, TC2, TC3, TC4, TC5, TC6

Source: See Copyright Details below and for full disclosure please refer to the EIS ***Volume 4 - References***

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Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid of Australia, Zone 55

N W E S

HANCOCK PROSPECTING PTY LTD

Alpha Coal Project
Environmental Impact Statement

INDICATIVE TRANSPORT CORRIDORS

Job Number	41-22090
Revision	A
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Figure: 17-3
Sheet 2 of 3

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LEGEND

- Town
- Camp
- Marshalling Yards
- Depot
- Proposed Alignment
- State Road
- Local Road
- Existing Railway
- Watercourse
- Waterbody
- Transport Corridors: TC1, TC2, TC3, TC4, TC5, TC6

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0 2.5 5 10 15 20 25

Kilometres

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Alpha Coal Project
Environmental Impact Statement

INDICATIVE TRANSPORT CORRIDORS

Job Number	41-22090
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Date	24-09-2010

Figure: 17-3
Sheet 3 of 3

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17.3.2 Construction Traffic Generation

17.3.2.1 Heavy Vehicle Movements

The main traffic generated through the construction phase will be from plant, equipment and material deliveries, as listed in Table 17-10.

Table 17-10: Construction plant and material

Construction Component	Plant and material required
Investigation works	drill rigs, D10 dozers, backhoes, excavators, and watercarts
Pioneering works	graders, water carts, dozers, excavators, small dump trucks, roller, temporary offices and facilities
Camp construction	graders, loaders, forklifts, mobile cranes, excavators, dump trucks and compactors Building modules are generally transported using a low-loader. Other equipment and materials will be transported using multi combination vehicles consistent with regulations for each road
Culvert manufacturing	mobile culvert rolling machine, forklifts, water carts, delivery of temporary portable buildings, and delivery of steel coils
Earthworks construction	temporary portable offices, workshop facilities, graders, dozers, water carts, excavators, loaders, haul trucks, road trains, scrapers, rollers, cranes, drill; and blast equipment, construction water equipment, mobile concrete batch plants, and other earthmoving equipment
Bridge construction	temporary portable offices, workshop facilities, mobile concrete batch plants, piling rigs, small and large cranes, excavators, compactors, and other plant required for bridge construction
Bridge Material	precast piles, pile casings, cement, aggregate, sand, reinforcement, formwork, false work, precast concrete decks, precast concrete piers, precast concrete headstock, prefabricated structural steel and bridge bearings
Trackwork	Temporary portable offices, crushing plant, excavators, loaders, haulage trucks, drill and blast equipment, explosives
Track construction	Temporary portable offices, workshop facilities, locomotives, wagons, flatbeds, rail train, track layer, tampers, grinders, water carts, loaders, road trains, cranes, and other major track construction equipment

The construction of the railway is anticipated to commence around the 4th Quarter of 2011 and be completed on the 4th Quarter of 2014, for an estimated 39 months. Table 17-11 presents the likely staging of the works with indication of expected duration.

Table 17-11: Staging of construction component

Activity	Mobilisation	Works start	Works finish	Demobilisation	Comments
Investigation works	Q4 2011	Q4 2011	Q4 2012	Q4 2012	Heavy vehicles to use public roads during mobilisation and demobilisation. Works to generally occur along rail corridor. Where required to cross a major river crossing, vehicles will be relocated to the other side using public road.
Pioneering works	Q4 2011	Q4 2011	Q2 2012	Q2 2012	Once plant is mobilised to site, works will be undertaken along the rail corridor
Camp construction	Q4 2011	Q4 2011	Q4 2012	Q4 2012	Concrete will generally be batched on site for each camp, with the exception of Camp 1. Pre mixed concrete from Bowen will be used for Camp 1.
Culvert manufacturing	Q4 2011	Q2 2012	Q4 2012	Q4 2012	Once plant and facility is mobilised to site, they will manufacture their first lot of culverts, then relocate to another site to manufacture the second lot and so on. The relocation works and steel coil delivery will be done using public roads.
Reinforced concrete box culverts		Q2 2012	Q4 2012		Reinforced concrete box culverts will likely be manufactured in Mackay and transported to site.
Earthworks Construction	Q4 2011 – Q3 2012	Q4 2011	Q1 2014	Q3 2013 - Q1 2014	Majority of the works will be in the rail formation and traffic movements will typically be on temporary construction haul roads adjacent to the proposed formation.
Bridge Work	Q2 2012 – Q3 2012	Q2 2012	Q3 2013	Q2 2013 – Q3 2014	Majority of the works will be in the rail formation and traffic movements will typically be on temporary construction haul roads adjacent to the proposed formation.

Activity	Mobilisation	Works start	Works finish	Demobilisation	Comments
Bridge Material		Q2 2012	Q3 2013		Materials for the bridge work might be obtained from overseas or from the domestic market.
Track work	Q2 2012	Q3 2012	Q4 2013	Q4 2014	Ballast quarries are expected to be developed on site at three locations along the rail alignment
Sleeper manufacturing	Q4 2011 – Q1 2012	Q2 2012	Q4 2013	Q4 2014	The proposed location for the manufacture of the sleeper on site is at Ch 470 km
Rail welding	Q4 2011 Q2 2012	Q3 2012	Q4 2013	Q4 2014	The proposed location of the onsite flashbutt welding facility is at Ch 470 km
Rail supply		Q3 2012	Q3 2013		The supply of rail is likely to be from overseas and delivered at the port of Mackay. The rail will be transported in 25m lengths to the rail welding facility at Ch 470
Turnout Supply		Q1 2013	Q3 2013		Turnouts will likely be manufactured in Mackay and transported to site
Level crossing panel supply		Q1 2013	Q3 2013		Precast concrete level crossing panels will likely be manufactured in Mackay and transported to site
Track construction	Q3 2013	Q3 2013	Q3 2014	Q3 2013 – Q2 2014	Once mobilised, majority of the works will be on the rail formation.
Rolling Stock	Q3 2013	Q3 2013	Q1 2014	Q1 2014	Rolling stock will be procured from overseas and delivered to the Port of Mackay then onwards to the marshalling yard at Ch 470 km

Source: HPPL

For each of the construction components in Table 17-11, the *Transport Logistic Paper* also provided an estimate of total heavy vehicle transport movements expected during mobilisation, works and demobilisation for the transport corridor to be used. This information was further analysed to determine the estimated peak volume of heavy vehicle generation for each transport corridor (see Table 17-12 and Figure 17-4) and the estimated peak volume of heavy vehicle generation per day for each transport corridor (see Table 17-13).

Table 17-12: Estimated heavy vehicle movements by transport corridor used

Quarter		TC 01	TC 02	TC 03	TC 04	TC 05	TC 06
Q4	2011	490	87	70	70	63	0
Q1	2012	438	40	28	28	38	0
Q2	2012	751	808	**155**	172	**951**	50
Q3	2012	1,884	**937**	140	157	934	18
Q4	2012	**1,891**	743	132	**174**	881	18
Q1	2013	1,580	424	92	141	882	16
Q2	2013	1,578	422	92	141	882	16
Q3	2013	1,774	92	46	48	98	16
Q4	2013	340	56	28	28	38	16
Q1	2014	334	40	28	28	38	0
Q2	2014	30	0	0	0	0	0
Q3	2014	0	0	0	0	0	0
Q4	2014	0	0	0	0	0	**120**

Figure 17-4: Estimated Heavy Vehicle Movements for the Duration of the Project

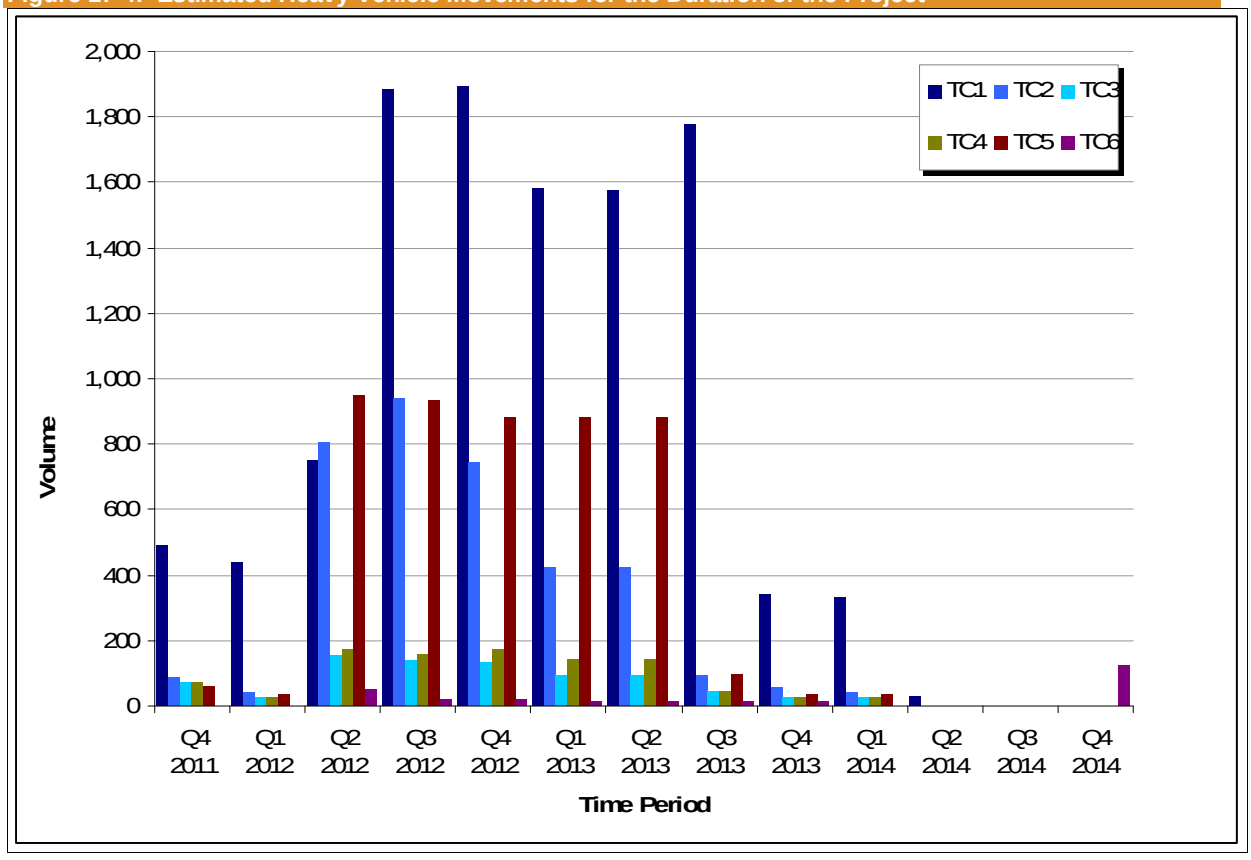

Table 17-13: Estimated peak daily heavy vehicle generation

Transport Corridor	Peak Quarterly Heavy Vehicle Generation	Estimated Peak Daily Heavy Vehicle Generation*	State Controlled Roads to be Impacted
TC 01	1891	32	Bruce Highway
TC 02	937	16	Bruce Highway Bowen Developmental Road
TC 03	155	3	Peak Downs Highway Cerito Developmental Road Newlands Access Road
TC 04	174	3	Peak Downs Highway Suttor Developmental Road
TC 05	951	16	Gregory Developmental Road
TC 06	120	2	Capricorn Highway Clermont – Alpha Road

Note: This is calculated assuming a 10 week work period per quarter and a 6 day work period per week.

17.3.3 Construction Camps and Construction Workforce

The construction workforce will comprise of approximately 2,680 workers to be accommodated at five main construction camps located within close proximity to the railway alignment. The workers will travel to and from the rail corridor via the local road network. The locations of the construction work camps are (refer to Volume 23, Section 2 of this EIS for the actual locations):

- Salisbury Plains;
- Collinsville;
- Eaglefield;
- Gregory; and
- Alpha Mine.

These work camps will be constructed simultaneously. All construction personnel will be employed on the basis of a Fly-In-Fly-Out work roster, working three weeks on site followed by one week of rest and recreation off site (3:1 FIFO). Coach trips to transport the workforce to and from the rail construction camps will connect with routine commercial flights or charter flights at the regional airport.

The workforce is expected to leave the camp between the hours of 6:00 and 7:00 a.m. and return between 5:00 and 6:00 p.m. A 50 seat coach and a 53 seat Scania 4 x 2 F-series coach are the nominated vehicles to be utilised for this purpose. Staff movements from the campsites to the rail alignments are expected to be short distances and only at the start and end of the work shift. In between hours, staff movements will be confined within the rail corridor.

The proposed access routes to the camps are detailed in Table 17-14. The estimated peak movements per week for personnel transport is assumed to occur on a single day.

Table 17-14: Details of Camp and Proposed Coach Route to Camp

Camp	Location	Size	Peak Occupancy	Peak Movements Per Week	Proposed FIFO Airport	Proposed Coach Route
1	Merinda	750	565	6	Proserpine	Proserpine to Bowen via Bruce Highway Bowen To Merinda via Bruce Highway
2	Collinsville	700	525	6	Proserpine	Proserpine to Camp 2 via Bruce Highway, Bowen Developmental Road, Mount Wyatt Road
3	Eaglefield	600	450	6	Mackay	Mackay to Camp 3 via Peak Downs Highway, Suttor Developmental Road
4	Gregory	600	450	6	Emerald	Clermont to Camp 4 via Peak Downs Highway, Gregory Developmental Road
5	Alpha Mine	300	300	4	Alpha	Alpha airport access road to Camp 5

17.3.3.1 Other Light Vehicle Generation

It is also anticipated that a small number of people will drive to site in personal vehicles. Rail camp 1 located at Merinda is in close proximity to popular residential areas where a small proportion of the workforce would potentially be residing and who would select to drive to work from home. This practice, however, would be discouraged for safety reasons (fatigue while travelling alone).

Additional vehicle movements will also be generated by service vehicles supplying the rail camps. This would typically include services such as food transport, linen laundering, fuel supplies, waste management contractors and maintenance servicemen.

It is estimated that approximately up to 20 service vehicle movements occur per week at each camp.

17.3.4 Traffic Impact

17.3.4.1 Impact of Construction on the Nominated Transport Corridors

17.3.4.1.1 Light / Medium-sized Vehicles

Movements attributed to service vehicles are assumed to be light vehicle movements and are likely to be spread out throughout the day.

For purposes of a worst-case scenario, it is assumed that 50% of the light vehicle movements would occur during the peak hour, hence an estimated 10 vehicle movements for each camp location would occur during the peak hour.

17.3.4.1.2 Heavy Vehicles

Heavy vehicles will comprise of coach movements for personnel transport from the nominated airports to the camp sites and heavy vehicle movements attributed to transport and delivery of plant and material.

Coach vehicle movements will comprise 28 vehicle movements per week for personnel transport from the airport to the campsites. It is likely that the arrival of personnel will occur before the AM peak hour but departure could coincide during the PM peak hour.

Heavy vehicle movements attributed to plant and material supply deliveries were estimated for each transport corridor, as shown in Table 17-15. The proportion of these movements occurring during the AM and PM peak periods is conservatively estimated at approximately 50%.

In summary, the estimated total vehicle movements for the worst-case scenario are shown in Table 17-15.

Table 17-15: Estimated Total Vehicle Movements (Worst-case Scenario)

Vehicle Movements	Daily (vehicles per day)	Peak Hour (vehicles per hour)
Light vehicle movements by service personnel	20	6
Heavy vehicle movements on		
Bruce Highway	48	24
Bowen Developmental Road	16	8
Peaks Down Highway	6	3
Cerito Developmental Road	3	2
Newlands Access Road	3	2
Suttor Developmental Road	3	2
Gregory Developmental Road	16	8
Capricorn Highway	2	1
Clermont – Alpha Road	2	1

Table 17-16 presents the impact of the additional traffic movements on the key roads and the anticipated level of service assuming worst-case scenario. In totality, this additional volume is unlikely to impact on the existing road network operations as it is expected to have spare capacity beyond this additional volume.

Table 17-16: Summary of additional traffic movements on the State-controlled roads

Road ID	Road Name	Existing		With Project			
		ADT	Percent Heavy Vehicles	Light (per day)	Heavy (per day)	ADT	Percent Heavy Vehicles
10 J	Bruce Highway (Proserpine-Bowen)	5,196	17.53%	12	48	5,256	18.2%
10K	Bruce Highway (Bowen-Ayr)	2,650	10.13%	6	48	2,704	11.7%
88B	Bowen Developmental Road (Collinsville – Belyando Crossing)	1,012	24.03%	12	16	1,040	24.92%
98A	Gregory Developmental Road (Clermont-Belyando Crossing)	312	31.99%	6	16	334	34.6%
82A	Suttor Developmental Road (Nebo-Mount Coolon)	45	22.94%	6	3	54	24.7%
5307	Collinsvale Elphinstone Road	588	19.26%	0	0	588	19.26%
33A	Peak Downs Highway (Clermont – Nebo)	3,377	15.21%	12	6	3,395	15.30%
33B	Peak Downs Highway (Nebo – Mackay)	3,645	16.42%	12	6	3,663	16.50%
16A	Capricorn Highway (Rockhampton – Duaringa)	nda		0	2		
16B	Capricorn Highway (Duaringa–Emerald)	nda		0	2		

Road ID	Road Name	Existing		With Project			
		ADT	Percent Heavy Vehicles	Light (per day)	Heavy (per day)	ADT	Percent Heavy Vehicles
16C	Capricorn Highway (Emerald – Alpha)	Nda		0	2		
552	Clermont – Alpha Road	377	12.24%	6	2	385	12.50%

17.3.4.1.3 Impact of Level Crossing Construction

The railway will cross road corridors at certain points. The locations of the crossings have been identified and discussed in Section 17.2.3 of this report.

The method of construction to be applied at each level crossing is yet to be determined. Temporary closures of at least one lane is likely to be required and a traffic management plan will be developed in consultation with the relevant road authority prior to construction to manage this. Given the low levels of traffic on most roads, it is expected that minimal delays would be experienced.

Where analysis indicates that where traffic volumes are anticipated to be high and road closures may cause excessive delays to traffic, traffic may need to be diverted around the crossing on a temporary track. This would be addressed in the detailed design phase of the project.

17.3.4.1.4 Impact of Grade Separated Crossing Construction

Construction of grade separated crossings is unlikely to cause any significant traffic delays on existing roads. It may be necessary to close one lane on a short term basis. This will be addressed through a construction traffic management plan to be developed in negotiation with TMR.

17.3.4.1.5 Impact of Construction on State Controlled Road (SCR) Network

The DMR's Guidelines for Assessment of Road Impacts for Development (April 2006) stipulates that the extent of impact of the project on the SCR network can be assessed on the basis of percentage increase in existing AADT. Where the construction or operational traffic generated by the development equals or exceeds 5% of the existing AADT on the road section, traffic operation impacts need to be considered.

Table 17-17 provides a summary of the impact of construction traffic on State-controlled roads.

Table 17-17: Construction traffic impact on State-controlled roads

Road ID	Road Name	AADT	% Impact
10J	Bruce Highway (Proserpine-Bowen)	5,256	1.0%
10K	Bruce Highway (Bowen-Ayr)	2,704	2.0%
88B	Bowen Developmental Road (Collinsville – Belyando Crossing)	1,040	2.7%
98A	Gregory Developmental Road (Clermont-Belyando Crossing)	334	7.0%

Road ID	Road Name	AADT	% Impact
82A	Suttor Developmental Road (Nebo-Mount Coolon)	54	20.0%
5307	Collinsvale Elphinstone Road	588	1.0%
33A	Peak Downs Highway (Clermont – Nebo)	3,395	0.5%
33B	Peak Downs Highway (Nebo – Mackay)	3,663	0.5%
552	Clermont – Alpha Road	385	2.1%

As shown in Table 17-17 above, the estimated traffic generated by the project will exceed the threshold 5% increase in AADT at two of the road sections listed above. However, it should be noted that this increase will be temporary and for a period of approximately 300 days. Hence, it is considered that suitable mitigation measures can be put in place for the duration of the period when these traffic levels are expected and relevant traffic issues can be addressed with a traffic management plan, rather than any upgrades to roads and intersections. The traffic management plan will need to be developed in consultation with TMR.

In addition to details about how traffic will be managed during construction, the traffic management plan will also link with the consultation plan, and include provision of regular updates to residents of Barcaldine, Isaac and Whitsunday Regional Councils of the construction program.

17.3.4.1.6 Traffic Impact During Railway Operation

When the railway is operational, occasional access into the corridor will be required to conduct inspections and maintenance works. However, it is anticipated that traffic volumes associated with these activities are expected to be negligible.

However, where maintenance works coincide with rail/road crossings and safety requirements require the closure of road lanes to road traffic, a special traffic management plan will be prepared in consultation with the local authorities.

Traffic impacts associated with railway operations at crossings can be further assessed when a more detailed operational plan has been developed for the transport of the coal from the Alpha Mine to the Port of Abbot Point. Standard safety procedures for rail operations, however, will apply at these road crossings and special procedures will be identified in the traffic management plan to be prepared.

On the assumption that the volume of 14 trains per day would be evenly spread throughout the daytime, and with each train requiring about 6 minutes to clear signals (4 minutes to pass plus an additional 2 minutes for advanced signal warning time and clearing time), it is estimated that traffic capacity will be reduced by 10%, on the average.

17.3.4.1.7 Impact on School Bus Routes

Access routes for the project may overlap with school bus routes. However, given the relatively low number of school bus services and the relatively short time of operation within the day, it is expected that there would be a negligible impact on the operation of the school bus routes. Any potential impacts will be addressed in detail when traffic management plans for construction and operation are prepared.

Communication and awareness will be critical to managing impacts on school bus routes during both construction and operation, such that school bus operators are aware of any safety issues, and the

construction workforce is aware of the routes and timing of school buses. If necessary, bus stops can be temporarily or permanently relocated to avoid conflict with level crossings.

17.3.4.1.8 Impact on Public Transport Routes

Public transport routes have not been identified in this study, but there are not expected to be regular public transport services in the Project area. The potential impact of the construction traffic on public transport operations will be addressed in detail when traffic management plans for construction are prepared. It is anticipated that construction access routes that coincide with public transport routes will be identified and special traffic management plans will be prepared to mitigate any potential impact on the public transport operation.

17.4 Conclusions

The volume and intensity of truck movements will increase over varying amounts during the 39 month construction period. The short-term increases in traffic volumes on the road network and their duration have been determined. Based on the nominal capacity of the road network, the additional construction traffic due to the project can be adequately accommodated at acceptable levels of service, so long as the communities affected are kept informed of progress and safeguards implemented. The delivery of materials and equipment that will be spread over the construction period can be arranged to minimise impact on the local community. Construction of level crossings will be planned and managed to minimise delays as well as to ensure that adequate warning is available to motorists.

Traffic management issues shall be addressed through the preparation and implementation of a Traffic Management Plan (TMP), to be developed during the detailed design phase. This TMP shall be developed in consultation with the relevant DTMR Regional offices, police and local authorities of councils impacted.

The traffic management plan will address key safety and logistical issues that may arise due to:

- vehicle crossings at major and minor road intersections;
- safety risks brought about by increased heavy vehicle traffic;
- lane closures; and the use of single-lane local access roads.

Mitigation measures will be identified to address each of these issues. Where, and when necessary, a separate site-specific local traffic management plan will be prepared.

A number of mitigating measures have been identified to ensure that transport and traffic impacts arising from the construction and operation are minimised. These measures will be incorporated into the TMP. An important mitigation measure relating to construction traffic impacts is the implementation of a community information and awareness program. This program will need to be initiated prior to construction commencing and continue throughout the entire construction period to ensure that local residents are fully aware of the construction activities, with particular regard to construction traffic issues. The awareness program shall identify communication protocols for community feedback on issues relating to construction vehicle driver behaviour and construction-related matters.

Other initiatives that need to be undertaken as part of the Traffic Management Plan include:

- in consultation with the DMR, identify mitigation measures to address the relative increase in traffic levels (>5% or a percentage value to be nominated by Main Roads) on affected road sections of the SCR network;
- in consultation with DMR, ensure general signposting of access roads with appropriate heavy vehicle and construction warning signs;
- review of speed restrictions along SCR network and where necessary, additional signposting of speed limitations;
- installation of specific warning signs at local access roads to the construction corridor to warn existing road users of entering and exiting traffic;
- distribution of day warning notices to advise local road users of scheduled construction activities;
- advance notice of road/lane closures and advice on alternative routes;
- installation of appropriate traffic control and warning signs for areas identified where potential safety risk issues exist;
- manage the transportation of construction materials to maximise vehicle loads to therefore minimise vehicle movements;
- whenever practical vehicles associated with the construction works will use internal and haulage access roads instead of public roads; and
- induction of truck and vehicle operators on the requirements of the Traffic Management Plan.

Key off-site traffic issues mainly relate to:

- use of identified road segments on the SCR network for access by heavy vehicles for delivery of plant and material;
- disruption to traffic due to road/lane closures brought about by construction activities at road crossings;
- increase in travel time to existing road users;
- ability of the roads to handle the volume of construction traffic particularly in regard to over-size and over-mass vehicles;
- road safety; and
- traffic management measures.