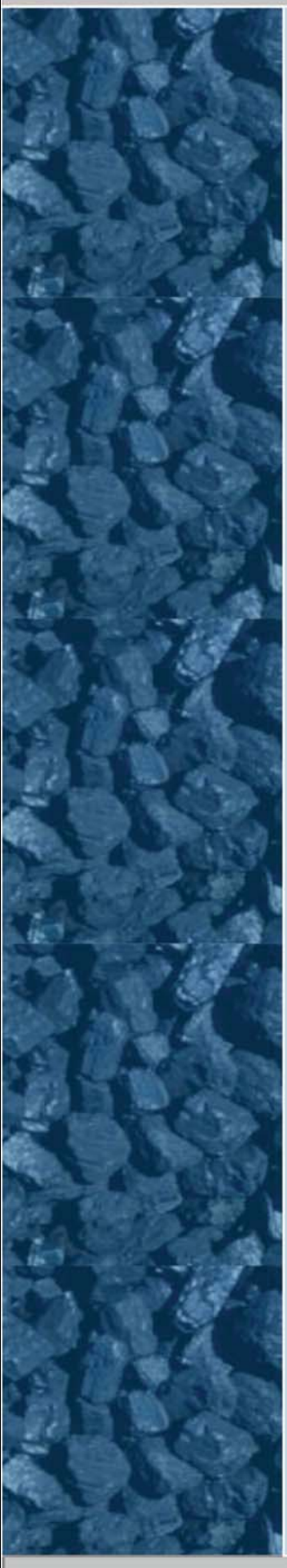
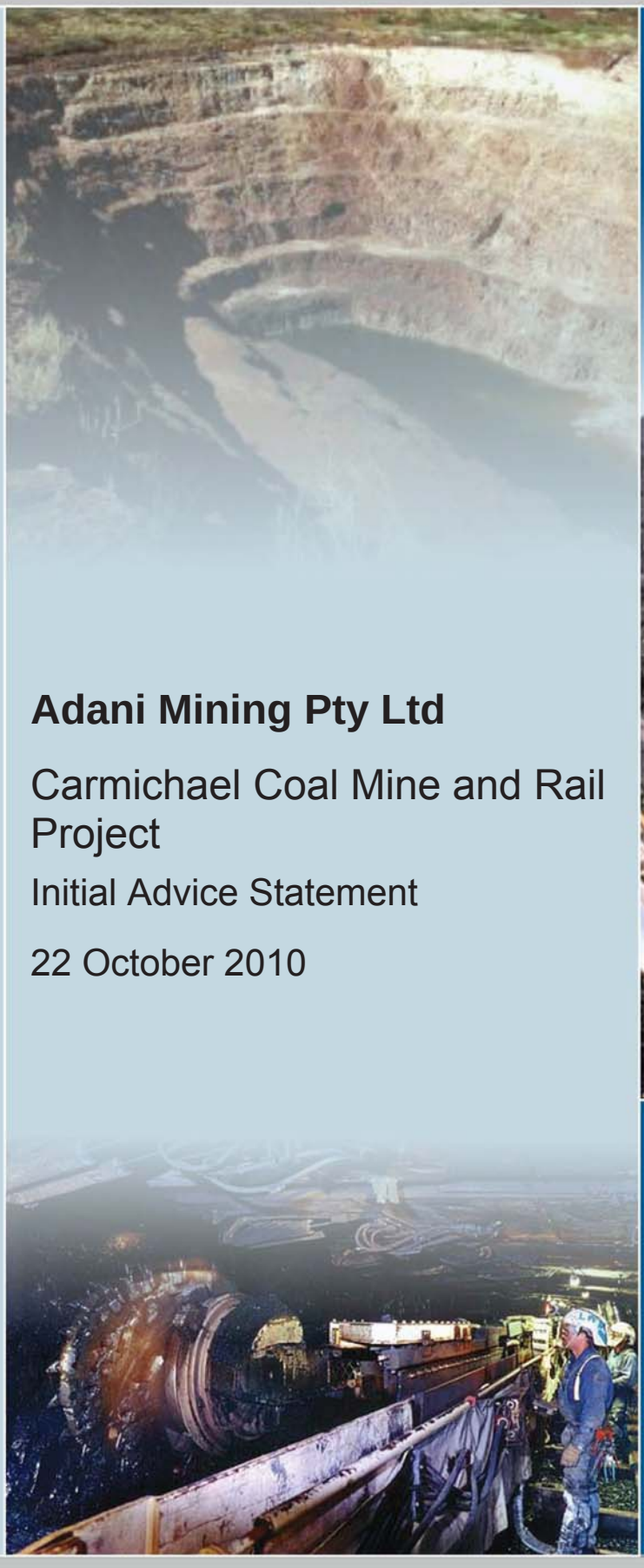
Adani Mining Pty Ltd

ADANI





Adani Mining Pty Ltd

Carmichael Coal Mine and Rail Project

Initial Advice Statement

22 October 2010

GHD

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1. Project Overview

1.1 Background

Adani Mining Pty Ltd (Adani) has purchased EPC 1690 from Linc Energy (Linc) and is investigating the opportunity to develop a coal mine and associated infrastructure. The Carmichael Coal Mine and Rail Project (the Project) will involve the development of both a greenfield open-cut coal mine and an underground coal mine in the Galilee Basin, supported by rail facilities leading to coal export terminals at either Abbot Point or Hay Point. The proposed mine will produce up to 60 million tonnes per annum (Mtpa) of product coal. The Project will have a mine life of 150 years, inclusive of construction, operation and closure. Export coal from this project will predominantly service the Indian domestic power market.

The purpose of this Initial Advice Statement (IAS) is to provide the Coordinator-General with adequate information so a decision can be made as to whether the Project should be declared a significant project for which an Environmental Impact Statement (EIS) is required under Section 26 (1) (a) of the *State Development and Public Works Organisation Act 1971*. The IAS also aims to provide stakeholders with an overview of the Project, and to provide an initial overview of the legislative, environmental, social and economic considerations associated with any future study investigation, and operation of the Project. Terms of Reference (ToR) for the EIS will be developed based on the outcomes of this report, the requirements of relevant government agencies and submissions of stakeholders and the community.

This IAS is submitted as supporting documentation for a referral under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).

1.2 The Proponent

Adani Mining Pty Ltd is a subsidiary of the Adani Group, a US $6 billion in terms of sales turnover and market capitalisation of US $ 30 billion, company based in Ahmedabad, India. The company has diverse interests in global trading, development and operation of ports, Inland Container Terminals, establishment of Special Economic Zones (SEZ), oil refining, logistics, gas distribution, and power generation, transmission and trading. The Adani Group is one of the largest and fastest growing professionally owned enterprises in India and in the global arena. The flagship company, Adani Enterprises Ltd. (formerly known as Adani Exports Ltd.), was established in 1988 as a partnership firm and is now a major listed entity with a market capitalisation of US $9 billion.

The Project proponent is Adani Mining Pty Ltd, which is an Australian subsidiary of the Adani Group. Contact details for the Proponent are as follows:

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1.3 Project Summary

The Carmichael Coal Mine and Rail Project comprises of two major components:

1. A greenfield coal mine (over EPC 1690), being both open cut and underground mining, and associated mine processing facilities; and
2. A railway line for the transport of coal to export port facilities at either, or both the Port of Abbot Point or the Port of Hay Point (Dudgeon Point).

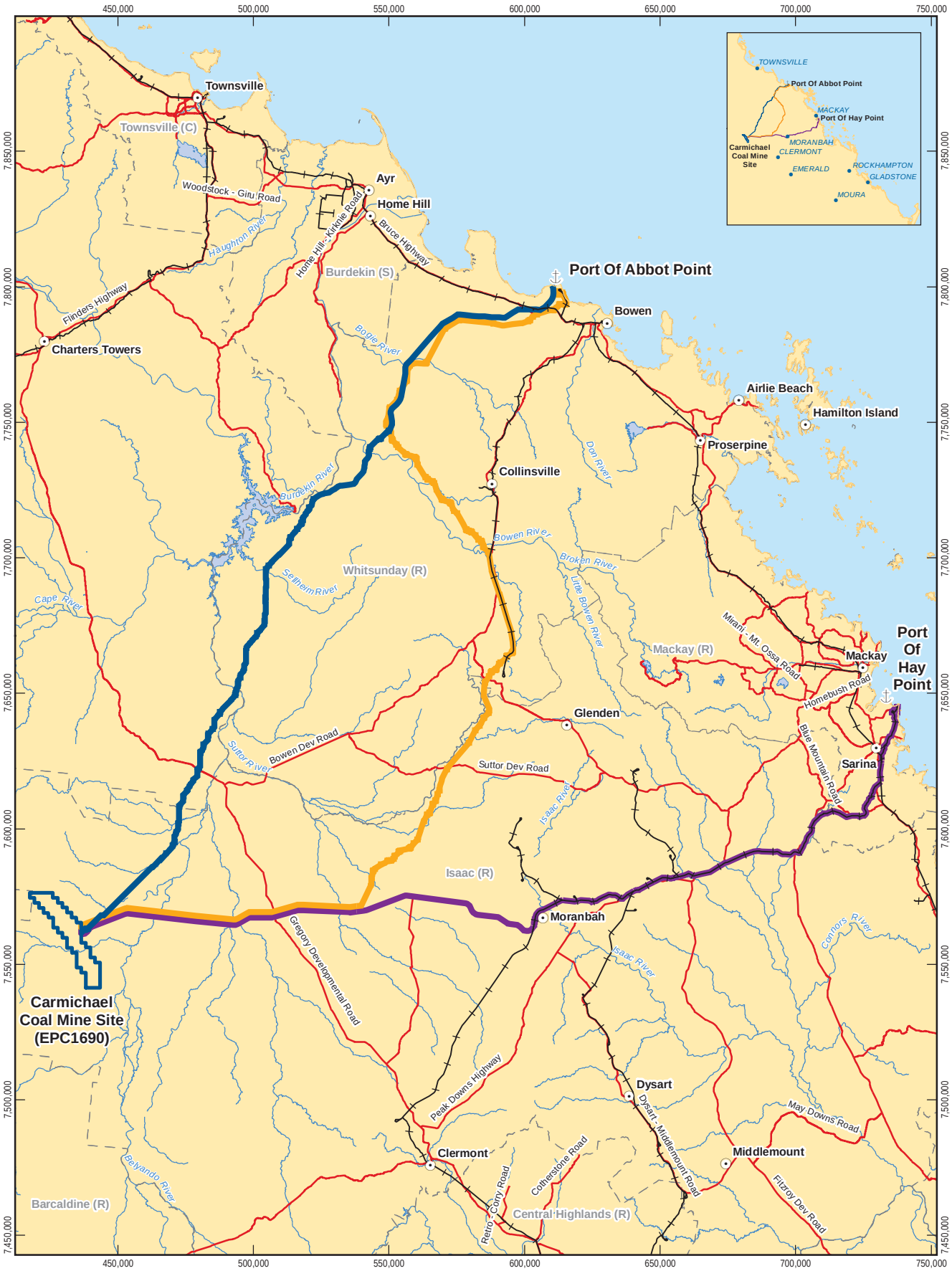
The proposed mine is expected to produce 60 Mtpa of product coal at peak production. The Project has an expected mine life of 150 years, inclusive of construction, operation and closure. Export coal from this Project will predominantly service the Indian market.

Export facilities at the Port of Abbot Point via the proposed Alpha rail alignment and/or the Port of Hay Point (Dudgeon Point) via the existing Goonyella line are being considered. Port facility investigations and environmental assessments are being undertaken separately by Adani and North Queensland Bulk Ports Corporation Limited.

1.4 Project Location

EPC 1690 is over the following parcels: Lot 1 on AY35, Lot 1 on SP164918, Lot 662 on PH1491 and Lot 663 on SP228220. The lease is mostly located on the Moray Downs cattle station, within the jurisdiction of Isaac Regional Council. It is located approximately 160 km to the north-west of Clermont, which in turn is located approximately 100 km north of the major central Queensland regional town of Emerald (see Figure 1). The site is accessed by the Gregory Development Road which runs from Clermont to Charters Towers, and then the property access road called the Moray Carmichael Access Road.

The project lies within Isaac Regional Council, Mackay Regional Council and Whitsunday Regional Council.



LEGEND

- Town
- Major Port
- State Road
- Existing Railway
- Watercourse
- Rail Option 1 (Alpha)
- Rail Option 2 (Goonyella)
- Rail Option 3 (Adani)
- Carmichael Coal Mine Site
- Local Govt Boundary
- Waterbody

1:2,000,000 (at A4)

0 10 20 30 40 50

Kilometres

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

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ADANI

Adani Mining Pty Ltd

Carmichael Coal Mine and Rail Project

Job Number	41-23244
Revision	A
Date	19-10-2010

Locality Plan and Rail Options

Figure: 1

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Data Source: GA: Towns, Railways, Watercourses, Waterbodies (2007); DMR: State Roads (2010); DME: Carmichael Mine Site; ABS: Local Govt Boundaries (2010); GHD: Rail Options, Major Ports (2010). Created by: BW.

1.5 Justification for the Project

1.5.1 Contribution of the Coal Industry to Queensland's Economy and Export Demands

The coal industry is one of the largest contributors to Queensland's economy, with Queensland being the largest exporter of seaborne coal in the world. Queensland's coal production reached a record 190 Mtpa of saleable coal in 2008–09. During this period, exports of saleable coal to 38 countries worldwide totalled 159 Mt[1].

Of the State's coal inventory, Permian coals within the Bowen and Galilee basins in central Queensland account for approximately 71%. Shallow coal potentially amenable to open-cut mining makes up about 55% of the inventory, with the remaining 45% present at greater depths. Thermal coals (including PCI coals) represent about 65% of the inventory, with the remainder being identified as coking coal. The Permian coal measures contain almost 100% of the identified coking coal resources[2].

Table 1 provides a summary of the contribution of the coal industry to the Queensland economy.

Table 1 Summary of Coal Industry Statistics for Queensland 2008-2009[3]

Factor	Contribution
Total coal produced	190 million tonnes
Total value of coal mining production	$41.5 billion
Contribution to Queensland's Gross Value Added	$26 billion
People employed directly in the coal industry	21,575

Demand for coal is expected to continue to experience strong growth in the next decade. Total exports for thermal and metallurgical coal are projected to grow at 5% per year between 2010 and 2020, with thermal coal exports likely to grow at a faster rate (6.7% per year) than metallurgical exports (3.5% per year)[4].

1.5.2 Project Rationale

The Galilee Basin is the last undeveloped coal resource within Queensland and is expected to become the largest coal producing region in the State. When fully developed the Carmichael Coal Mine will be the largest coal mine in Queensland

Queensland will benefit from the development of the mine and associated rail infrastructure through long-term contributions of royalties to the State economy, employment and small business opportunities in areas surrounding the Project. The Project aims to influence positively and benefit the surrounding

[1] Department of Employment, Economic Development and Innovation: Resources and Energy: http://www.dme.qld.gov.au/mines/coal.cfm, accessed 12/10/2010.

[2] Department of Employment, Economic Development and Innovation: Resources and Energy: http://www.dme.qld.gov.au/mines/resources.cfm, accessed 12/10/2010.

[3] Railing Queensland's Coal: Queensland Government, May 2010.

[4] The Australian Coal industry – creating value for Australia's future: Australian Coal Association.

Barcaldine Region. It will involve one of the largest supply chain systems in Australia and will require significant integration and planning.

It is estimated the Project will require a capital investment of $4.1 billion for the construction of the mine, $16.4 billion for mine operations and $6.0 billion for construction of rail to the Port of Abbot Point or $6.8 billion for construction of rail to the Port of Hay Point. The mine is expected to employ 4,000 people during construction and a permanent work force of 5,000 people to operate the mine. It is projected that a significant number of additional jobs will be created for local and state suppliers and contractors in combination with increased employment opportunities for local communities in the region.

1.5.3 Project Timing

The initial output of 2 Mtpa in 2014 (Year 1 of operation) will increase to deliver a maximum of 60 Mtpa from 2022.

2. Project Alternatives

2.1 Introduction

This section describes the development alternatives of the Project including a 'no action' option. A limited number of rail options are available given current capacity constraints in Queensland and the limited infrastructure currently servicing the Galilee Basin.

2.2 Alternative Port Options

Two port options are currently under consideration for the Project:

- Option 1 — Export via the Multi Cargo Facility at the Port of Abbot Point; and / or
- Option 2 — Export via the Dudgeon Point expansion at the Port of Hay Point (Adani has been announced as one of the preferred proponents to develop this Port).

Development of each of the Ports is subject to separate assessment processes currently being progressed by North Queensland Bulk Ports Corporation (NQBP). As such the Port development does not form part of the Project described in this IAS, but does influence the corridor selection for rail options.

2.3 Alternative Rail Options

Options for the routing of a rail corridor to either the Port of Abbot Point or the Port of Hay Point are currently being investigated. At this time three options have been identified:

- Option 1 — From mine site to the proposed standard gauge Alpha Railway (currently being progressed by Hancock Prospecting Pty Ltd) and export via the Port of Abbot Point;
- Option 2 — From mine site to the existing narrow gauge Goonyella system south of Moranbah and export via the Port of Hay Point; and
- Option 3 — From the mine site to the Port of Abbot Point via a greenfield Adani railway.

Each of the options is shown on Figure 1.

It is assumed that both the Alpha Railway and the Goonyella system will be operating at capacity when Adani seeks access. Therefore any additional trains Adani runs on existing systems will require corresponding upgrades to existing track capacity to avoid impacting negatively on existing operations. As such, the decision on a definitive rail corridor is dependent upon operational and transport capacity, negotiations with Hancock Prospecting and Queensland Rail (QR) and potential environmental impacts.

The Alpha Railway is being constructed to a capacity of 60 Mtpa which is fully allocated to Alpha mine and Kevin's Corner Mine. To accommodate the additional Adani traffic on the Alpha Railway without negatively impacting on operations, it is expected that additional passing loops and extension of existing passing loops will be required. This will allow trains to pass each other without stopping at signals. The specific expansion requirements have not been investigated at this stage of the Project.

To export coal via the Port of Hay Point, the Adani railway will connect the mine to the existing Goonyella system approximately 15 km south of Moranbah, 175 km from the mine. The trains will then proceed on the Goonyella system to the Port, which shall require creation of additional coal handling facilities, rolling stock maintenance facilities, crewing, etc. The Goonyella system is an existing narrow gauge electrified railway currently owned by QR. It is assumed the Goonyella system will be upgraded to 230 Mtpa prior to

Adani output reaching 60 Mtpa. The greenfield railway connecting to the Goonyella system will be 175 km long single track with three passing loops, which may be upgraded to an increased number of loops as cargo throughput increases. To provide for the additional 60 Mtpa capacity for Adani, it is currently estimated that on the Goonyella system an additional 25 km of track triplication/quadruplication and 18 new turnouts will be required in addition to the currently planned 230 Mtpa expansion. The specific expansion requirements are currently being investigated by QR.

A stand alone railway linking the mine to the Port of Abbot Point would require the development of approximately 500 km of greenfield railway.

2.4 Summary of Alternatives

Table 2 outlines the three proposed project railway corridor alternatives.

Table 2 Project alternatives

Railway corridor	Description	Analysis of options
Alpha Railway	Proposed standard gauge railway (325 km) plus additional 105 km of greenfield railway.	◗ Proposed rail infrastructure ◗ Standard gauge ◗ Train length 3,500 m ◗ Train payload 21,996 t
Goonyella System	Existing narrow gauge railway (195 km) plus additional 175 km of greenfield railway towards mine and 10 km towards port.	◗ Existing rail infrastructure ◗ Narrow gauge ◗ Train length 2,050 m ◗ Train payload 9,600 t
Adani greenfield railway	Proposed standard gauge railway, approximately 400 km of greenfield railway.	◗ Proposed rail infrastructure ◗ Standard gauge ◗ Train length 3,500 m ◗ Train payload 21,996 t

3. Project Description

3.1 Introduction

The Galilee Coal Mine and Rail Project comprises of two major components:

1. A greenfield coal mine (over EPC 1690), being both open cut and underground mining, and associated mine processing facilities; and
2. A railway line for the transport of coal to export port facilities at the Port of Hay Point and / or the Port of Abbot Point. The rail corridor between the mine and Moranbah will also accommodate service infrastructure.

The proposed mine is expected to produce 60 Mtpa of product coal, with plans to increase coal production over time to achieve this output. The Project has an expected mine life of 150 years, inclusive of construction, operation and closure. Export coal from this Project will predominantly service the Pacific market.

Export facilities at the Port of Abbot Point via the proposed Alpha rail alignment and / or the Port of Hay Point (Dudgeon Point) via the existing Goonyella line are being considered.

3.2 The Mine

3.2.1 Galilee Coal Reserves

The Project deposit lies in the Galilee Basin within the late Permian Colinlea and Bandanna Formations. The Galilee Basin is a significant coal field consisting of up to four principal coal seams suitable for thermal coal, with the potential for liquefaction and gasification.

3.2.2 Coal Resource

The Project deposit is located on EPC 1690. The Project contains an estimated coal resource of 8.3 billion tonnes. These are held within three main seam groups (AB seam, C and D seams, and E and F seams). Exploration undertaken in the late 1970s and in 2009 indicates that AB and D seams are the thickest coal seams. Within the Project area four major coal seams dipping gently from east to west and varying in thickness from 5 m to 8 m, enable high production open cut mining.

In general, it can be stated that the coals are of low rank, are non-coking, high volatility and moderately high in inherent moisture. The coals are classified as high volatile bituminous A under the ASTM classification with low sulphur content and the crucible swelling number from 0 to 112. The average specific energy is 23 MJ/kg.

The coal seams are of thermal coal quality, as summarised in Table 3.

Table 3 Typical coal quality parameters for the Project

	Mtpa	Ash %	Yield %	TM %	Energy GJ/t
ROM coal	30	30			19.8
Bypass coal[1]	9.5	<25	100	7	21.6

	Mtpa	Ash %	Yield %	TM %	Energy GJ/t
CPP feed	20.5	>25			19.3
Washed coal[2]	17	17	80	19	20.6
Railed coal	**26**	**20**	**86**	**12**	**20.7**

[1] Assumed in situ moisture is 7.1%
[2] Assumed yield of CPP is 80%

3.2.3 Coal Extraction

The Project will combine open-cut and underground mining with a mine life of 150 years. It is assumed that mining operations will be by Owner/Operator using large electric shovels, and/or excavators, and trucks for both waste removal and coal mining.

It is expected operations will be six pits of combined open pit and underground workings. Each pit is expected to produce 10 Mtpa at peak production. The overall workable length of the mine will be approximately 45 km. Pit dimensions are approximated in Table 4.

Table 4 Approximate pit dimensions

	Pit No.					
Pit Dimensions	**1**	**2**	**3**	**4**	**5**	**6**
Approx. Length (km)	6	6	7.5	8.5	8.5	8.5
Width to Final H/W (km)	2	1.7	3.5	2.4	2.5	3.5

3.2.4 Processing

There is insufficient data from the small diameter bore core work, undertaken to date, to be used alone to design a coal preparation process. There is no indication of the quantity or quality of the fines that will inevitably be produced during mining and handling before the coal preparation plant. Processing of the fines may or may not be required depending on the quality of the raw fines. If processing is required the type of process, e.g. froth flotation, teetered bed separator, spirals or combination of these processes cannot be assessed, nor the impact on overall mine recoveries, product quality and mine economics be determined without more detailed washability work. This work is usually done on large diameter bore cores. Similarly, it is not possible to determine reliably the optimum process for the coarser coal size fractions.

However, the washability data that are available indicate that the washing process will be required to separate at high densities (greater than 1.60 RD) and the coal preparation process may be essentially a de-stoning process.

3.2.5 Service Road Access

Road connections provide primary access to the mine site during construction, and the connection of the mine to the production and import centres for mine consumables during operation. The nearest major industrial centres and maritime freight gateways for the import and supply of general freight are at Mackay and Townsville.

Movement of general freight, including fuel, is most likely to be moved by 9-axle B Double trucks with a carrying capacity of approximately 63 t. Larger payloads per vehicle are achievable through the use of road trains; however, regulatory restrictions on the use of these vehicles, particularly within the cities (accessing port areas and industrial precincts), reduce their practicality.

The identified road transport routes are shown below in Figure 2. As shown in Figure 2 Townsville offers a shorter haul distance and provides the advantage of connecting to the larger freight handling port facilities and industrial centre. These advantages must be considered within the context of road condition and safety for all routes.

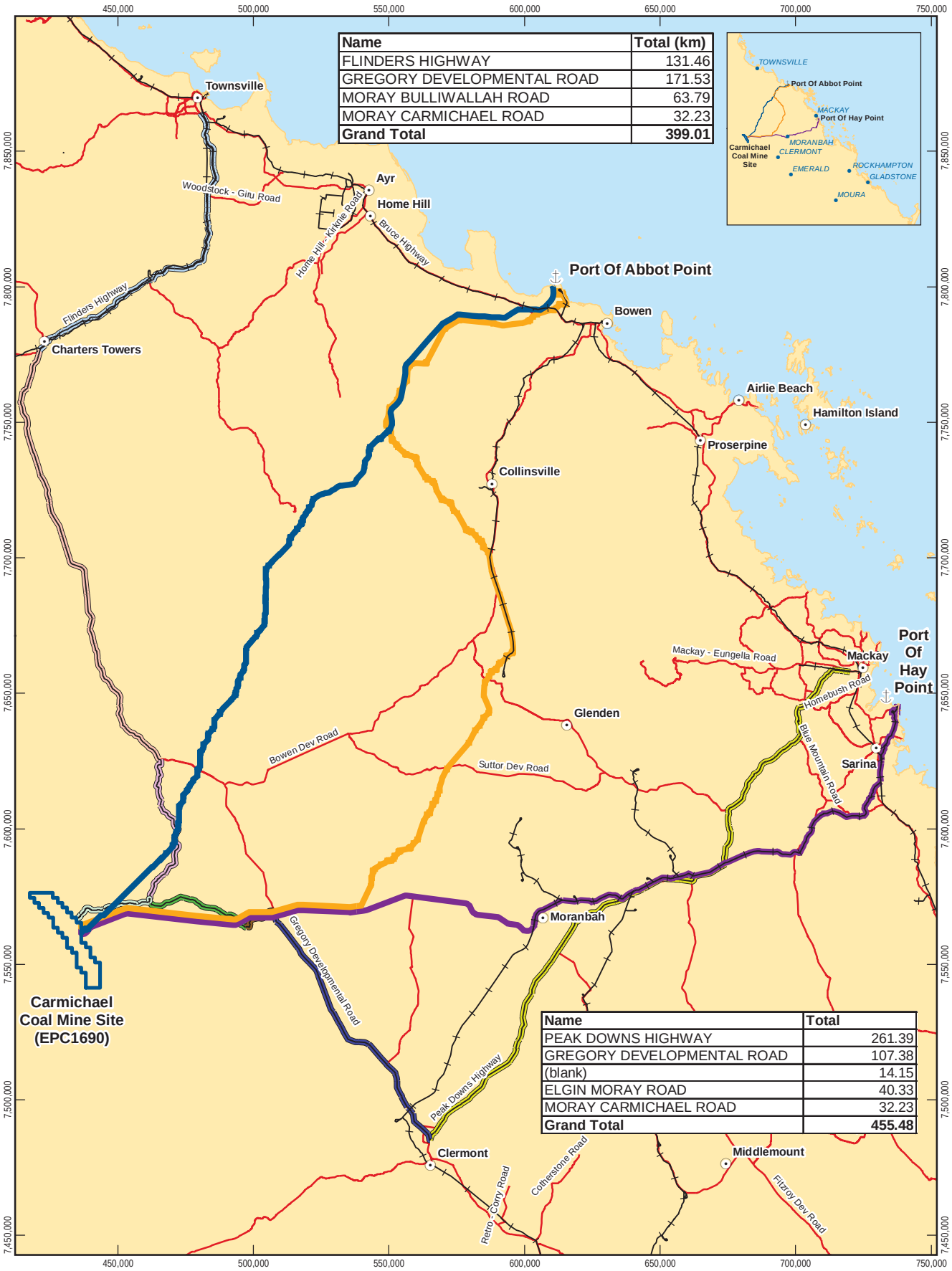
3.2.6 Power and Fuel Supply

Based on the projected production rate of up to 60 Mtpa, the assumed maximum power required is approximately 200 MW. One option for power generation is the construction of a 2x80 MW or 3x50 MW Gas Turbine power station with local 11/0.415 kV reticulation, which would eliminate any cost of expensive 132 kV power lines and stepdown transformer substations. However, it would require the construction of a 160–180 km gas pipeline from the Moranbah region.

A second power supply option to be considered for long term operations is through interconnection to the region's power grid through the Powerlink and Ergon supply system. However, initial operating power for the construction and ramp up phases may be provided by diesel generator.

The proposed mine would most likely be supplied from the Ergon Energy substation which is located in Moranbah, 160 km East from the mine site. In general the Bowen Basin coalfields are supplied from Moranbah 132/66 kV and the projected annual growth rate is estimated at around 22% at this substation. Therefore some expansion will be required at the substation as well as a likely upgrade of the power transmission from the Nebo (on the Powerlink distribution network).

Several additional power supply options are available, although few have been reviewed in detail. Additional information will be provided on the various power supply options following the completion of the pre-feasibility study. Diesel fuel will be supplied to the site for the operation of mine equipment and the logistics of the supply will be determined during the pre-feasibility and feasibility studies.



Name	Total (km)
FLINDERS HIGHWAY	131.46
GREGORY DEVELOPMENTAL ROAD	171.53
MORAY BULLIWALLAH ROAD	63.79
MORAY CARMICHAEL ROAD	32.23
Grand Total	**399.01**

Name	Total
PEAK DOWNS HIGHWAY	261.39
GREGORY DEVELOPMENTAL ROAD	107.38
(blank)	14.15
ELGIN MORAY ROAD	40.33
MORAY CARMICHAEL ROAD	32.23
Grand Total	**455.48**

LEGEND

- Town
- Major Port
- Carmichael Coal Mine Site
- State Road
- Existing Railway
- Rail Option 1 (Alpha)
- Rail Option 2 (Goonyella)
- Rail Option 3 (Adani)

Townsville to Site
- Flinders Highway
- Gregory Developmental Rd
- Moray Bulliwallah Rd

Mackay to Site
- Peak Downs Hwy
- Gregory Developmental Rd
- (Blank)
- Elgin Moray Rd

Both Access Routes
- Moray Carmichael Rd

1:2,000,000 (at A4)

0 10 20 30 40 50

Kilometres

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

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ADANI

Adani Mining Pty Ltd

Carmichael Coal Mine and Rail Project

Job Number 41-23244
Revision A
Date 19-10-2010

Regional Road Access

Figure: 2

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Level 4, 201 Charlotte St Brisbane QLD 4000 T +61 7 3316 3000 F +61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

Data Source: GA: Towns, Railways (2007); DMR: State Roads (2010); DME: Carmichael Mine Site; GHD: Rail Options, Major Ports, Road Access Routes (2010). Created by: BW.

3.2.7 Water Requirements

The water resources required by the Project will vary over the lifetime of the mine. During construction the water needed will be minimal compared with full production water requirements. The average water consumption is expected to be approximately 425 ML.

The production assumptions that have been adopted in preliminary investigations are summarised in Table 5. The actual consumption of water will vary with the quality of the coal, design of the wash plant and possibilities for reuse. None of these are known at present, so estimates of the water consumption per million tonnes of coal are only approximate and likely to be revised as more information becomes available.

Table 5 Production assumptions

Start (years)	Production (Mtpa)	Extras
1	2	Wash plant in use at mine
2	5	Wash plant in use at mine
3	10	Wash plant in use at mine
4	20	Wash plant in use at mine
5	27	Wash plant in use at mine
5+	30	Wash plant in use at mine

It is proposed that the water requirements for the mine will be supplied from a combination of:

- Clean water pipeline from SunWater's water supply schemes;
- Groundwater;
- Surface Water; and
- Coal Seam Gas associated water.

SunWater is currently researching possibilities for bulk water supply in the southern part of the Galilee Basin, in the vicinity of the Project area. The preferred source option for the Project is the Connors River Dam project which consists of two pipelines. The first is a 133 km pipeline from the proposed Connors River Dam to Moranbah and the second is from Moranbah to deliver the water to the coal mines in the Galilee Basin. It is expected that the dam and pipelines should be commissioned in early 2014.

Preliminary investigations suggest potentially significant groundwater resources in the area. However, the amount of groundwater available on site and the recharge capacity will be determined during future investigations.

There are several waterways in the vicinity of EPC 1690, the most relevant being Carmichael River, which flows across the southern portion of the mine site. However, based on location and climate characteristics, as well as a local gauging station, these creeks are assumed to be ephemeral and unlikely to be a reliable source of water. Rainfall is unreliable due to seasonal fluctuations, particularly in this region of Australia, which is prone to drought.

3.2.8 Staffing and Accommodation

Construction of the mine is expected to employ a workforce of approximately 4,000 construction staff. During the operations phase approximately 5,000 mine staff will be employed.

All of the Regional Councils have construction or accommodation camps in their regions and are particularly focused on reducing the reliance on a Fly-In-Fly-Out (FIFO) or drive in/drive out roster during operation. During recent consultation for other mining related projects, the Isaac and Whitsunday Regional Councils expressed their desire for an operational workforce that was based in existing towns in the regions. This is seen as a way of delivering benefits from mining to those towns, rather than existing towns suffering negative social impacts.

3.2.9 Aerodrome

Due to the remote location of the mine site, and the excessive road distance for regular commuting, there is a high level of dependence on air services. Air services will provide site access for the FIFO workforce, transport of small volumes of air freight and emergency evacuation capability.

Due to the high proportion of FIFO workforce, it is likely that the onsite airstrip will need to accommodate small jet and larger turbo-prop aircraft. The ability to operate small jets, such as the Fokker F100 or Embraer 130, and large turbo-prop aircraft such as the DH8 Q400 will provide commercial operators appropriate economies of scale that would support low frequency commercial operations. This will remove the need to operate charter flights.

3.2.10 Other Infrastructure and Services

Major infrastructure, services and utilities associated with the mine are described in Table 6.

Table 6 Major infrastructure and utilities associated with the mine

Infrastructure type	Infrastructure items
Heavy structures	Heavy equipment workshop; electrical workshop; field maintenance workshop; tyre change/repair workshop; heavy vehicle washdown facility, refuelling and lubrication facility; light vehicle wash; warehouse .
Other buildings	Main administration and technical services office; muster and mine operations building; amenities building; security; training/induction facilities; services workshops.
Miscellaneous structures	Covered car parks; water treatment plant shed; hazardous materials storage; where required, explosives magazines storage.
Fuel/Lubricants/Air	Main tank farm and lubrication storage; light vehicle fuelling station; air compressor(s) and reticulation.
Civil	Public access areas; public entry road; car parks; secure areas; roads/paved areas; mine infrastructure area light vehicle road network; mine infrastructure area heavy vehicle access road; hardstands; machine assembly areas.

Infrastructure type	Infrastructure items
Site water	Industrial effluent; oily water sources; wash down sources; treatment reuse/disposal; industrial area storm water collection, treatment, reuse and discharge; sewerage collection, treatment, reuse and disposal; site drainage plan.
Raw water	Raw water storage/reticulation; potable water treatment; storage and reticulation; fire systems storage tanks; pumping systems and reticulation.
Power	Site substation; reticulation; lighting.
Communications	Main control; reticulation.

3.2.11 Mine Rehabilitation

A mine rehabilitation plan and set of procedures will be established prior to the commencement of mining. The objective of the plan will be to create a post-mining stabilised landscape resembling pre-mining conditions.

3.3 Rail Corridors

3.3.1 Overview

The Project includes the construction and operation of a new and existing rail corridor to transport coal to the chosen port location. As detailed in 2.3, three rail options are currently being considered. The following provides details on rail operations and corridor options.

3.3.2 Planned Railway Operations and Characteristics

Detailed rail operations will be confirmed during the engineering and design phase of the Project. The Pre-Feasibility Study will consider a new, dedicated rail system, as well as the use of existing rail infrastructure where possible. Any new rail systems and rail corridor option will consider the following factors:

- 60 Mtpa of coal will be transferred via rail from the mine to the relevant port. It is possible to increase the capacity of the rail system to transport up to 80 Mtpa by increasing the number of passing loops or the potential duplication of the existing lines. Capacity expansion options will be assessed as part of a Rail Optimisation Study conducted during the Project Feasibility Study and will also be influenced by third party interest;
- The rail system will be designed to operate diesel-electric trains. The rail system could be electrified with overhead line equipment — 25 kV, 50 Hz alternating supply — but this is only likely to occur if one of the options that includes the use of existing rail infrastructure is adopted;
- The minimum train size is likely to be the 10,000 t Goonyella-sized train and the final selection of length and gauge will depend on the final port and rail option selected. It is anticipated that 20 to 30 train sets may be required to transport 60 Mtpa;

- Several passing loops will initially be required for the selected rail route. The number, location and length of passing loops will be determined during the Rail Optimisation Study conducted during the Project Feasibility Study;
- Coal will be transported 7 days a week, 24 hours a day for up to 52 weeks per year. Trains will operate at a maximum speed of 80 km per hour when fully-loaded;
- The gauge of the rail system could be narrow gauge, standard gauge or dual gauge, depending on the most viable business case option. The final selection will be made during the Pre-Feasibility Study;
- New rail lines will be built above the 1-in-100 year flood level. Dust and noise control measures will be incorporated into design to minimise impacts on communities and ecosystems alongside the rail corridor; and
- The rail corridor between the mine and Moranbah connection will include provision for infrastructure services, such as water pipeline, and high voltage power lines.

3.3.3 Rail Corridor Options

Potential rail corridor options for the transportation of coal from the mine to either the Port of Abbot Point or the Port of Hay Point are in shown in Figure 1 and described in the following sections.

Option 1: Mine to Port of Abbot Point via proposed Alpha Railway

The Alpha Railway, joining Alpha Mine and Kevin's Corner Mine with the Port of Abbot Point, has not been constructed but is in the "well developed design and approval stages" and it is assumed that it will be fully constructed and operational prior to the Carmichael Coal Mine start up.

To export coal from the Port of Abbott Point, the Adani railway will connect the mine to the proposed Alpha Railway approximately 100 km due east of the Carmichael Coal Mine. Adani coal trains will then continue north for approximately 325 km on the Alpha railway to Port. To form this link, the Adani Railway requires a new 105 km greenfield railway with one passing loop which joins the Alpha Railway approximately 325 km from Abbott Point.

It is assumed that the Alpha Railway is being constructed to a capacity of 60 Mtpa which is fully allocated to Alpha Mine and Kevin's Corner Mine. To accommodate the additional Adani traffic on the Alpha Railway without negatively impacting on operations it is expected that an additional two long passing loops and the extension of existing passing loops totalling approximately 100 km will be required. This will allow trains to pass each other without stopping at signals.

Option 2: Mine to Port of Hay Point via Goonyella System

To export coal from the proposed Dudgeon Point expansion at the Port of Hay Point, the Adani railway will connect the Carmichael Coal Mine to the existing Goonyella system approximately 15 km south of Moranbah, some 175 km from the mine. The trains will then proceed on the Goonyella system to the Port and take off to the Dudgeon Point Port with a Greenfield rail line connection.

The Goonyella system is an existing narrow gauge electrified railway currently owned by Queensland Rail. It is assumed the Goonyella system will be upgraded to 230 Mtpa prior to Adani output reaching 30 Mtpa. The greenfield railway connecting to the Goonyella system is expected to be 175 km long single track with 3 passing loops.

To provide for the additional 30 Mtpa capacity from Adani an additional 25 km of track triplication/quadruplication and 18 new turnouts will be required in addition to the currently planned 230 Mtpa expansion. Any additions to the current network will also need to be electrified for use by existing trains, even though Adani trains may be diesel or electric traction. The greenfield section will not need to be electrified if it is decided to operate diesel trains.

Option 3: Mine to Port of Abbot Point via Greenfield Adani Railway

A greenfield railway corridor is being investigated to link the coal mine to the Port of Abbot Point. The Adani Railway would be an approximately 400 km greenfield railway development.

4. Existing Environmental Values and Potential Impacts

4.1 Introduction

Environmental impacts associated with the Project are those that may result from the development and operation of the mine and its associated on-site facilities and the rail corridor, as well as longer terms impacts that may persist after closure of the mine.

The following overview of the existing environment and an initial assessment of potential impacts have been based on desktop derived information or studies of the Project area. During the development of the EIS, further studies will be undertaken to define the environmental values of the site and refine potential impacts and mitigation measures.

As discussed there are two project components: the mine and rail corridor. These are treated separately below.

4.2 The Mine

4.2.1 Climate, Natural Hazards and Climate Change

The region enjoys typical tropical weather, with temperatures ranging from 20 to 40 degrees Celsius and may receive heavy rains in the summer months (November through to April). It has a semi-arid to arid climate with hot summers and dry, warm winters.

A project specific Environmental Management Plan will be developed for the construction and operation stages of the Project to appropriately manage and mitigate any impacts upon greenhouse gas issues and climate change.

4.2.2 Land

Land Use and Tenure

The Project area is mostly located on a cattle station. The area is typically covered by farmland, predominantly livestock with some cropping. Carmichael Coal Mine (EPC 1690) covers an area of 82 sub-blocks in the eastern part of the Galilee Basin. Land uses within and adjacent to the mine site that will be impacted by the Project are predominantly low intensity cattle grazing.

Native Title

The Native Title Act 1993 (NTA) recognises the rights and interests of indigenous people under their traditional laws and customs. A Native Title search has been undertaken on properties impacted by the proposed mine site. The search indicated that one Native Title Claim is current over the mine site: the Wangan and Jagalingou Native Title Claim boundary (QC04/5; QUD85/04; accepted for Registration on 5 July 2004).

Adani intends to enter into discussions with the Native Title claimants during the EIS process.

Topography, Geology and Soils

The Project area topography ranges from 300 m to 370 m above sea level and comprises generally flat grazing country with some gentle ridges in the western section of the lease.

The deposit lies in the Galilee Basin within the late Permian Colinlea and Bandanna Formations. The Galilee Basin covers an area estimated at 247,000 km² in central Queensland and is entirely intracratonic and filled with Late Carboniferous to Middle Triassic sediments (Figure 3). These rocks are predominantly fluvial in origin with minor glacial material developed at the base of the succession.

Coal seams are present in three Late Permian units of the Galilee Basin: the Colinlea Sandstone and overlying Bandanna Formation occur in the southern and NW parts of the basin; and the lateral equivalent of these two units, the Betts Creek Beds occurs in the centre and west of the northern half of the basin. Individual seams are up to 20 m thick with an aggregate maximum thickness of 45 m developed in the western part of the Koburra Trough. The Late Permian coal seams are designated A to G in order of increasing age with most seams comprising predominantly dull, clean coal. Seam C is generally highly banded. The seams are generally dipping at 2–4 degrees to the West with some slight steepening to the South and in the middle of the deposit where a fault has been interpreted. Figure 4 shows a typical East–West cross section across the deposit.

During construction of the mine, particularly during vegetation clearing and earthworks, there is potential for erosion and dispersion of exposed subsurface soils, which could lead to an impact on local water quality. Soil investigations will be undertaken to identify any reactive cracking clay soils, dispersive, erosion prone soils and saline soils as these are of particular concern and will need to be managed during construction.

A Sediment, Drainage and Erosion Control Plan will be developed for construction activities to mitigate and control sediment movement onsite, and minimise the potential for sediment laden runoff.

During operation of the mine, the draglines and the subsequent spoil dumps will create an altered landform with potential for erosion and geotechnical instability. This impact will be addressed through on-going and progressive rehabilitation of the spoil dumps and other disturbed areas. A Rehabilitation Plan will be detailed in the EIS. In addition, geotechnical investigations will be undertaken during the EIS to discuss the stability of the pit and any mitigation measures that may be undertaken.

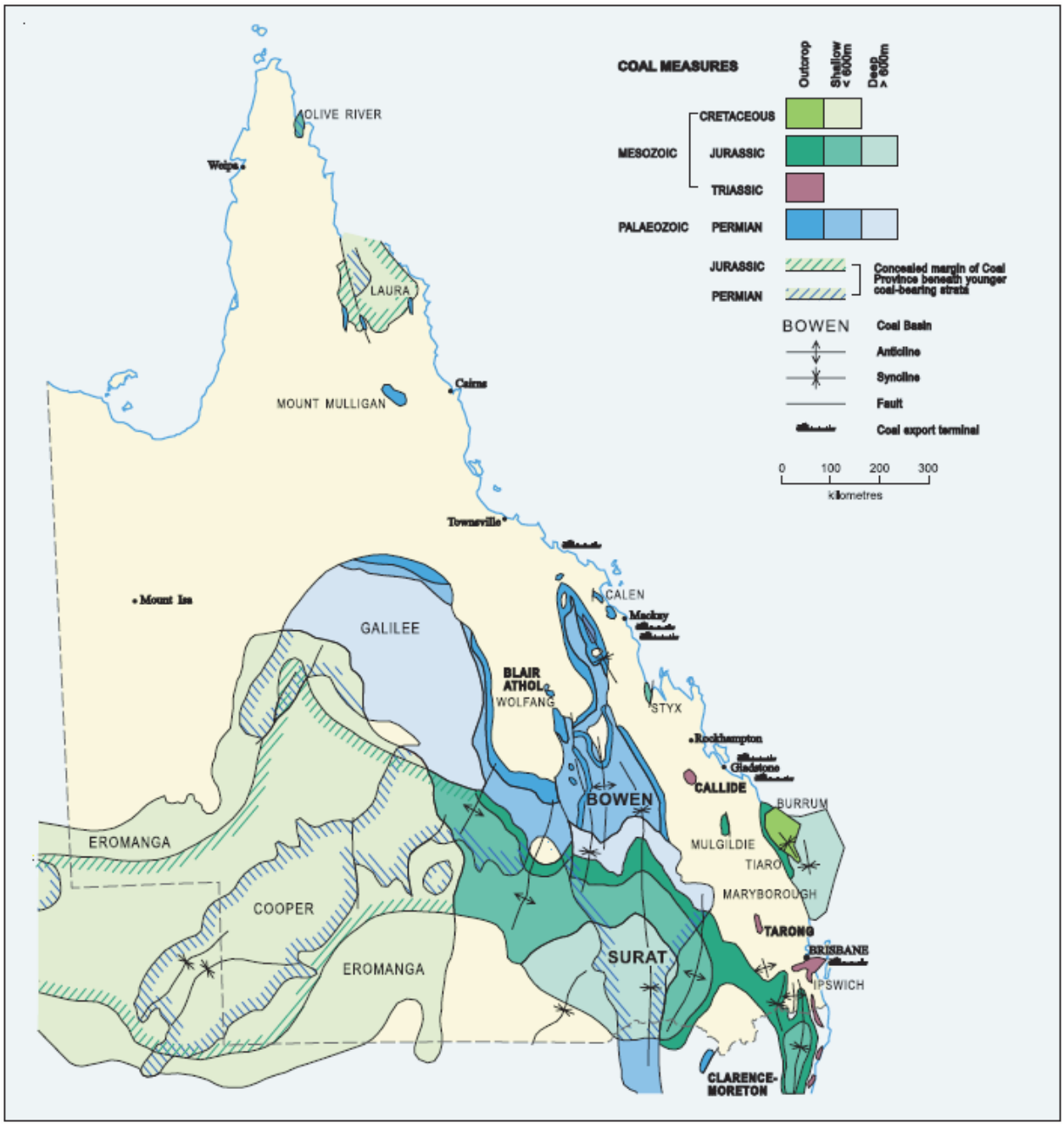


Figure 3 Queensland coal basins

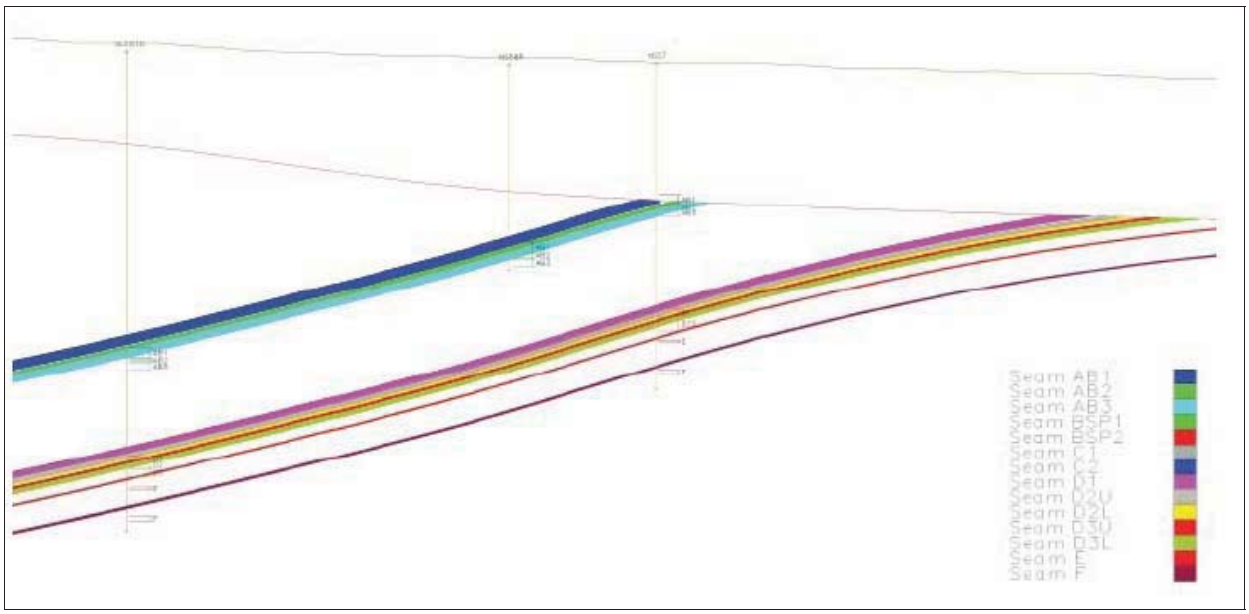


Figure 4 Cross section through the project area

Visual Amenity

Infrastructure to be constructed for the mine includes overland conveyors, ROM facility, CPP, storage facilities, access and hauls roads, an optional coal washery and associated infrastructure, an administration and bathhouse, and car parking.

The infrastructure required for the Project has the potential to decrease the visual amenity of the site; however, this will be minimised through the use of landscaping and appropriate design (where possible).

The mine may diminish the available visual qualities of the area. The vegetation on site is planned to be used as a visual screen where possible. The mine is located in a rural area and is not expected to impact significantly on local towns or residential areas.

Visual amenity and possible mitigation measures will be investigated as part of the EIS process.

4.2.3 Nature Conservation

Overview

To gain an understanding of the potential occurrence of important flora and fauna and ecological communities within and adjacent to the Project mining tenure, desktop searches were undertaken of a 20 km radius from a central point of the mine site (latitude –22.041, longitude 146.364). This considered potential sensitive environmental areas, flora, fauna and aquatic ecosystems.

Ecological Communities and Regional Ecosystems

Database searches identified 42 regional ecosystems (REs) mapped (Version 6.0, 2005) within and adjacent to the mine site, as listed under the *Vegetation Management Act 1999* (VM Act). This includes two communities also listed under the EPBC Act as threatened ecological communities (TECs). Table 7 summarises the communities and REs identified on and adjacent to the Project area. Figure 5 shows the distribution of the communities across the mine site.

Table 7 TECs and REs mapped within and adjacent to the mine site

Ecological community / regional ecosystem	Occurrence/Number
Threatened Ecological Communities listed under the EPBC Act	
Brigalow (*Acacia harpophylla* dominant and co-dominant communities)	Within Project area
The Community of Native Species Dependent on Natural Discharge of Groundwater from the Great Artesian Basin.	Adjacent to Project area
Regional Ecosystems listed under the VM Act	
Endangered	10
Of concern	8
Least concern	24

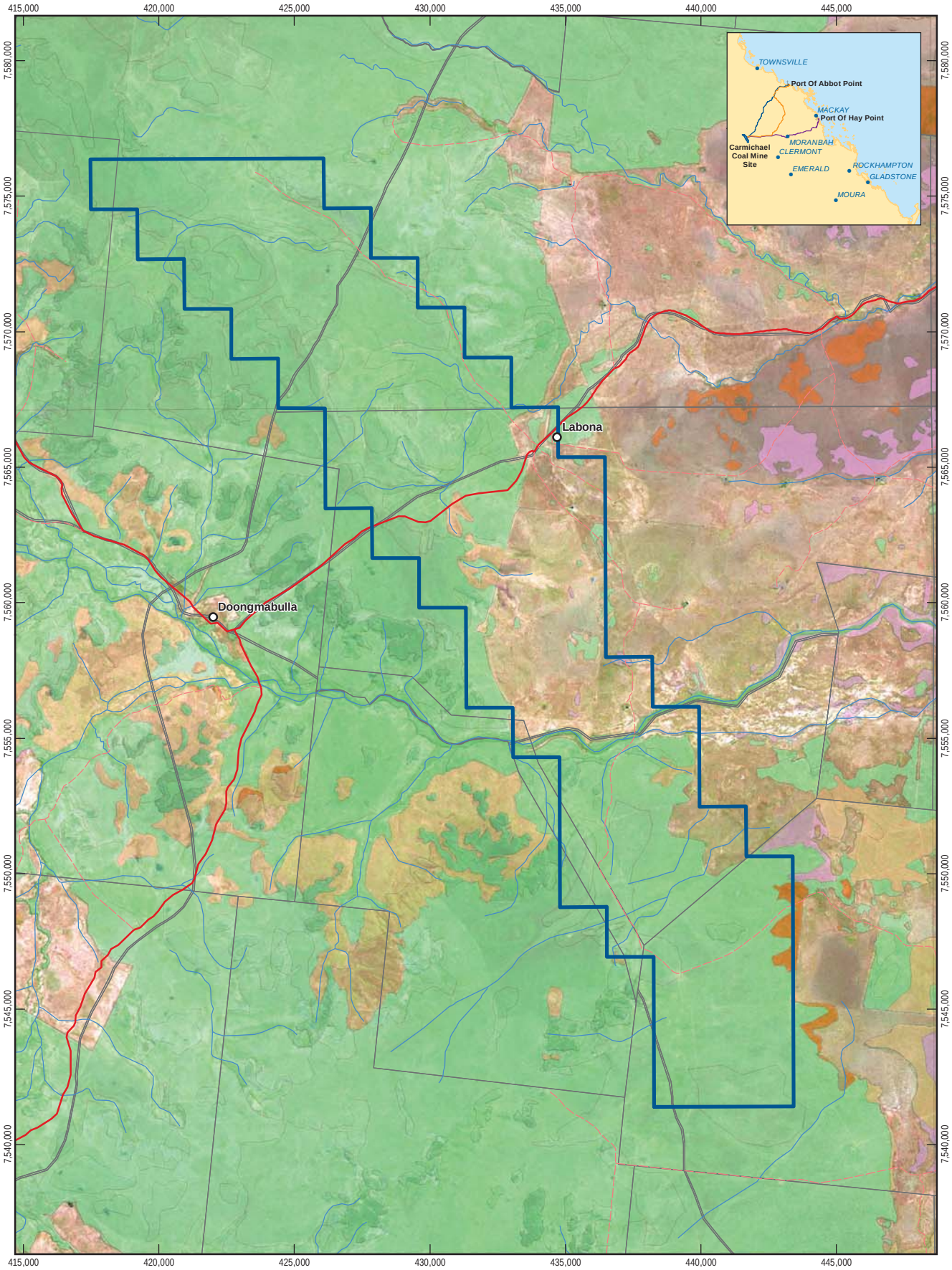
Potential impacts to vegetation communities will be associated with clearing for the mine footprint and other associated facilities, as well as the potential for quality degradation by weed invasion and other secondary impacts (e.g. dust, changes in hydrology). Further studies and groundtruthing will be undertaken during the EIS process to confirm which communities will be affected and to what extent. Mitigation measures will be developed to minimise these impacts, particularly in areas associated with sensitive ecosystems.

Protected Areas

Bygana West Nature Refuge occurs in the southern portion of the Carmichael Coal Mine lease area. This contains a number of ecological values and provides suitable habitat for a variety of native fauna species.

One Ramsar Wetland of International Significance (Coongie Lakes) and one Wetland of National Significance (Doongmabulla Springs) were detected within 40 km of the Project area.

Studies undertaken during the EIS process will consider the Project's proximity to and potential impact on these protected areas. A direct impact on these areas is not expected, although it is recognised that indirect impacts must be considered and, where appropriate, suitable mitigation measures, management and/or monitoring be established.



LEGEND

- Homestead
- Minor Road
- Track
- Watercourse
- Carmichael Coal Mine Site
- Cadastre

Regional Ecosystems

- Endangered - Dominant
- Endangered - Sub-Dominant
- Of Concern - Dominant
- Of Concern - Sub-Dominant
- Not of Concern
- Non-Remnant / Regrowth

1:200,000 (at A4)

0 1 2 3 4 5

Kilometres

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

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ADANI

Adani Mining Pty Ltd

Carmichael Coal Mine and Rail Project

Mine Site
Regional Ecosystems

Job Number 41-23244
Revision A
Date 19-10-2010

Figure: 5

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Data Source: GA: Homesteads, Watercourses, Roads (2007); DME: Carmichael Mine Site; DERM: Cadastre, Regional Ecosystems (2010); DERM: Landsat (2005). Created by: BW.

Threatened Flora and Fauna Species

A review of databases has identified flora and fauna species potentially occurring within the Project area, that are listed under the *Nature Conservation Act 1992* (NC Act) and the EPBC Act (Table 8).

Table 8 Threatened flora and fauna potentially occurring within the Project area

Threatened species	Number of species (20 km buffer from mine site)
Flora	
Listed under the EPBC Act and NC Act	2
Listed under the EPBC Act only	1
Listed under the NC Act only	3
Total	**6**
Fauna	
Listed under the EPBC Act and NC act	1
Listed under the EPBC Act only	7
Listed under the NC Act only	0
Total	**8**

Nine species listed as migratory and marine were also identified from the EPBC Protected Matters search (see Table 9).

Table 9 Migratory and marine species potentially occurring within the project area

EPBC Act listed migratory or marine	Number of species (20 km buffer from mine site)
Listed as migratory and marine	9
Listed as migratory only	0
Listed as marine only	0

Potential impacts to flora and fauna species will be mainly associated with the direct loss of habitat within the mine footprint and other associated facilities as well as potential indirect impacts related to degradation of adjacent habitat and reduced habitat quality.

The removal of vegetation is likely to impact the biological and habitat value of the area. Particularly, this could include loss of flora and fauna habitat, restriction of fauna movement, restriction of vegetative dispersal and propagation and increased edge effects.

Further studies and ground-truthing will be undertaken during the EIS process to characterise the Project area with regard to its values for flora and fauna species, including species listed under State and/or Federal legislation. Mitigation measures will be developed to minimise direct impacts to flora and fauna as well as indirect impacts to adjacent habitats. Appropriate mitigation measures will be developed as part of the EIS process following detailed ecological investigations.

4.2.4 Water Resources

Surface Waterways

There is one major waterway within the Project site. The Carmichael River cuts across the southern section of the lease. This river flows into the Belyando River to the east of the lease which is part of the Burdekin River catchment. The Belyando Catchment is approximately 35,411 km² in size and is one of the main subcatchments in the Burdekin Basin. A number of small ephemeral drainages also exist within the Project area. The mine footprint overlaps some ephemeral drainage lines within the Project area and is adjacent to the Carmichael River. Mining activities and associated infrastructure have the potential to alter the catchment flow regime and volume as a result of interfering with natural flows and have the potential to impact downstream catchments.

The construction and operation of the mine have the potential to negatively impact on surface water quality of the immediate area and the associated catchments. Construction, in particular, has the potential to increase sedimentation in the surrounding surface waters through the release of sediments and topsoils from stockpiles and cleared areas if adequate erosion, sediment and drainage controls are not implemented. During the construction and operation phases of the mine, potential impacts to surface water quality may include:

- Increased turbidity and sediment loads from disturbed soils entering waterways;
- Pollution from hydrocarbon and other small spills from storage areas and vehicles; and
- Reduced water quality from the storage and disposal of waste materials.

Further studies into the catchments and values of the surface waterways within and adjacent to the Project area will be undertaken during the EIS process. These studies will consider the activities of the Project and the direct and indirect consequences of the operation. Mitigation measures will be developed to minimise the impact of the Project on surface water resources and quality.

Groundwater

EPC 1690 is located close to the boundary between the Great Artesian Basin (to the west) and the Tasman Basin (to the east). The region is often referred to as the Burdekin Dry Tropics Region. This region is a recharge source of groundwater for the Great Artesian Basin, which underlies 22% of Australia. The Great Artesian Basin is one of Australia's most important water resources, with an area of over 1.7 million km² and an estimated water storage capacity of 64,900 ML[5].

The Basin lies largely beneath arid areas where groundwater is the only reliable source of good quality water for human activity. It also supports important natural ecosystems including significant mound springs. From a groundwater management perspective this area is within the Bowen Unincorporated area, which reflects the relatively low level of historic development. Despite this low level of development in the lease area , geological mapping indicates the presence of a number of sub-artesian boreholes and springs. This suggests potentially significant groundwater resources in the area.

Potential impacts on groundwater include:

- Release of groundwater into the pit resulting in decreased groundwater pressure, altered groundwater levels, altered flow direction, and potential for complete dewatering of local groundwater resources; and

[5] Source: www.derm.qld.gov.au/factsheets/pdf/water/w68.pdf

- Contaminants from the pit entering into groundwater resources.

Full surface and groundwater investigations will be undertaken as part of the EIS process to discuss existing water resources in and adjacent to the mine and impacts the mine could have on these resources. The procedures for the management of these impacts will be discussed as part of the EIS.

4.2.5 Air Quality

The Project area is predominantly rural lands supporting grazing and other agricultural activities. An assessment of the existing and potential air quality will be undertaken as part of the EIS process.

During construction of the mine, considerable earthworks will be necessary to prepare the site for infrastructure. These, along with increased traffic volume (rail and road), increase the potential for dust generation and air quality impacts. During the operational phase of the Project there is also the potential for a reduction of air quality due to dust generation and emissions from dragline activities, stockpiling overburden, product transport onsite, processing and loading to rail transport. A predictive modelling study of potential dust emissions from the Project will be undertaken as part of the EIS process.

Dust generation will be addressed in the construction environmental management plan (CEMP), and minimised during construction and operational phases using appropriate dust suppression and control techniques.

4.2.6 Greenhouse Gas Emissions

Mining activities will result in the emissions of some greenhouse gases to the atmosphere. The EIS will estimate greenhouse gas emissions and propose mitigations to minimise these outputs.

A project specific Environmental Management Plan will be developed for the construction and operation stages of the Project to appropriate manage and mitigate any impacts upon greenhouse gas issues and climate change.

4.2.7 Noise and Vibration

The existing noise environment is typical of rural areas. A detailed noise and vibration assessment will be undertaken as part of the EIS.

During construction of the mine there will be an increase in vehicle movements to and from the mine site due to transport of infrastructure materials, construction personnel and earthmoving equipment. The increased vehicle movements have the potential to generate noise audible on occasion from nearby properties and industry. Other construction-specific activities, such as excavation, clearing, filling and potentially blasting, also have the potential to increase ambient noise levels. Once the mine is operational there will be an increase in noise levels due to the dragline or blasting operations, transport of coal onsite, and coal processing activities.

The potential increase in noise levels, both during construction and operation, is to be mitigated through a combination of environmental management strategies, appropriate infrastructure design and separation distances to sensitive receptors.

Furthermore, the potential for vibration impacts during both construction and operation are expected to be minimal. Possible vibration impacts from limited blasting (if required) would be managed through appropriate design of blasting patterns and selection of blasting techniques.

4.2.8 Waste

The waste generated by the Project will include both general and mine specific waste streams. The Project EMP developed during the EIS will incorporate waste management measures and procedures.

4.2.9 Transport

Transport operations associated with the Project comprise the road, rail and maritime connections between nodes of freight origin and destination and the airport hub and mine site for personnel movement.

Road connections will provide primary access to the mine site during construction, and the connection of the mine to production and import centres for mine consumables during cooperation. The nearest industrial centres and maritime freight gateways for the import and supply of general freight are at Mackay and Townsville. Movement of general freight by road, including fuel, is most likely by B Double trucks with a carrying capacity of approximately 63 t. Due to the nature of cargo, two truck fleets are being considered — one for the movement of general freight, and another for the transport of bulk liquids.

Extraction of product from the mine will require the realignment of an existing local council road (Moray Carmichael Access Road), which currently passes over the Project area. Detailed investigation of the road realignment will be conducted during the EIS and associated feasibility studies.

The mine will generate an increase in traffic to and from the site during construction and operation. In the construction phase, materials will be transported to and from site via road. During the operational phase, the product will be transported offsite via rail and personnel will be accommodated onsite. Nearby roads during construction will be more heavily trafficked than at present. The impact of this on the roads has not yet been determined. A traffic study will be undertaken as part of the EIS process.

4.2.10 Indigenous Cultural Heritage

The EIS process requires that Cultural Heritage Management Plan be developed in accordance with the provisions of the *Aboriginal Cultural Heritage Act 2003*.

4.2.11 European Cultural Heritage

There are no places currently registered on the Inventory of Heritage Places maintained by the DERM within the Mine EPC area. Detailed European cultural heritage surveys over the exploration area will be conducted during the EIS.

4.2.12 Social Values

The townships of Alpha and Clermont are the nearest towns of significant size to the Project, lying approximately 158 km South and 170 km East respectively of the site. Other townships in the region include Moranbah, Aramac, Barcaldine and Jericho. These lie some distance away. The Barcaldine Regional Council encompasses both Jericho and Alpha, whereas Moranbah and Clermont sit within the Isaac Regional Council area. The Project itself is located predominantly within the Isaac Regional Council, although a small portion lies within the Charters Towers local government areas.

Consultation with directly affected landowners will be undertaken. Indirect and cumulative positive impacts will flow at the regional and State levels largely through increased employment opportunities arising during construction and operation.

The potential impacts that will be assessed in the EIS include:

- Effects on housing, employment and public services in the surrounding area;
- Workforce personnel and services. It is expected the construction workforce will be housed in temporary accommodation-style facilities;
- Direct impacts on landowners;
- Local population levels and demographics;
- Infrastructure developments and their effect on the socio-economic dynamics of the region; and
- Workforce arrangement through Fly-In-Fly-Out (FIFO) operations.

4.2.13 Economic Values

It is anticipated the mine construction will require an investment of approximately $4.1 billion and a further $16.4 billion for mine operations. The mine is expected to employ 4,000 people during construction and a permanent work force of 5,000 people to operate the mine. It is projected a significant number of additional jobs will be created for local and state suppliers and contractors in combination with increased employment opportunities for local communities in the region.

4.3 Rail Corridors

As described in Section 3.2.11 the Project includes the construction and operation of a new and existing rail corridor to transport coal to the chosen port location. Three rail corridors are being considered:

- Option 1: Alpha railway to the Port of Abbot Point;
- Option 2: Goonyella railway to the Port of Hay Point; or
- Option 3: Adani greenfield railway to the Port of Abbot Point.

At this level of assessment, they traverse similar landscapes for much of the alignment. The discussion below considers the alignments together, discussing individual options only where necessary, The EIS studies will focus on the preferred alignment that is chosen.

4.3.1 Climate, Natural Hazard and Climate Change

As described in Section 4.2.1, the region enjoys typical tropical weather.

4.3.2 Land

Land Use and Tenure

All rail corridor options involve the construction and operation of new, dedicated rail track of varying lengths. These new, dedicated corridors are likely to have a minor impact on the predominantly rural land use crossed by the track. Stock routes may be affected and access issues between and within large farming properties may occur. Absolute care shall be taken while designing the rail corridor to keep minimum impacts on the existing stock routes, and other infrastructure.

Native Title

The Native Title Act 1993 (NT Act) recognises the rights and interests of indigenous people under their traditional laws and customs. A Native Title search has been undertaken on properties impacted by the proposed mine site and potential railway line corridors. The search indicated that five Native Title Claims have been lodged over the rail corridors options. One claim has been finalised and dismissed while the remaining four are registered and active (Table 10). Adani intends to enter into discussions with Native Title claimants.

Table 10 Summary of Native Title in potential Project area

Jangga People	Claim is registered and active	Potential rail corridor to Abbot Point
Yuilbera People	Claim is registered and active	Potential rail corridor to Hay Point
Birri People	Claim is registered and active	Potential rail corridor to Abbot Point
Wirri People	Claim is registered and active	Potential rail corridor to Hay Point

Topography, Geology and Soils

The topography traversed by Options 1 and 3 varies from the south-eastern end to the terminal at the Port of Abbott Point, is dominated by gentle undulating slopes with slight rises and shallow depressions. The corridors will intersect a number of waterways including rivers (such as the Bowen River and Bogie River) and smaller ephemeral streams.

The three rail corridors cross a large number of geological formations. Detailed geological assessments and engineering will be conducted throughout the EIS to ensure rail design and construction is undertaken in accordance with geological conditions.

Rail construction activities, particularly clearing and earthworks, have the potential to cause erosion and dispersion of exposed subsurface soils. Detailed geotechnical investigations will be carried out as part of engineering and the EIS to adequately assess the suitability of the stratigraphy for construction and operation of a railway. A soil survey will also be undertaken to identify any reactive cracking clay soils, dispersive, erosion prone soils and saline soils that will need to be managed during construction. A Sediment, Drainage and Erosion Control Plan will be developed to mitigate and control sediment movement onsite, and minimise the potential for sediment laden runoff during construction.

Rehabilitation strategies for the rail corridor will be developed during the EIS process and will include revegetation of cleared areas with native species. During operation the potential for erosion and sedimentation resulting from the rail will be minimised through the ongoing maintenance of revegetated areas and development of suitable management procedures for maintenance activities.

Visual Amenity

The regions surrounding the Option 1 rail corridor between the mine and Abbot Point and Option 2 between the mine and Moranbah is predominantly rural in character. Between Moranbah and Dudgeon Point of the Option 2 corridor, the rail traverses land used for coal mining.

A detailed visual amenity impact assessment would be undertaken as part of the EIS process for the appropriate rail options. Community consultation conducted as part of the Project and the development of the rail corridors will seek to minimise impacts on visual amenity.

4.3.3 Nature Conservation

Overview

To gain an understanding of the potential occurrence of important flora and fauna and ecological communities within and adjacent to the rail alignments, desktop searches were undertaken of a 20 km buffer of the rail corridors[6]. This considered potential sensitive environmental areas, flora, fauna and aquatic ecosystems.

Ecological Communities and Regional Ecosystems

Database searches identified regional ecosystems (REs) mapped (Version 6.0, 2005) within and adjacent to the rail corridors, as listed under the *Vegetation Management Act 1999* (VM Act) (see Figure 6). This includes four communities also listed under the EPBC Act as threatened ecological communities (TECs): Brigalow TEC, Littoral Rainforest and Coastal Vine Thickets of Eastern Australia TEC, Natural Grasslands of the Queensland Central Highlands and the northern Fitzroy Basin TEC and Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregion TEC.

Further investigation will be undertaken during the EIS to assess the impact on the vegetation communities.

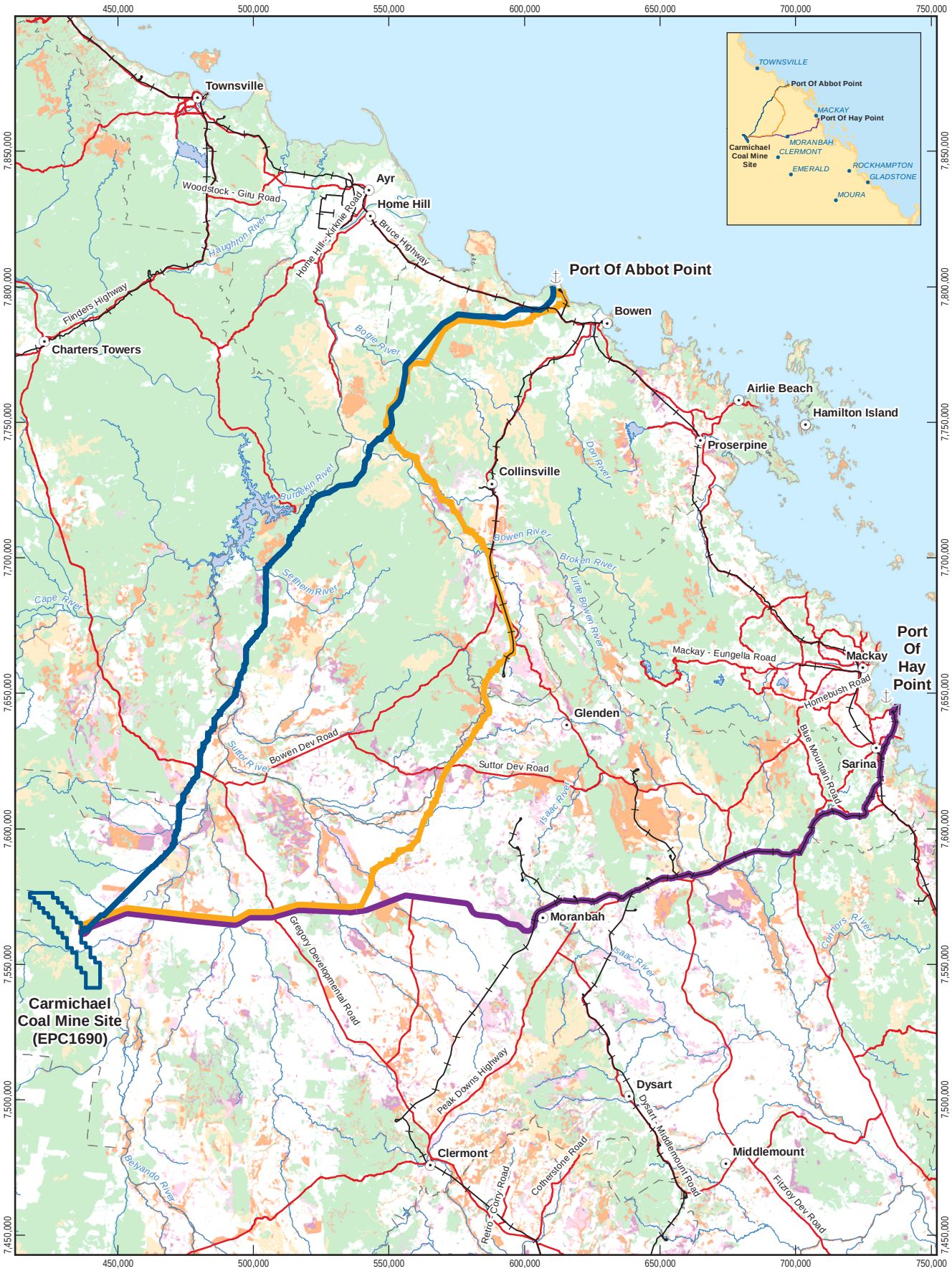
Other flora studies to be undertaken during the EIS include investigations of:

- Increased edge effects and the introduction and colonisation of weeds during construction and operational phases; and
- Clearing of mapped regional ecosystems and the 'least concern' flora within them, requiring permits under the Regional Vegetation Management Codes.

The removal of vegetation is likely to impact the biological and habitat value of the area. Particularly, this could include loss of flora and fauna habitat, restriction of fauna movement, restriction of vegetative dispersal and propagation, and increased edge effects.

Appropriate mitigation measures will be developed as part of the EIS process following detailed ecological investigations.

[6] For rail corridor Options 1 and 2. Desktop assessment of Option 3 is to be undertaken following further refinement.



LEGEND

- Town
- Major Port
- State Road
- Existing Railway
- Watercourse
- Rail Option 1 (Alpha)
- Rail Option 2 (Goonyella)
- Rail Option 3 (Adani)
- Carmichael Coal Mine Site
- Local Govt Boundary
- Waterbody

Regional Ecosystems

- Endangered - Dominant
- Endangered - Sub-Dominant
- Of Concern - Dominant
- Of Concern - Sub-Dominant
- Not of Concern
- Non-Remnant / Regrowth
- Plantation

1:2,000,000 (at A4)

0 10 20 30 40 50

Kilometres

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

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ADANI

Adani Mining Pty Ltd

Carmichael Coal Mine and Rail Project

Rail Options
Regional Ecosystems

Job Number	41-23244
Revision	A
Date	19-10-2010

Figure: 6

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Data Source: GA: Towns, Railways, Watercourses, Waterbodies (2007); DMR: State Roads (2010); DME: Carmichael Mine Site; DERM: RE v6 (2010); ABS: Local Govt Boundaries; GHD: Rail Options, Major Ports (2010). Created by: BW.

Protected Areas

The three rail corridors have the potential to intersect or be within the same catchment as areas protected under State and Federal legislation. No Ramsar wetlands are expected to occur in or immediately adjacent to the rail corridors, although waterways that form part of the Shoalwater Bay catchment occur along Option 2 which lead to the Shoalwater and Corio Bays Ramsar site that lies east of the Port of Hay Point.

There is not expected to be any direct impact on the Ramsar wetlands though some disturbance within the upper catchment may occur as a result of rail creek crossings. All creek crossings will be considered areas of high ecological sensitivity and subject to management guidelines outlined in an Environmental Management Plan. Additional investigation will be undertaken on the preferred route and studies undertaken during the EIS process will consider the Project's proximity to and potential impact on any protected areas. There is not expected to be a direct impact to these areas, though it is recognised that indirect impacts must be considered, and where appropriate suitable mitigation measures, management and/or monitoring implemented.

Threatened Flora and Fauna Species

Habitats along the rail corridors have potential to provide forage and breeding resources for threatened flora and fauna species. This includes species listed under the EPBC Act (including marine and migratory species), NC Act and other locally conservation significant flora and fauna. Additional investigation will be undertaken on the preferred route and studies undertaken during the EIS process will consider the Project's proximity to and potential impact on any threatened species or their habitat.

The removal of vegetation is likely to impact the biological and habitat value of the area. Particularly, this could include loss of flora and fauna habitat, restriction of fauna movement, restriction of vegetative dispersal and propagation and increased edge effects.

Further studies and groundtruthing will be undertaken during the EIS process to characterise the flora and fauna values of the rail corridor, including species listed under State and/or Federal legislation. Mitigation measures will be developed to minimise direct impacts to flora and fauna as well as indirect impacts to adjacent habitats. Appropriate mitigation measures will be developed as part of the EIS process following detailed ecological investigations.

Further investigations will be required during the EIS phase to assess the impacts on these species.

4.3.4 Water Resources

Surface Waterways

The Option 1 rail corridor falls chiefly within the Belyando/Suttor subcatchment which covers an area of >135,000 km² and sits within the larger Burdekin Catchment. The corridor crosses several ephemeral creeks and the Suttor and Bowen Rivers. The vast length of the corridor experiences strong wet/dry seasonality with the wet season between November and April delivering the majority of the annual rainfall. The majority of small creeks and waterways crossed by the rail corridor deliver unreliable flows and may run dry for extended periods towards the end of the dry season.

Land along the Option 1 rail corridor and river catchments is predominantly used for livestock grazing, which results in areas of exposed topsoil and large quantities of manure surrounding waterways. Heavy

rainfall following extended dry periods can transport large volumes of exposed soils and sediments from the catchment into the waterways.

Option 2 to Port of Hay Point crosses a series of ephemeral waterbodies including Middle Creek, Fox Creek, Mistake Creek, Isaac River, Hall Creek and Cooper Creek. Most creeks are ephemeral and flow in an easterly direction. Detailed assessments of all creek crossings will be undertaken to assess the ecological value during the EIS.

The construction of the rail infrastructure has the potential to result in direct and indirect impacts to the surface waterways as a result of riparian clearing, construction within the waterways and flow diversion. These activities can result in degradation of surface water quality and alteration to in-stream and floodplain hydrology. This has a potential impact upon downstream catchments and local aquatic habitats. The low-lying nature of some rail corridor sites may necessitate studies on surface water hydrology and water quality. These will be undertaken as part of the EIS.

Surface water hydrology studies will review any potential impact of flooding and storm surge on the rail options. Types of waterway crossings and possible stream diversions will also be identified during this stage. All rail corridors will cross a number of freshwater creeks and streams of varying size. Crossing engineering design and a CEMP will be developed to detail procedures and measures to mitigate potential water-quality impacts.

Groundwater

Groundwater investigations will be undertaken as part of the EIS process of the preferred corridor to discuss existing water resources and the potential impact that the rail infrastructure could have on these resources. The procedures for the management of these impacts will be discussed as part of the EIS.

4.3.5 Air Quality

The areas surrounding the rail corridors are predominantly rural in character. Air emissions are likely to be dust generated through cattle-raising, cultivation and harvesting activities, and exhaust emissions from rural machinery.

The Option 2 rail corridor also traverses land used for coal mining between Moranbah and Dudgeon Point. Air emissions associated with these land uses include dust (particulate matter), exhaust gases and greenhouse gas emissions from site equipment and processing facilities.

During construction the main air quality impacts are likely to be associated with dust generated during earthworks and movement of vehicles over exposed surfaces. Exhaust emissions from vehicles and plant quickly dissipate, and are likely to have a negligible impact on the local environment. Given the large distances to houses and other sensitive receptors, it is unlikely that dust or exhaust emissions will have a significant impact; however, this will be investigated in more detail in the EIS. The CEMP will contain measures to minimise the generation of dust during construction activities.

4.3.6 Greenhouse Gas Emissions

Construction and operation of the railway will result in the emission of some greenhouse gases to the atmosphere. The EIS will estimate greenhouse gas emissions and propose mitigations to minimise these outputs.

A project specific Environmental Management Plan will be developed for the construction and operation stages of the Project to appropriately manage and mitigate any impacts upon greenhouse issues and climate change.

4.3.7 Noise and Vibration

Noise and vibration impacts are not likely to be significant given the distances from nearby properties to the rail corridors.

A number of small towns are located within the rail corridors. Current noise levels in these areas would be typical of rural areas. The main noise issues are likely to be associated with mining operations and traffic on main roads.

The potential increase in noise levels, both during construction and operation, is to be mitigated through a combination of environmental management strategies, appropriate infrastructure design criteria and separation distances to sensitive receptors. A detailed noise and vibration assessment will be undertaken as part of the EIS process.

4.3.8 Waste

The waste generated by the Project will predominantly be associated with the construction phase activities. The Project EMP developed during the EIS will incorporate waste management measures and procedures.

4.3.9 Transport

The Option 1 rail corridor is expected to intersect three major roads: the Gregory Developmental Road, Suttor Developmental Road and Bruce Highway. The Option 2 rail corridors are expected to intersect at least two major roads, the Gregory Developmental Road and Suttor Developmental Road near Moranbah. A number of minor roads will also be traversed.

A detailed traffic study will be undertaken during the EIS to determine what types of crossings are most appropriate in terms of safety, operations and cost. Road crossings and occupational crossings will comply with appropriate design criteria. The exact nature and location of crossings will be investigated further during the EIS, and stakeholders will be consulted.

4.3.10 Indigenous Cultural Heritage

A cultural heritage study will be undertaken as part of the EIS process and a Cultural Heritage Management Plan developed in accordance with the *Aboriginal Cultural Heritage Act 2003 (*ACH Act).

4.3.11 European Cultural Heritage

There are no places currently registered on the Inventory of Heritage Places maintained by the DERM within the exploration area. Detailed European cultural heritage surveys over the exploration area will be conducted during the EIS.

4.3.12 Social Values

The rail corridor options pass within 15 km of a number of major towns. Further studies will be undertaken of the selected preferred corridor with respect to direct and indirect impacts at a regional and state level. Consultation with directly affected landowners will be undertaken.

4.3.13 Economic Values

It is anticipated that the railway development will require a total investment of approximately $6.8 billion for rail to the Port of Hay Point or $6.0 billion for rail to the Port of Abbot Point. The railway is expected to employ approximately 2,000 people during construction and a permanent work force of approximately 120 people to operate the rail.

It is projected a significant number of additional jobs will be created for local and state suppliers and contractors in combination with increased employment opportunities for local communities in the region.

5. Environmental Risk Management

5.1 Project Environmental Management System

An Environmental Management System (EMS) for the Project will be developed. The EMS will be consistent with the principles of ISO 14001, including provisions for monitoring and continuous improvement of environmental performance. The EMS forms a component of the broader Project management system that addresses the occupational health and safety and community and heritage aspects of the Project. A series of supporting Environmental Management Plans (EMPs) will be developed to implement the environmental management and monitoring commitments adopted for the Project.

This will incorporate management requirements and address risks and impacts identified during the EIS process.

5.2 Project Environmental Management Plan

A Project EMP will be prepared. The EMP will detail policies, procedures and controls that will be implemented to minimise potential environmental impacts during design, construction and operation of the Project. The objectives of the Project EMP are to:

Define the management structure of the Project and the environmental roles and responsibilities of Adani and contractors on the Project;

- Identify environmental legal requirements relevant to the Project;
- Identify the environmental risks associated with the major activities that will be undertaken during the Project;
- Document Project management controls, procedures and rules to manage the identified environmental risks and satisfy environmental requirements;
- Establish objectives and targets for environmental performance;
- Document monitoring, auditing and reporting requirements; and
- Capture commitments made in the EIS as specific and measurable actions.

Implementation of the Project EMP will ensure adequate protection and management of the environmental values which may be impacted upon by the construction and operation of the Project.

5.3 Construction Environment Management Plan

A Construction Environment Management Plan (CEMP) will be prepared for the mine and each rail corridor of the Project. The CEMPs will detail policies, procedures and controls that will be implemented by Adani and its contractors to minimize potential environmental impacts during the construction phase of the Project.

The CEMP has the following objectives:

- Identify the environmental issues and potential environmental impacts associated with construction;

- Outline management plans, procedures and controls for each of the environmental issues associated with construction;
- Specify the environmental responsibilities of the Project management team, contractors and on-site workers;
- Ensure construction is undertaken in compliance with relevant environmental legislation and standards; and
- Define monitoring, reporting and auditing requirements for the construction phase.

Effective implementation of the CEMPs during construction will ensure environmental risks are appropriately managed in a way which satisfies relevant legislative requirements and stakeholder expectations.

5.4 Hazard, Risk and Health and Safety Issues

Hazards and associated risks are presented by the construction and operation of the Project. Hazards need to be identified and the associated risks managed in order to reduce or eliminate the potential for harm to occur to people, property and the environment. A formal risk assessment process will be developed to assist in the management of risks through construction and operation of the Project.

5.5 Closure and Decommissioning

A Mine Closure Plan will be developed for the Project as part of mine engineering and operational design. The Mine Closure Plan will identify procedures, actions and monitoring to be implemented to achieve the desired landscape performance goals. Implementation of the Mine Closure Plan will ensure that the post-mining landscape is safe, stable and suitable for the designated future use. A Rehabilitation Program will be developed and implemented, both during mine operations and after mine closure. The program will involve progressive revegetation with suitable native vegetation and landscaping of the mined area in order to create a sustainable and stable post-mining landform.

It is not expected that the rail corridor will require decommissioning within the next 30 years. A decommissioning strategy and closure plan will be developed as part of the Project for the rail corridor. The decommissioning strategy will be incorporated into the operational management system of the rail corridor.

6. Relevant Environmental Legislation

6.1 Project Approvals

This section describes the Project approval framework for the Project. The content of this section applies to the mine and all possible options for the rail corridor. Given the nature, scale and location of the mine and rail corridor options, and the potential impact on surrounding areas, there will be a need for various approvals from Commonwealth, State and Local Government departments.

6.2 Commonwealth Legislation

6.2.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environmental Protection and Biodiversity Conservation Act* 1999 (EPBC Act) is the Commonwealth's principal piece of environmental protection legislation. Under Part 3 of the EPBC Act 1999, a person must not take an action that has or is likely to have a significant impact on a matter of National Environmental Significance (NES) unless that person can rely on an exemption, or obtains an approval from the Commonwealth Minister.

Matters of National Environmental Significance are described as:

- World Heritage Properties;
- National Heritage Places;
- Wetlands of International Importance (Ramsar wetlands);
- Threatened Species and Ecological Communities;
- Migratory Species;
- Commonwealth Marine Areas; and
- Nuclear Actions (including uranium mining).

The Project will be referred to Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) to determine whether the Project is a controlled action. If the Project is determined to be a controlled action, it is proposed that the EIS be undertaken under the Bilateral agreement between Queensland and the Commonwealth.

6.2.2 Native Title Act 1993

The *Native Title Act 1993* (NT Act) recognises the rights and interests of Indigenous people under their traditional laws and customs (DERM, 2010). A Native Title search has been undertaken on properties impacted by the proposed mine site and likely railway line corridor. The search indicated that five Native Title Claims have been lodged over the potential mine site and both rail corridors options. One claim has been finalised and dismissed while the remaining four are registered and active. In response to these Native Title registrations a Cultural Heritage Management Plan (CHMP) will need to be prepared as part of any EIS.

6.3 State Government Legislation

6.3.1 State Development and Public Works Organisation Act 1971

The *State Development and Public Works Organisation Act 1971* (SDPWO Act) establishes an environmental assessment process for projects declared to be a 'significant project'. Adani is seeking to have the project declared a 'significant project' in accordance with Section 26(1)(b) of the Act.

Under this process, the Coordinator General can administer the EIS process and impose conditions relating to the following:

- *Mineral Resources Act 1989;*
- *Environmental Protection Act 1994;*
- *Sustainable Planning Act 2009*; and
- Other approvals as required.

The Project consists of several infrastructure components and will require approval under numerous acts.

6.3.2 Sustainable Planning Act 2009

Prior to December 2009, development within Queensland was regulated by the *Integrated Planning Act 1997.* This Act has been replaced by the new *Sustainable Planning Act 2009* (SP Act), which came into effect on 18 December 2009. The SP Act provides a more focused and streamlined approach to the development framework. The Integrated Development Assessment System (IDAS) establishes a framework for assessment of development applications.

The SP Act establishes the requirements for development assessment of applications triggered under the following acts:

- *Environmental Protection Act 1994;*
- *Vegetation Management Act 1999;*
- *Fisheries Act 1994;*
- *Water Act 2000;*
- *Land Title Act 1994;*
- *Wild Rivers Act 2005;*
- *Transport Infrastructure Act 1994;*
- *Land Protection (Pest and Stock Route Management) Act 2002;*
- *Queensland Heritage Act 1992;*
- *Aboriginal Cultural Heritage Act 2003; and*
- *Coastal Protection and Management Act 1995.*

The SP Act also establishes a number of State Planning Policies (SPP) which are likely to be applicable to assessment of the proposed mine and railway line. SPPs relevant to the Project include:

- SPP 1/02 – Development in the Vicinity of Certain Airports and Aviation Facilities;

- SPP 1/03 – Mitigating the Adverse Impacts of Flood, Bushfire and Landslide;
- SPP 1/07 – Housing and Residential Development;
- SPP 1/92 – Development and the Conservation of Good Quality Agricultural Land;
- SPP 2/02 – Planning and Managing Development involving ASS; and
- SPP 2/07 – Protection of Extractive Resources.

6.3.3 Mineral Resources Act 1989

The Mineral Resources Act 1989 (MR Act) provides a framework for the development and utilisation of the State's mineral resources. The Project will require forms of land tenure regulated by the MR Act such as exploration permits (Coal) and mining leases. The Act is administered by the Department of Environment and Resource Management (DERM); environmental issues are dealt with by DERM.

The purpose of this act and the *Mineral Resources Regulation 2003* is to:

- Encourage and facilitate prospecting and exploring for and mining of minerals;
- Enhance knowledge of the mineral resources of the State;
- Minimise land use conflict with respect to prospecting, exploring and mining;
- Encourage environmental responsibility in prospecting, exploring and mining;
- Ensure an appropriate financial return to the State from mining;
- Provide an administrative framework to expedite and regulate prospecting and exploring for and mining of minerals;
- Encourage responsible land care management in prospecting, exploring and mining.

It is under this act that approval for a mining lease for future operations is granted. Mining leases entitle the holder to machine-mine specified minerals such as coal and carry out activities associated with mining or promoting the activity of mining.

A mining lease is not restricted to a maximum term. This is determined in accordance with the amount of reserves identified and the projected mine life.

Under Part 7, Section 232 of the Act unless otherwise approved by the Minister pursuant to section 226(3), a mining lease in respect of a mineral or minerals may be applied for by an eligible person in respect of contiguous land comprised in:

a. a prospecting permit or prospecting permits; or

b. an exploration permit or exploration permits; or

c. a mineral development licence or mineral development licences; in respect of that mineral or those minerals of which the applicant or, where more than one person is the applicant, at least one of them is, with or without others, the holder.

Any mining lease granted will be subject to a number of standard conditions outlined in Section 275 of the Act.

6.3.4 Environmental Protection Act 1994

The *Environmental Protection Act 1994* (EP Act) places emphasis on managing Queensland's environment within the principles of ecologically sustainable development. The EP Act is administered by the Department of Environment and Resource Management (DERM). Under the EP Act anyone undertaking an activity that may cause environmental harm must comply with the EP Act's general duty of care and approval is required for:

- Activities that could cause actual or potential environmental harm via the generation of emissions or through carrying out the activity;
- Environmentally Relevant Activities (ERAs);
- Activities likely to cause land contamination (notifiable activities recorded on the Environmental Management Register); and
- All other notifiable activities listed in Schedule 3 of the EP Act.

Sections 319 and 320 of the EP Act note that all persons have a duty of care to the environment. Therefore, it is not permissible to cause environmental harm (as defined in the EP Act) whilst undertaking any activity, unless all reasonable and practical means are taken to minimise that harm. To assist in meeting this duty of care, DERM has prepared Environmental Protection Policies (EPPs). The EP Act outlines the scope and content for preparing EPPs to protect Queensland's environment. These policies may be made with regard to the environment or anything that affects, or may affect, the environment. It should also be noted that all subordinate legislation to the EP Act, such as the EPPs, binds all persons.

Schedule 2 of the *Environmental Protection Regulation 2008* under the EP Act lists various ERAs for which development approval and registration certificates are required to authorise those activities. Activities that have been identified as likely to cause land contamination are listed in Schedule 3 of the EP Act. Under the Act, landowners and local government must inform DERM that land has been, or is being, used for a notifiable activity. Land that has been, or is being, used for a notifiable activity, is recorded on the Environmental Management Register, which is maintained by DERM. Part 8 of the EP Act deals with managing contaminated land. The Proponent will be required to advise DERM if notifiable activities are to occur on site.

6.3.5 Vegetation Management Act 1999

The *Vegetation Management Act 1999* (VM Act), in conjunction with the SP Act, regulates the clearing of native vegetation, excluding grasses and mangroves. Under the SP Act, operational work, that is the clearing of native vegetation, is to be assessed against the purposes of the VM Act.

DERM would assess any clearing proposed by this Project against the relevant *Regional Ongoing Clearing Code*. Only remnant vegetation (native vegetation that occurs in a mapped Regional Ecosystem (RE), or that meets the structural and species requirements to be mapped as a RE) will be assessed under this process.

The type of vegetation clearing applications required for the proposed development is dependent on the type of vegetation present on the site. Under the VM Act all remnant vegetation (including Endangered, Of Concern and Not of Concern Regional Ecosystems) irrespective of land tenure and all native vegetation on State Land (regardless of conservation status) is protected. Clearing of vegetation on State land is also listed as assessable development under the SP Act.

6.3.6 Nature Conservation Act 1992

DERM manages the *Nature Conservation Act 1992* (NC Act).

Under section 73 (a) of the NC Act, DERM is required to conserve wildlife and its values to:

- Ensure the survival and natural development of the wildlife in the wild; and
- Conserve the biological diversity of the wildlife to the greatest possible extent; and
- Identify, reduce or remove, the effects of threatening processes relating to the wildlife; and
- Identify the wildlife's critical habitat and conserve it to the greatest possible extent.

Any activity that may have the potential to, impact on wildlife or its values in an area may be seen as a threatening process and will be referred to DERM as part of the development approval process. In particular, the effect of the Project on Endangered, Vulnerable or Rare wildlife, or the habitat on which that wildlife depends, will be of interest to DERM in regard to their obligations under section 73 of the NC Act.

The *Nature Conservation (Protected Plants) Conservation Plan 2000* was updated on 8 February 2008. One of the main changes in this plan is that plants listed as least concern (almost all native plants within Qld) now require a clearing permit from DERM prior to removal. Some exemptions exist and are in relation to freehold land and the landowner undertaking the activity.

Under section 89 of the NC Act, a licence, permit or authority (issued under the NC Act), or an exemption is required to 'take' protected plants. The *Nature Conservation (Protected Plants) Conservation Plan 2000* (Conservation Plan) outlines how clearing permits, licences and exemptions can be issued to take protected plants.

The Project will require vegetation clearing potentially affecting protected plants. As such it is expected that permits will be required under the NC Act.

6.3.7 Water Act 2000

The *Water Act 2000* is a regulatory framework guiding sustainable planning and management of Queensland's water resources. Water related development is regulated by the Water Act in parallel to the SP Act.

Any water related development works that require taking or interfering with water from creeks is likely to require a development approval under the SP Act.

Key approvals regulated by the Water Act that the Project may trigger are as follows:

Riverine Protection Permit

A Riverine Protection Permit allows the holder to carry out one or more of the following activities within a watercourse, lake or spring:

- Clear vegetation;
- Excavate; and
- Place fill

To carry out such activities in a watercourse a Riverine Protection Permit is required under Section 266 of the Water Act unless an approval already exists under another act.

Water Bores

A number of approvals are required to construct and operate a sub artesian bore. Permits and Licences are required under the Water Act in addition to an operational works application under SP Act for Taking or Interfering with Water.

Water Bore Driller's Permit

An individual may apply for a water bore driller's licence if they wish to undertake such works. An application must:

a. be made to the chief executive in the approved form;

b. state the class of licence prescribed under a regulation for which the applicant is applying;

c. state any licence endorsements, prescribed under a regulation, the applicant is applying for; and

d. be supported by evidence that the applicant has the qualifications or experience prescribed under a regulation for a water bore driller; and

e. be accompanied by the fee prescribed under a regulation.

In the case of this Project it may also be feasible to contract an existing party holding a bore driller's licence.

Water Licence or Permit

Part 6 of the Water Act outlines the process for individuals requiring a water licence or permit.

There are two major differences between the two approvals.

1. A water licence can be amended, renewed, reinstated, transferred, amalgamated, subdivided, surrendered or cancelled, while a water permit is for a set purpose that cannot be altered; and
2. The assessment process for a water licence includes a stage for public notification.

Both applications are not controlled by IDAS timeframes and are assessed against set criteria in the Water Act

6.3.8 Aboriginal Cultural Heritage Act 2003 (Qld)

The *Aboriginal Cultural Heritage Act 2003* establishes a 'cultural heritage duty of care', which requires that a person who carries out an activity must take all reasonable and practicable measures to ensure the activity does not harm Aboriginal cultural heritage.

The Act establishes a framework for the conduct of assessment of cultural heritage impact and processes to be undertaken in preparing Cultural Heritage Management Plans. The Act states that where an EIS is required under a legislative framework then a Cultural Heritage Management Plan must be prepared to manage all aspects of cultural heritage for the construction and operation of the project.

Adani intends to conduct consultations with the applicable Aboriginal Parties to prepare a Cultural Heritage Management Plan in accordance with the Act.

7. Community and Stakeholder Consultation

7.1 Introduction

The overall purpose of the community and stakeholder consultation process will be to enable opportunities for the community and other stakeholders to identify issues, impacts (potential or perceived) and mitigation measures of the Project and for these to be documented for consideration as part of the environmental assessment.

A Community and Stakeholder Consultation Plan will be prepared to guide the consultation activities during the environmental assessment process and demonstrate how the consultation will inform the development of the environmental assessment.

7.2 Community and Stakeholder Consultation

The community and stakeholder consultation process will seek to achieve the following objectives:

- Establish an open two-way flow of information, designed to meet both community and government agency requirements in achieving a transparent, meaningful and appropriate consultation process;
- Raise awareness and understanding of the Project, its objectives, and timings among key stakeholders in industry, government and the community;
- Provide a number of avenues through which the Bowen community and other stakeholders can provide their input, and for this to be documented and considered in the environmental assessment process; and
- Build community support and understanding of the environmental assessment process.

In order to meet these objectives, the Consultation Team will:

- Identify all relevant stakeholders of the Project and inform them of the environmental assessment objectives and consultation activities;
- Meet the requirements for community and stakeholder consultation as outlined in the Project Terms of Reference and;
- Provide a community and stakeholder consultation report for inclusion in the *draft* environmental assessment document, in accordance with the Project's Terms of Reference.
- These objectives will be refined where required in the finalisation of this Community and Stakeholder Consultation Plan.

7.3 Stakeholders

A stakeholder is defined as any individual, group of individuals, organisation or political entity with an interest in the outcome of a decision. They may be, or perceive that they may be, affected directly or indirectly by the outcome of a decision[7]. Stakeholders for the Project include Federal, State and Local Government representatives, affected landowners, local business and residents, environmental and cultural heritage groups and surrounding communities.

[7] International Association for Public Participation (IAP2), 2006.

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