

NORTH GALILEE BASIN RAIL PROJECT

adani



Adani Mining Pty Ltd

North Galilee Basin Rail Initial Advice Statement

May 2013

Executive summary

Adani Mining Pty Ltd (Adani) is proposing the development of rail infrastructure to transport product coal from the Galilee Basin to the Port of Abbot Point and Port of Hay Point (Dudgeon Point expansion). To meet the growing global demand for coal, the significant coal reserves in the Galilee Basin will continue to be opened up to mining. New rail infrastructure is required to meet the capacity demands of the current and future mines in the Galilee Basin. Adani is committed to an open access regime for the infrastructure it creates and this has been a consideration in designing its rail and port infrastructure.

Adani has undertaken an Environmental Impact Statement and is currently seeking environmental approval for its proposed Carmichael Coal Mine and Rail Project (Carmichael Project). The Carmichael Project comprises the construction and operation of the Carmichael Mine and an associated east-west railway line between the mine site and a junction with Aurizon's (formerly QR National) Goonyella system, south of Moranbah on the Blair Athol line. The proposed east-west rail infrastructure (dual / narrow gauge) primarily addresses the transportation need of coal from the Galilee Basin to Dudgeon Point or Abbot Point via Moranbah using the narrow gauge system of Aurizon. However, a narrow gauge system is not the ultimate commercially optimal solution for rail transport of the vast Galilee Basin coal reserves over the required haulage distances to Central Queensland export ports. As such, the Carmichael Rail infrastructure offers a short-term incremental solution that maintains port optionality, but is primarily only a medium- to long-term solution for export directly to Dudgeon Point.

Dual port capability for the export of coal is required by Adani to insure against potential force majeure conditions that may affect one of the mine-to-port supply chain routes. In addition, dual port capability will help to accommodate any future production increases from Adani and/or third-party mines in the Galilee Basin, which may exceed the capacity of one port. Adani Mining Pty Ltd is one of the two preferred proponents for development of the Dudgeon Point expansion. In addition, Adani currently owns Abbot Point Coal Terminal 1 and is proposing development of Terminal 0. Accordingly, suitable rail infrastructure is required to supply coal to both Abbot Point and Dudgeon Point for export.

Adani is proposing a direct rail route from the Carmichael Coal Mine to the Port of Abbot Point. The new rail line, the North Galilee Basin Rail (NGBR), is proposed to be a standard gauge heavy haul greenfield rail line, which will connect the Carmichael Project directly with the Port of Abbot Point, providing an alternate, standard gauge and shorter route to the port compared to the existing narrow gauge system via Moranbah. Development of the NGBR is aligned with Adani's policy of maintaining dual port capability for evacuation of coal from its mine and also meets the requirement of being the optimal long-term rail solution for the Galilee Basin. The purpose of this Initial Advice Statement is to provide the Coordinator-General with adequate information on the proposed North Galilee Basin Rail (NGBR) the "NGBR Project" so a decision can be made as to whether the NGBR Project should be declared a Coordinated Project (formerly 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 rail alignment will be located within a nominal 1000 m wide investigation corridor, which branches off approximately 70 km east of the Carmichael Mine on the proposed Carmichael Project's east-west rail corridor, in the vicinity of Mistake Creek, northwards to connect with supporting infrastructure (including rail loop/s and port infrastructure, the subject of separate

investigations) at the Port of Abbot Point. The NGBR Project will comprise development of approximately 300 km standard gauge greenfield rail line with an operational capacity of up to 100 Mtpa.

The NGBR Project has been developed to largely align with, and thereby satisfy, the Queensland Government's 'Preferred Corridors Policy' announced in June 2012 and subsequent related communication in Jan 2013. This policy accords primacy to the principle of giving advantage to the "first mover" and calls for all proposed railways, that join the Galilee Basin coal reserves with the Central Queensland coal export ports, to align with two preferred corridors; one aligned north-south and one aligned east-west. The NGBR Project constitutes an alignment consistent with the intent of the north-south 'preferred corridor' providing direct access to the Port of Abbot Point, while the Carmichael Project rail infrastructure alignment is consistent with the intent of the east-west 'preferred corridor' (providing direct access to the Port of Hay Point (Dudgeon Point Expansion)). Should the recently publicised GVK-Hancock and Aurizon partnership proceed, which appears in recent media announcements to indicate a desire on Aurizon's part to leverage its existing narrow gauge system rather than creating greenfield standard gauge capacity, this would mean the NGBR is a unique standard gauge solution for the Galilee Basin in the long term and does not conflict with the GVK-Hancock and Aurizon partnership solution.

It is estimated that the NGBR Project will require a capital investment of approximately \$2.2 billion. Construction of the Project is expected to commence in 2014 and be completed within approximately two years. Operation of the Project will coincide with completion of the construction and commencement of Carmichael Coal Mine output, currently expected in 2016. Construction of the NGBR Project will provide in the order of 3800 direct employment opportunities (at peak) and during operations approximately 125 employment opportunities. It is likely 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. Employment opportunities associated with the NGBR Project are considered to be significant, particularly when combined with opportunities arising from the Carmichael Project, there will be a significant increase in employment opportunities in the region.

The NGBR Project is significant in its own right, being separate to and distinct from the Carmichael Project (particularly the rail component as elaborated above). The NGBR Project has the following attributes that characterise it as a Coordinated Project, as outlined in the Coordinator-General's guideline - *Preparing an Initial Advice Statement* (DSDIP 2012):

- Is a standalone project that requires a separate financial investment decision and approvals from the Carmichael Project;
- Subject to complex approvals processes requiring Federal, State and Local government involvement;
- Requires a high level of capital expenditure, approximately \$2.2 billion;
- Provides significant employment opportunities through construction (approximately 3800) and operations (approximately 125);
- Has potential effects on infrastructure (rail and road), the environment and social values;
- Is strategically significant to the:
 - Locality – reduces significant distance through rail route to Abbot Point as compared to the route via Moranbah.

- Environment – reduces significant potential rail congestion and cumulative impacts through the Goonyella and Newlands systems via Moranbah;
- Region – reduces potential congestion on the already constrained Goonyella and Newlands rail systems while increasing regional rail capacity, which shall be more operations friendly and cost effective as a result of being a heavy haul standard gauge line; and
- State – provides efficient access to the growing coal export facilities at the Port of Abbot Point (while maintaining potential for access to the Port of Hay Point (Dudgeon Point Expansion) through the related Carmichael Project).

The significance of the NGBR Project compares with other rail projects of a similar scale currently being undertaken and previously undertaken in the region, which have been declared significant projects (now coordinated projects).

The NGBR Project, currently a 1000 m wide investigative corridor (to be refined to a 100 m wide rail corridor through further investigation), is situated within the Isaac and Whitsunday Regional Council Local Government Areas and traverses 51 freehold lots, 35 leasehold lots, one unallocated State land lot and tenements comprising exploration permits for coal, exploration permits for minerals, one petroleum pipeline licence and one water pipeline easement. One water pipeline and a number of high voltage power line easements are expected to be crossed. The existing environment is predominantly rural lands supporting grazing and other agricultural activities. The NGBR Project is located primarily within the Regional Landscape and Rural Production Area designation under the *Mackay, Isaac and Whitsunday Regional Plan 2012*, with a smaller area of Urban Footprint designation near Abbot Point.

The proposed NGBR Project crosses a series of permanent and ephemeral water bodies, including Bowen River, Bogie River, Elliot River, Pelican Creek and Suttor River. The investigative corridor intersects a number of major roads, including the Bruce Highway, Suttor Developmental Road, Bowen Developmental Road, Gregory Developmental Road, Kilcummin-Diamond Downs Road, Cerito Road, Strathmore Road and Strathalbyn Road. Other minor roads and tracks will likely also be traversed. Crossing treatments are expected to be a combination of grade-separated and at-grade crossings, dependent on the level of risk, level of traffic, nature and size of the road being traversed. Six stock routes are also expected to be intersected.

The NGBR Project has the potential to impact agricultural land mapped as being of good quality within the footprint of the alignment, and has the potential to fragment land parcels leading to a reduction and loss of access to agricultural land. The EIS will investigate potential impacts and provide mitigation and management measures to minimise impacts.

Desktop searches have been undertaken within a 10 km buffer of the proposed NGBR Project to gain an understanding of the potential occurrence of important flora and fauna and ecological communities within and adjacent to the rail alignment. A number of regional ecosystems listed under the *Vegetation Management Act 1999* are mapped within or adjacent to the rail corridor including three communities also listed under the *Environment Protection and Biodiversity Conservation Act 1999* as threatened ecological communities.

Habitats along the NGBR Project corridor have potential to provide forage and breeding resources for threatened flora and fauna species. Thirty-seven threatened species are listed under the *Environment Protection and Biodiversity Conservation Act 1999* and thirty-seven under the *Nature Conservation Act 1992* within a 10 km buffer of the proposed NGBR Project. Further, forty-four threatened species listed as migratory and eighty-seven listed as marine were also identified using the Commonwealth's Protected Matters search. Results from the

Queensland Wildlife Online database indicate that a total of 1954 species (24 amphibians, 316 birds, 56 mammals, 93 reptiles, 23 insects, 12 fish, 32 ferns and 1398 plants) have been historically recorded within 10 km of the investigative corridor alignment. Of these, forty-three species are listed under the NC Act and/or EPBC Act (Table 3-4).

No Ramsar wetlands occur in or immediately adjacent to the proposed NGBR Project corridor. There is not expected to be any direct impact on 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.

One wetland protection trigger area is traversed by the proposed NGBR Project corridor at Abbot Point – Caley Valley. The potential for the NGBR Project corridor to have indirect impacts on two other Nationally Important Wetlands will also need to be addressed by the EIS. This includes the Great Barrier Reef Marine Park additionally classed as a World Heritage Property and National Heritage Place under the EPBC Act. One Commonwealth Marine Area and six State Reserves fall within the EPBC protected matters buffer neighbouring, but outside of, the proposed 1000m NGBR Project investigative corridor, and potential indirect impacts on these protected areas will require consideration.

Cultural heritage investigations for the NGBR Project have commenced and Adani has executed an early works agreement and a Cultural Heritage Management Plan with the Jangga People in accordance with the *Aboriginal Cultural Heritage Act 2003*. Similar discussion, agreement and Cultural Heritage Management Plans are also proposed with the Birri People, Juru People and Juru People No.2. Adani has commenced consultation with the four Aboriginal parties for the NGBR Project Corridor in accordance with the Act. Further negotiations and investigations will be undertaken during the EIS process and matters addressed in accordance with the provisions of the *Aboriginal Cultural Heritage Act 2003*, as appropriate. Preliminary searches of public databases do not indicate the presence of European heritage sites within the NGBR Project corridor.

The most significant townships in the vicinity of the NGBR Project are Moranbah and Glenden within the Isaac Regional Council area and Bowen and Collinsville in the Whitsunday Regional Council area. Indirect and cumulative positive impacts will flow at the regional and State levels largely through increased employment opportunities arising during construction and operation. Consultation with directly affected landowners will be undertaken and a Community and Stakeholder Consultation Plan will be prepared to guide the consultation activities during the environmental assessment process. Adani has commenced notification of tenement and land holders of the proposed NGBR Project. Adani has also commenced discussions with regard to land access for investigative purposes and will continue to liaise with stakeholders throughout the EIS process.

An Environmental Management System for the NGBR Project will be developed as well as a series of supporting Environmental Management Plans including a Project specific and a Construction management plan. This will incorporate management requirements and address risks and impacts identified during the EIS process.

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Abbreviations and Definitions

Abbreviation	Term
The Proponent	Adani Mining Pty Ltd (Adani)
The Project	North Galilee Basin Rail (NGBR)
The Carmichael Project	The Carmichael Coal Mine and Rail Project
CEMP	Construction Environmental Management Plan
CHMP	Cultural Heritage Management Plan
DAFF	Department of Agriculture, Fisheries and Forestry
DEHP	Department of Environment and Heritage Protection
DNRM	Department of Natural Resources and Mines
DSDIP	Department of State Development, Infrastructure and Planning
DSEWPaC	Department of Sustainability, Environment, Water, Populations and Community (Commonwealth)
DTMR	Department of Transport and Main Roads
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EMS	Environmental Management System
EP Act	<i>Environmental Protection Act 1994</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EPC	Exploration permit for coal
EPM	Exploration permit for minerals
EPPs	Environmental Protection Policies
ERAs	Environmentally Relevant Activities
IAS	Initial Advice Statement
IDAS	Integrated Development Assessment System
MNES	Matters of National Environmental Significance
Mtpa	Million tonnes per annum
NC Act	<i>Nature Conservation Act 1992</i>
PPL	Petroleum pipeline licence
RE	Regional Ecosystem
SDPWO Act	<i>State Development and Public Works Organisation Act 1971</i>
SP Act	<i>Sustainable Planning Act 2009</i>
SPP	State Planning Policy
TECs	Threatened ecological communities
ToR	Terms of Reference
VM Act	<i>Vegetation Management Act 1999</i>

1. Introduction

1.1 Background

Adani Mining Pty Ltd (Adani) is proposing the development of rail infrastructure to transport coal product from the Galilee Basin to the Port of Abbot Point and Port of Hay Point (Dudgeon Point expansion).

Adani has undertaken an Environmental Impact Statement and is currently seeking environmental approval for its proposed Carmichael Coal Mine and Rail Project (Carmichael Project). The Carmichael Project comprises the construction and operation of the Carmichael Mine and an associated east-west aligned railway line between the mine site and a junction with the Aurizon (formerly QR National) Goonyella rail system approximately 8 km south of Moranbah, including a section of dual gauge and a section of narrow gauge railway. The Carmichael Project proposes to transport coal to both the Port of Abbot Point and the Port of Hay Point (Dudgeon Point expansion).

The east-west Carmichael Rail infrastructure (dual / narrow gauge) primarily addresses the transportation need of coal from the Galilee Basin to Dudgeon Point or Abbot Point via Moranbah using the narrow gauge system of Aurizon. However, a narrow gauge system is not the ultimate commercially optimal solution for rail transport of the vast Galilee Basin coal reserves over the required haulage distances to Central Queensland export ports. As such, the Carmichael Rail infrastructure offers a short-term incremental solution that maintains port optionality, but is primarily only a medium- to long-term solution for export directly to Dudgeon Point.

Dual port capability for the export of coal is required by Adani to insure against potential force majeure conditions that may affect one of the mine-to-port supply chain routes. In addition, dual port capability will help to accommodate any future production increases from Adani and/or third-party mines in the Galilee Basin, which may exceed the capacity of one port. Adani Mining Pty Ltd is one of the two preferred proponents for development of the Dudgeon Point expansion. In addition, Adani currently owns Abbot Point Coal Terminal 1 and is proposing development of Terminal 0. Accordingly, suitable rail infrastructure is required to supply coal to both Abbot Point and Dudgeon Point for export.

Adani is proposing a direct rail route from the Carmichael Coal Mine to the Port of Abbot Point. The new rail line, the North Galilee Basin Rail (NGBR), is proposed to be a standard gauge heavy haul greenfield rail line, which will connect the Carmichael Project rail infrastructure directly with the Port of Abbot Point, providing an alternate, standard gauge and shorter route to the port compared to the existing narrow gauge system via Moranbah. Development of the NGBR is aligned with Adani's policy of maintaining dual port capability for evacuation of coal from its mine and also meets the requirement of being the optimal long-term rail solution for the Galilee Basin.

Should the recently publicised GVK-Hancock and Aurizon partnership proceed, which appears in recent media announcements to indicate a desire on Aurizon's part to leverage its existing narrow gauge system rather than creating greenfield standard gauge capacity, this would mean the NGBR is a unique standard gauge solution for the Galilee Basin in the long term and does not conflict with the GVK-Hancock and Aurizon partnership solution.

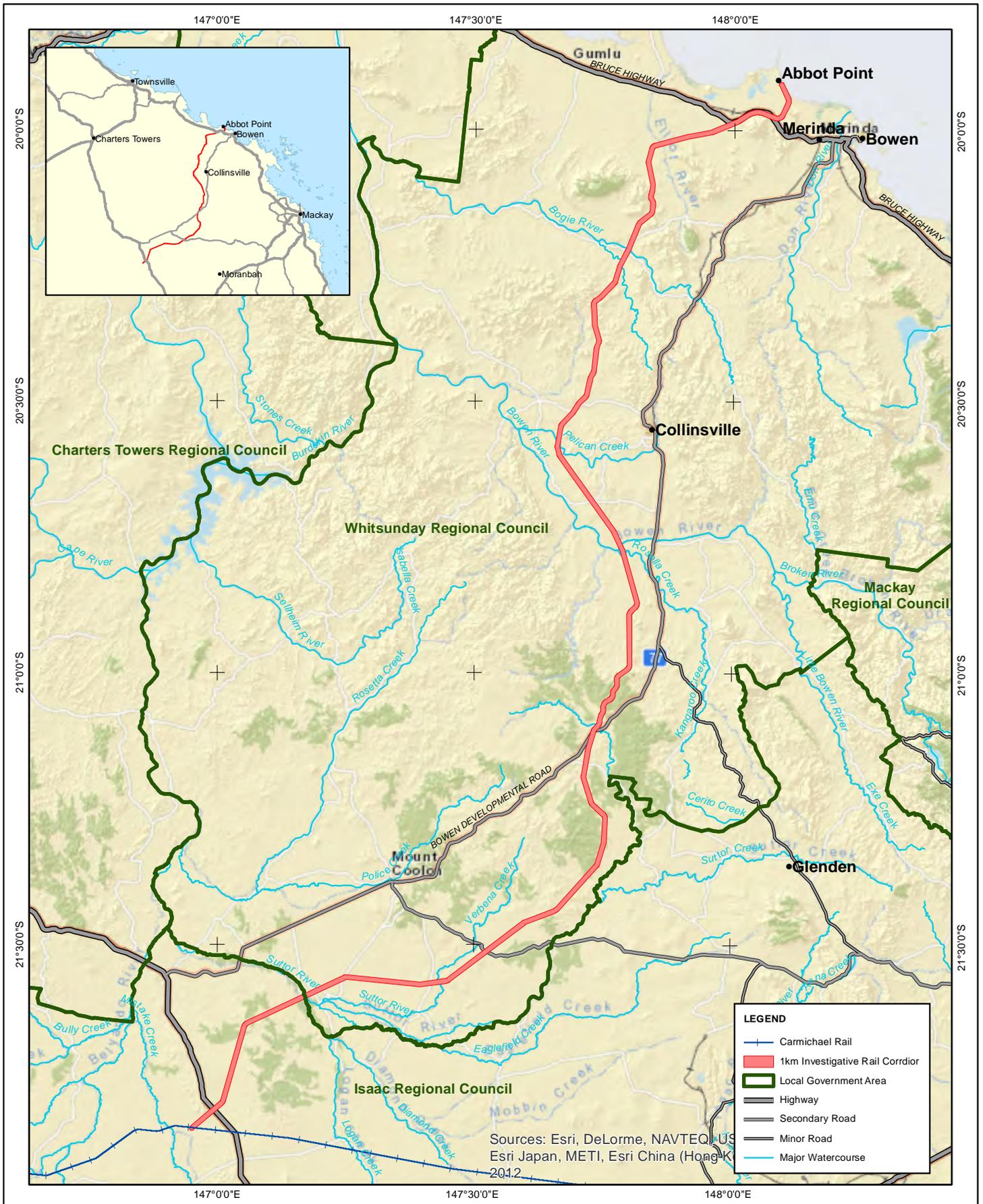
1.2 Project Location

To maximise flexibility and increase the capacity to avoid environmentally sensitive areas, a broad (1000 m wide) investigative corridor is proposed. The final alignment will be refined to within a nominal 100 m wide corridor through consideration of environmental, social and geotechnical constraints.

The investigative corridor is approximately 300 km in length connecting with the proposed Carmichael Project's east-west rail corridor, near Mistake Creek, heading northwards to connect with supporting infrastructure (including rail loop/s and port infrastructure, the subject of separate investigations) at the Port of Abbot Point. Figure 1-1 illustrates the Project location.

The proposed NGBR Project location is in keeping with the Queensland Government's recent policy decision regarding development of a single north-south multi-user common access rail corridor within the Galilee Basin to Abbot Point. A single north-south corridor is proposed so as to ensure that local and regional impacts are minimised, particularly with regard to impacts on landholders and property management practices.

The NGBR Project 1 km wide investigative corridor traverses 51 freehold lots, 35 leasehold lots and one unallocated State land lot and is located within the Isaac and Whitsunday Regional Council Local Government Areas. The NGBR Project is primarily located within the Regional Landscape and Rural Production Area designation under the *Mackay, Isaac and Whitsunday Regional Plan 2012*, with a smaller area of Urban Footprint designation near Abbot Point.



Sources: Esri, DeLorme, NAVTEQ, US
 Esri Japan, METI, Esri China (Hong K
 2012

LEGEND

- Carmichael Rail
- 1km Investigative Rail Corridor
- Local Government Area
- Highway
- Secondary Road
- Minor Road
- Major Watercourse

NOTES

DISCLAIMER
 In preparing this map, RLMS have endeavoured to ensure that the data and information are as accurate and reliable as possible. However RLMS cannot accept liability for any decisions or actions of whatever kind or nature based on this study. RLMS expressly disclaims any loss or damage that may arise therefrom.



0 10 20 30 40

Kilometres
 Coordinate System
 GDA 1994 MGA Zone 55

CLIENT ADANI MINING PTY LTD

PROJECT NORTH GALILEE BASIN RAIL (NGBR)

FIGURE 1-1 PROJECT LOCATION

DATE JANUARY 2013




1.3 Purpose and Scope of the Initial Advice Statement

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 NGBR Project should be declared a Coordinated Project (formerly '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* (SDPWO Act).

This IAS also aims to provide stakeholders with an overview of the NGBR Project, including legislative, environmental, social, cultural and economic considerations associated with any future studies or investigations and construction and operation of the NGBR 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 from stakeholders and the community.

1.4 The Proponent

The Project proponent is Adani Mining Pty Ltd. Adani is an Australian subsidiary of the Adani Group's Adani Enterprises Limited, a company based in Ahmedabad, India. Adani Enterprises Limited has diverse interests in global trading, development and operation of ports, inland container terminals, and establishment of special economic zones, oil refining, logistics, gas distribution, power generation, transmission and trading. The Adani Group has a sales turnover in excess of US\$6 billion and market capitalisation in excess of US\$30 billion.

Adani established in Australia in mid-2010 with the intent of engaging in exploring, mining, and exporting coal resources. As part of this intent Adani initially purchased the right to seek a mining lease application (being MLA70441) over exploration permit for coal (EPC) 1690 and then secured access to the eastern part of EPC1080 in December 2011. This was the initiation of development of the Carmichael Project.

Adani Abbot Point Terminal Pty Ltd, an Australian subsidiary of Adani Ports and Special Economic Zone Limited owns Abbot Point Coal Terminal 1 and is currently seeking to expand capacity by expansion at Abbot Point Coal Terminal for the export of coal.

Adani has not been subject to any proceedings under an Australian Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources. Since establishing in Australia, Adani has sought to deliver community benefit from its business involvement.

Internationally, our mine on Bunyu Island (East Kalimantan province), Indonesia, has been in production since March 2008 and is currently producing 4 Mtpa without any proceedings under Indonesian environmental protection laws. The same mine obtained a National Safety Award for the year 2011-12 (awarded in November 2012). Many of the Adani group of companies operate under ISO14000 accreditation and others are in the process of obtaining certification. Adani respects and is fully compliant with environmental laws wherever it operates.

Adani intends to engage a number of sub-consultants for the purpose of detailed technical studies for the preparation of the EIS. The EIS will be funded within the means of Adani Enterprises Limited and its subsidiaries, specifically Adani Mining Pty Ltd.

Contact details for the Proponent are as follows:

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1.5 Justification for the Project

1.5.1 Overview

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.

A report published by the Australian Government Bureau of Resources and Energy Economics (BREE 2012) provides thermal and metallurgical coal export outlook figures to 2025. Over the period 2010 to 2025, global thermal coal consumption is projected to increase at an average annual rate of 1.7 per cent (BREE 2012). Most of this growth is projected to occur in emerging economies, especially within India and China (BREE 2012).

Queensland's economy places a significant emphasis on exports, particularly from the natural resources sector. Industries within this sector (particularly mining) are significant contributors to economic growth in Queensland. Subsequently, Queensland continues to be a major supplier of coal to overseas users. With trade in coal forecast to increase significantly over the foreseeable future, the demand on the freight rail systems in the State is expected to follow suit. To meet the growing global demand, the significant coal reserves in the Galilee Basin will continue to be opened up to mining. New rail connections are required to meet the capacity demands of the current and future mines in the Galilee Basin.

1.5.2 Project Rationale

Management and planning for the development of Queensland's abundant coal resources now and into the future is guided by a number of key State and Federal government policy documents. The Coal Plan 2030 (DIP 2010) is proposed to guide the development of Queensland's major coal regions and export markets over the next 20 years. The report's key findings focus on the development of regional coal resources, the growth of global markets and the need for domestic infrastructure to supply those markets.

The State Government's Queensland Infrastructure Plan (DLGP 2011a) was prepared to guide the development of major infrastructure toward the State's Q2 2020 objectives. The development of infrastructure to support Queensland's resources regions is a key initiative of the Infrastructure Plan.

The Infrastructure Plan forecasts that the completion of a number of large thermal coal mining projects will place Queensland as one of the largest thermal coal exporters globally, in line with Queensland's current status as a major global metallurgical coal exporter. Improving rail access between the Galilee Basin and Abbot Point is a specific focus, to improve current and future prospects for mining development in the region. The private sector is seen as the major

proponent of such projects, a view supported by the Australian Government's National Ports Strategy (Infrastructure Australia 2010).

The Queensland Government's Northern Economic Triangle Infrastructure Plan 2007 - 2012 (DEEDI 2007, currently administered by Department of State Development, Infrastructure and Planning) is the first five year increment to achieve a 50 year commitment to ensure that critical infrastructure is provided to underpin private sector investment in industrial development and mineral processing. The expansion of the Port of Abbot Point and associated coal terminals, the development of coal processing infrastructure, and the integration of new with existing infrastructure are strategic objectives of this document.

The Queensland Regionalisation Strategy (DLGP 2011b) also cites the expansion of mining into the Galilee Basin as a key opportunity for the Mackay, Isaac and Whitsunday region. The *Mackay, Isaac and Whitsunday Regional Plan 2012* seeks to prevent incompatible development from occurring in key resource areas (DLGP 2012) to ensure the future development of the resources and manage the economic benefits for the region. The NGBR Project will generate approximately 3800 construction and 125 permanent employment opportunities.

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 proposed Carmichael Coal Mine will be the largest coal mine in Queensland. Adani is currently seeking environmental approval for the Carmichael Project which includes a 189 km east-west rail corridor to transport coal from the proposed Carmichael Mine to a junction with the existing Goonyella rail system south of Moranbah.

Through ongoing engagement with Aurizon, it was determined that rail access to the Port of Abbot Point via Moranbah is not only a longer route, but also increases burden on the network as the existing system will require significant upgrade to support the additional capacity requirements. The existing narrow gauge lines on the Goonyella and Newlands systems provide a limited capacity for upgrade to meet the vast potential demands of the Galilee Basin due to the challenging topography in the area and the systems being narrow gauge.

The newly proposed NGBR Project will increase the efficiency of the existing and proposed rail systems by providing a more direct route to the Port of Abbot Point and reducing projected capacity constraints on the existing 'bottleneck' in the system currently being experienced at Moranbah. The NGBR Project investigative corridor has also been designed to enable potential for third-party rail infrastructure to be developed nearby and within a common corridor.

The State Government announced in June 2012 its support for the development of the coal industry in the Galilee Basin and has committed to the designation of north-south and east-west common rail corridors to service coal mines in the region. While the Carmichael Rail project is being developed in line with the State Government's preferred east-west rail corridor to address the transportation need direct to the Port of Hay Point (Dudgeon Point expansion), the NGBR Project is proposed to provide a more direct and operationally more cost effective transport solution direct to Abbot Point. The NGBR Project is aligned with the State Government's intent for a preferred north-south and multi-user common access rail corridor.

The NGBR Project is proposed to have an operational capacity of 100 Mtpa product. This will accommodate use by both Adani and third party users in the northern Galilee Basin (and southern Galilee Basin if an extension is developed to join the NGBR), reducing the need for new independent tracks resulting in additional environmental footprints and adverse impacts to landowners in the region.

The NGBR Project is significant in its own right. Although related, this is separate to and distinct from the Carmichael Project (particularly the rail infrastructure components). The NGBR Project

has the following attributes that characterise it as a Coordinated Project, as outlined in the Coordinator-General's guideline for preparing an IAS (DSDIP, 2012):

- Is a standalone project that requires a separate financial investment decision and approvals from the Carmichael Project;
- Subject to complex approvals processes requiring Federal, State and Local government involvement;
- Requires a high level of capital expenditure, approximately \$2.2 billion;
- Provides significant employment opportunities through construction (3800) and operations (125);
- Has potential effects on infrastructure (rail and road), the environment and social values;
- Is strategically significant to the:
 - Locality – reduces significant distance through rail route to Abbot Point as compared to the route via Moranbah.
 - Environment – reduces significant potential rail congestion and cumulative impacts through the Goonyella and Newlands systems via Moranbah;
 - Region – reduces potential congestion on the already constrained Goonyella and Newlands rail systems while increasing regional rail capacity, which shall be more operations friendly and cost effective as a result of being a heavy haul standard gauge line; and
 - State – provides efficient access to the growing coal export facilities at the Port of Abbot Point (while maintaining potential for access to the Port of Hay Point (Dudgeon Point Expansion) through the related Carmichael Project).

The significance of the Project compares with rail projects of a similar scale currently being undertaken and previously undertaken in the region, which have been declared significant projects (now coordinated projects).

1.5.3 Project Economic Benefits and Timing

It is estimated that the NGBR Project will require a capital investment of approximately \$2.2 billion. The NGBR Project requires a separate financial investment decision from the Carmichael Project, and as such will be subject to separate project management activities, environmental assessments and approvals at Commonwealth, State and Local levels of government. Adani will commit capital expenditure via a financial investment decision for construction of the NGBR Project once headline Commonwealth and State approvals have been granted. It is expected that the NGBR Project will be financed within the means of Adani Enterprises Ltd and its subsidiaries, specifically Adani Mining Pty Ltd.

Adani is already committed to financing the environmental assessment and ongoing development of several projects in Queensland, including the Carmichael Project, Abbot Point Terminal 0 Project and Dudgeon Point Coal Terminals Project. Adani's diverse interests in global trading, development and operation of ports, inland container terminals, establishment of special economic zones, oil refining, logistics, gas distribution, power generation, transmission and trading mean that Adani is well placed to undertake and fund a rail project of this scale and nature.

Construction of the NGBR Project will provide approximately 3800 direct employment opportunities and operations 125 employment opportunities. It is likely 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, which may be in

the order of 1000 – 1500 indirect employment opportunities at peak construction. Employment opportunities associated with the Project are considered to be significant, particularly when combined with opportunities arising from the Carmichael Project, there will be a significant increase in employment opportunities in the region.

In addition to economic benefits from increased direct and indirect employment opportunities, the NGBR Project will provide economic benefits to the State and Commonwealth economies by facilitating the generation of royalties from the production and sale of coal and payment of the Minerals Resource Rent Tax. These royalties and taxes are fed back to the local and regional economies via the State Royalties for the Regions initiative and other State and Commonwealth mechanisms.

Construction of the NGBR Project is expected to commence in 2014 and be completed (in a single stage) within approximately two years. Operation of the NGBR Project will coincide with completion of construction and commencement of Carmichael Mine output, currently expected in 2016. The proposed mine has an expected lifespan of 90 years and rail infrastructure developed will be required to support the operations for the duration.

1.6 Project Alternatives

1.6.1 Overview

Given the current lack of direct mine to port rail systems in the Galilee Basin, coupled with the below rail capacity constraints on Aurizon (formerly Queensland rail) networks of the Goonyella and Newlands systems and the limited capacity for upgrade in these lower axle load narrow gauge railway infrastructures for serving the vast Galilee Basin in particular, there are very limited rail options available to the proponent.

Adani has, therefore, undertaken a high level desktop assessment and multi-criteria analysis to identify possible south to north rail alignments branching off from the Carmichael Project's proposed rail infrastructure near Mistake Creek heading to the Port of Abbot Point addressing the environmental, hydrological, geotechnical and civil constraints associated with each between these two points.

Environmental considerations included:

- River and waterway crossings;
- Topography and landforms;
- Regional ecosystems (REs), in particular endangered and of concern (REs), high value regrowth vegetation and Essential Habitat;
- The presence of other infrastructure (including homesteads and settlements), mining and exploration lease and permit boundaries, coal resource areas, roads, power lines and pipelines; and
- Strategic Cropping Land.

The preferred option for the Project is development of the proposed NGBR Project, which comprises the construction and operation of approximately 300 km of heavy haul standard gauge railway corridor connecting to the Carmichael Project's rail infrastructure (near Mistake Creek) directly with supporting infrastructure (including rail loop/s and port infrastructure, the subject of separate investigations) at the Port of Abbot Point. This preferred option will facilitate transport of up to 100 Mtpa product coal directly to the Port of Abbot Point, alleviating capacity constraints associated with the rail infrastructure 'bottleneck' near Moranbah on the existing Goonyella system and further on the Newlands system of Aurizon.

1.6.2 Co-location and Co-use

Options for routing a rail corridor to the Port of Abbot Point using co-location and/or co-use opportunities have been investigated as follows:

- Adani Carmichael Project

Adani is currently seeking environmental approval for the proposed Carmichael Project comprising the development of a rail infrastructure corridor between the Carmichael Mine and a connection with Aurizon's Goonyella rail system approximately 8 km south of Moranbah. The Carmichael Project rail infrastructure will enable direct transport of product coal toward the Port of Hay Point (Dudgeon Point expansion) and indirect transport toward the Port of Abbot Point via the already constrained Goonyella rail system. This would, however, be the narrow gauge system with a much lower 26.5 tonne axle load with very limited capacity for upgrade over the brownfield section of Aurizon. The transportation of such a large quantity of coal over the much longer narrow gauge route to Abbot Point would increase costs of producing the thermal coal, which in turn reduces the cost-competitiveness of Galilee basin coal in the global market. So, for financial viability, a shorter, higher tonne axle load and standard gauge route is preferable.

- Waratah Coal Pty Ltd's proposed China First Project

Adani has considered developing and/or utilising a consolidated corridor with Waratah Coal Pty Ltd's proposed China First Project.

Due to long steep grades, serious contractibility challenges (such as very deep cut and fill earthworks) of this alignment through the middle of Leichardt range and uncertainty with respect to timeframes for commencement of development for the China First Project, in addition to a more favourable and technically better route option having been identified by Adani, opportunities for co-use and/or co-alignment with the China First Project are limited.

- Hancock Coal Infrastructure Pty Ltd's proposed Alpha Coal Project

Adani has previously considered developing and/or utilising a consolidated corridor with Hancock Coal Infrastructure Pty Ltd's proposed Alpha Coal Project (Alpha).

The Alpha Railway will be operating at capacity when Adani seeks access as the railway is to be constructed to facilitate a capacity of 60 Mtpa which is fully allocated to Alpha mine (30 Mtpa) and Kevin's Corner Mine (30 Mtpa) to the south. As such opportunities for co-use of the railway are limited. The Alpha Railway, besides being a much longer route to Abbot Point from the northern Galilee Basin, traverses through the large flood plains of the Suttor and Bogie Rivers, which pose serious challenges for construction and maintainability of a heavy haul rail operation. Further, uncertainty with regard to timeframes and commitments around construction of the Alpha Project are a constraint to adoption of this proposal.

- Aurizon Central Queensland Integrated Rail Project

Aurizon is seeking to develop an integrated rail system to service existing and proposed coal mines in the Galilee Basin. The rail system seeks to design a supply chain solution to haul coal from the Galilee Basin to relevant export terminals as efficiently as possible. The proposed Central Queensland Integrated Rail Project alignment is a narrow gauge solution connecting to already congested and less scalable network on the Newlands system. Moreover, the proposed Central Queensland Integrated Rail is a much longer, and therefore less cost-effective, route to Abbot Point, besides being an operationally

less efficient narrow gauge system as compared to the heavy haul standard gauge proposed for the NGBR Project.

Opportunities to consolidate the Aurizon and Adani alignments have been explored; however, due to uncertainty with regard to Aurizon's development timelines, in addition to the above technical aspects, Adani has decided to propose the much shorter and standard gauge NGBR Project.

1.6.3 Do nothing

The development of the proposed NGBR Project will provide a much awaited transport solution to the vast thermal coal reserve in Galilee Basin and shall open a gateway to the development of Queensland's economy via the export of vast volumes of thermal coal through the Port of Abbot Point. The 'do nothing' option will result in increased traffic on Aurizon's Goonyella and Newlands rail systems and thus increase the 'bottleneck' situation currently being experienced on the existing rail system near Moranbah and will subsequently result in the need for an upgrade to a much larger section of the rail line with associated social and environmental disturbances. The transportation of such a large quantity of coal over the much longer narrow gauge route would increase costs of producing the thermal coal, which in turn reduces the cost-competitiveness of Galilee basin coal in the global market.

2. Project Description

2.1 Overview

The NGBR Project will involve the development of an approximately 300 km long standard gauge greenfield rail line from the proposed Carmichael Project's dual gauge line in the vicinity of Mistake Creek and heading northwards to connect with supporting infrastructure (including rail loop/s and port infrastructure) at the Port of Abbot Point. The proposed NGBR Project Line will provide a more direct route to the Port of Abbot Point, reducing projected capacity constraints on the Goonyella and Newlands rail systems.

For investigative purposes, and to allow for the avoidance of and/or minimise potential impacts on environmentally sensitive areas, a broad (1000 m wide) investigation corridor has been identified. The final alignment will be refined to a nominal 100 m wide corridor through consideration of environmental, social and geotechnical constraints.

The final corridor will accommodate all rail infrastructures, scalable to accommodate 100 Mtpa product coal transport, including but not limited to passing loops, a maintenance road, rolling stock maintenance (provisioning, fuel storage and refuelling, maintenance, etc.), water supply and pipeline, track and signalling maintenance facilities, staff crib, accommodation and training facilities and other necessary infrastructure associated with the operational functions of the Project.

Temporary construction facilities are expected to include, but not be limited to laydown areas, construction depots (warehousing, fuel storage, vehicle storage, administration facilities, etc.), sleeper manufacturing yards, construction accommodation camps, quarries and borrow pits, access tracks into the corridor and other necessary infrastructure associated with the construction functions of the Project, as required. Some temporary construction related facilities (for example, a number of laydown areas, temporary construction camps, quarries, borrow pits and access tracks into the corridor) and some permanent operations related facilities (for example, rolling stock maintenance, provisioning and marshalling yards, fuel storage and transportation facilities including maintenance access tracks into the corridor) may require additional footprints adjacent to the corridor. While these temporary and permanent facility areas have the potential to be located beyond the final corridor, the facilities are key components of the NGBR Project and therefore will require assessment and conditions sought as part of the EIS. The final footprint of the Project, including all temporary and permanent facility areas (both within and outside of the final rail corridor), and impacts associated with construction, operation and maintenance will be assessed in the EIS.

The Project will comprise a standard gauge rail line with an operational capacity of up to 100 Mtpa. This allows for connection to Adani's proposed Carmichael Project railway line. It will also make provision for use by third parties within the Galilee Basin.

The NGBR Project has been developed to largely align with the intent of, and thereby satisfy, the Queensland Government's 'Preferred Corridors Policy' announced in June 2012. This policy calls for all proposed railways, that join the Galilee Basin coal reserves with the existing rail network and/or Central Queensland coal export ports, to align with two preferred corridors; one aligned north-south and one aligned east-west. The NGBR Project constitutes an alignment consistent with the intent of a north-south 'preferred corridor', terminating at the east-west Carmichael Project rail infrastructure around Mistake Creek in the south and Abbot Point in the north, and provides a more direct and shorter route to the growing export facilities at the Port of Abbot Point. Should the recently publicised GVK-Hancock and Aurizon partnership proceed, which appears in recent media announcements to indicate a desire on Aurizon's part to

leverage its existing narrow gauge system rather than creating greenfield standard gauge capacity, this would mean the NGBR is a unique standard gauge solution for the Galilee Basin in the long term and does not conflict with the GVK-Hancock and Aurizon partnership solution.

The Carmichael Project rail infrastructure alignment, on the other hand, is predominantly consistent with the intent of the east-west 'preferred corridor' (providing direct access to the Port of Hay Point (Dudgeon Point expansion)). As a result, it meets with the existing Goonyella rail system south of Moranbah. The eastern portion of the Carmichael Project rail infrastructure is required, in addition to development of the NGBR, to enable transport of Adani and third-party user product coal directly to the Port of Hay Point (Dudgeon Point expansion) from the northern Galilee Basin.

Watercourses crossed by the NGBR Project investigative corridor include major waterways (including the Bowen River, Bogie River, Elliot River, Pelican Creek, Suttor River) and several smaller creeks and ephemeral water bodies. The NGBR Project will be built at the desired flood immunity level, currently expected to be the 100 year Average Recurrence Interval flood level to top of rail (to be finalised during detailed design and may increase for certain bridges and structures).

The investigative corridor intersects a number of major roads, including the Bruce Highway, Suttor Developmental Road, Bowen Developmental Road, Gregory Developmental Road, Kilcummin-Diamond Downs Road, Cerito Road, Strathmore Road and Strathalbyn Road. It can be expected that other minor roads, tracks and internal accesses will also be traversed. Crossing treatments are expected to be a combination of grade-separated and at-grade crossings, dependent on the level of risk, level of traffic, nature and size of the road being traversed. Six stock routes are also expected to be intersected.

A detailed assessment of the crossings required in this regard will be undertaken as well as an analysis of any expected impacts to the associated environmental values; these will be discussed in the EIS.

Dust and noise control measures will be incorporated into the design to minimise impacts on communities and ecosystems alongside the rail corridor. Similarly, detailed assessment of these impacts will be incorporated into the EIS, as well as any proposed mitigation measures.

2.2 Construction

2.2.1 Construction Activities

The following construction activities are likely to be undertaken on the Project and will be assessed in the EIS:

- Site preparation including site clearance, establishing a number of temporary construction camps and a number of laydown areas (for the purposes of: materials laydown, warehousing, concrete sleeper manufacturing plant, fuel storage and dispensation facilities, concrete batching plant, machinery storage, etc.), installation of temporary and permanent fencing, installation of drainage and water, stormwater and wastewater management controls and construction of site access;
- Civil works including bulk earthworks, black soil treatment, construction of cuts and embankments, installation of permanent drainage controls, construction of temporary haul roads, establishment of concrete batching plants, bridge and watercourse crossing construction, development of quarries and borrow areas, and construction of permanent rolling stock maintenance, provisioning and marshalling yards. The temporary haul roads will be used during construction for the transport of materials (including: bulk earthworks,

quarry material for ballast, rail, sleepers and fixings, water for dust suppression, etc.) and personnel along the alignment;

- Identification and establishment of water supply infrastructure. A number of options will be investigated for construction water supply such as: the use of creeks and rivers near to the alignment; construction of bores; use of existing storages such as dams that can be enlarged to increase capacity and rainfall harvesting; the construction of new dams along the alignment; and the use of recycled, potable and/or raw water from proximate townships tankered to site;
- Track works including installation of the rail, passing loops, and bad order sidings, signalling installation, communication backbone, and maintenance infrastructure facilities for track, signalling and emergency management system; and
- Haulage and transport of Project equipment, machinery, material and resources and personnel, respectively, on both internal temporary haul roads and the external road network.

The Project will also require the establishment of a maintenance access track within the proposed final corridor. The final location and design of the maintenance access track will be determined as part of the final detailed design and will be assessed in the EIS.

2.2.2 Construction workforce

Construction of the NGBR Project is expected to employ a workforce of approximately 3800 construction staff at peak. Staff will be accommodated at temporary construction workers camp(s) along the alignment. Staff will be transported to and from the construction sites by means of four wheel drive vehicle and/or bus.

2.3 Operations

2.3.1 Railway Operation Characteristics

It is intended that the NGBR Project will operate standard gauge diesel-electric trains with around 240 wagons and four locomotives, resulting in train lengths of approximately 4,500 m and payloads of around 25,000 tonnes. Final train consist arrangements are subject to refinement and will be nominated during detailed design.

Operational capacity will be in the order of 100 Mtpa product to enable haulage of product from the Carmichael Mine and third party producers in the Galilee Basin.

Trains are expected to run 24 hours per day, year round. Trains will operate at a maximum speed of 80 km per hour when fully loaded. Conceptual operational regimes will be assessed in the EIS to determine potential impacts, in particular on air and noise sensitive receptors.

2.3.2 Operational workforce

The number of train drivers required will vary depending on the cycle time, which is inherently driven by the design specification for the NGBR Project and capacity of other lines on the existing system. Approximately 125 employment opportunities will arise as a result of operation of the Project.

For the NGBR Project operations, it is anticipated that the majority of the mainline train crew will be based out of Bowen and would work in shifts while staying at the workers accommodation village at the proposed Carmichael Mine, then return to the Port of Abbot Point.

2.3.3 Signalling and Communication

The signalling requirements for the NGBR Project will consist of a remote control signalling system with standard technology, which shall be upgraded to in cab signalling as traffic increases. It is proposed that a dedicated train control centre in Brisbane will be developed for controlling train operations, with a backup control centre at the mine end.

2.3.4 Maintenance

Generally track maintenance requirements can be split into three distinct categories:

- Routine Maintenance;
- Major Periodic Maintenance; and
- Emergency Response.

Maintenance teams will require facilities that are suitable to make routine maintenance cost effective, and are also able to support the major periodic maintenance or any emergency response requirements should they arise. In this regard, it is intended that the maintenance crews will utilise the rolling stock maintenance, provisioning and marshalling yards developed for the NGBR Project. It is expected that these facilities will be located toward the northern end of the investigative corridor, near to the Port of Abbot Point to minimise travelling time for the workforce and the transportation time and cost for equipment and fuel.

3. Existing Environmental Values and Potential Impacts

3.1 Introduction

Environmental impacts associated with the NGBR Project are those that may result from the construction and operation of the rail line and its associated activities.

The following overview of the existing environment and an initial assessment of potential impacts have been based on desktop derived information or studies within the NGBR Project's investigative corridor 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.

It is expected that the most likely potential impacts associated with the construction of the NGBR Project will be land clearance (affecting flora, fauna and ecological communities), transport (affecting State and local road network) and water resources (affecting surface and groundwater resources for water supply, construction of watercourse crossings, and floodplain hydrology). It is expected that the most likely potential impacts associated with the operation of the NGBR Project will be land use (bisection of properties) and water resources (floodplain hydrology). A hierarchical approach to managing impacts will be employed for the Project, being in order of preference: avoidance, mitigation and offsetting.

The NGBR Project is expected to have potential for impacts on Commonwealth matters of National Environmental Significance (MNES). As a result, Adani intend to lodge a referral to the Commonwealth's Department of Sustainability, Environment, Water, Populations and Community (DSEWPaC) under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). It is expected that the NGBR Project will be considered a controlled action requiring further assessment via an EIS. The EIS is expected to be assessed in accordance with the bilateral agreement between the State of Queensland and the Commonwealth.

3.2 Climate

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 (EMP) will be developed for the construction and operation stages of the NGBR Project to appropriately manage and mitigate relevant greenhouse gas and climate change impacts.

3.3 Land

3.3.1 Land Use and Tenure

Development of the NGBR Project comprises the construction and operation of a dedicated greenfield standard gauge rail line and associated infrastructure such as a maintenance access road and temporary construction utilities (for example, construction camps, depots, quarries, batching plants, sleepers manufacturing plant, material handling laydown areas and water supply infrastructure).

The NGBR Project will traverse an area typically covered by farmland, predominantly livestock grazing and also traverses the Abbot Point State Development Area and Strategic Port Land in the vicinity of Abbot Point. One gas and one water pipeline and a number of high voltage power line easements are expected to be crossed. Six stock routes will be traversed by the Project and may be affected (including: U321BOWN01, U398BOWN04, U398BOWN05, U409BOWN02, U402BOWN01 and U403BOWN02). Disruption to and/or augmentation of access between and within large farming properties may be required. Absolute care shall be taken during design of the rail corridor to minimise impacts on the existing stock route, accesses, and other infrastructure.

The proposed rail corridor traverses lands administered by two tiers of government (local and State). The NGBR Project is primarily located within the Regional Landscape and Rural Production Area designation under the *Mackay, Isaac and Whitsunday Regional Plan 2012*, with a small area of Urban Footprint designation towards Abbot Point.

Eighty-seven land lots have been identified as being directly impacted by the proposed 1000 m investigative corridor as listed in Table 3-1. However, as the development of the corridor progresses, this will be optimised to a 100 m wide corridor to minimise the number of land parcels and associated potential impacts on landholders and land use practices. Adani shall seek land access to all the said properties for investigative purposes through mutual voluntary agreement.

Table 3-1 NGBR Project Property Tenure (1000 m investigative corridor)

Lot on Plan	Current Tenure	Lot on Plan	Current Tenure
Lot 05 on DK103	LL	Lot 3 on RP748510	FH
Lot 1 on DK150	LL	Lot 3 on SB236	LL
Lot 1 on DK244	LL	Lot 3 on SB514	LL
Lot 1 on RP705785	FH	Lot 3 on SP132678	LL
Lot 1 on RP737838	FH	Lot 3 on SP194889	FH
Lot 1 on RP748508	FH	Lot 3 on 235PH752	LL
Lot 1 on RP748509	FH	Lot 33 on SP253263	FH
Lot 1 on RP748510	FH	Lot 335 on SP227560	LL
Lot 1 on RP748511	FH	Lot 336 on SP227560	LL
Lot 1 on RP748512	FH	Lot 355 on K124696	FH
Lot 1 on RP748625	FH	Lot 36 on USL44985	SL
Lot 1 on RP748626	FH	Lot 38 on 21PH1304	LL
Lot 1 on RP748627	FH	Lot 3821 on PH1304	LL
Lot 1 on SB279	LL	Lot 4 on SB687	LL
Lot 10 on BL49	LL	Lot 4 on SP116046	LL
Lot 10 on BL49	LL	Lot 4 on SP171921	LL
Lot 10 on DK17	FH	Lot 4 on SP194889	FH
Lot 13 on SP232519	FH	Lot 44 on HR1599	LL
Lot 14 on SB438	LL	Lot 47 on HR1607	LL
Lot 151 on SP122338	LL	Lot 47 on SP227557	LL
Lot 1510 on SP171920	LL	Lot 5 on DC90	FH
Lot 152 on SP122339	LL	Lot 5 on DK17	FH
Lot 17 on DK68	FH	Lot 5 on RP705781	FH
Lot 1943 on SP221555	LL	Lot 5 on SP194888	FH
Lot 2 on HR1033	FH	Lot 50 on HR1931	FH

Lot on Plan	Current Tenure	Lot on Plan	Current Tenure
Lot 2 on HR1724	FH	Lot 5047 on PH370	LL
Lot 2 on RP738758	FH	Lot 5086 on SM100	LL
Lot 2 on RP745292	FH	Lot 5088 on SM101	LL
Lot 2 on RP748511	FH	Lot 51 on HR1931	FH
Lot 2 on RP748512	FH	Lot 51 on SP243724	FH
Lot 2 on RP748625	FH	Lot 53 on SP243724	FH
Lot 2 on RP748626	FH	Lot 56 on SP243724	FH
Lot 2 on RP748627	FH	Lot 58 on SP243726	LL
Lot 2 on SP147334	FH	Lot 6 on DK17	FH
Lot 24 on RP804256	FH	Lot 6 on SP194888	FH
Lot 24 on RP805036	FH	Lot 618 on PH2106	LL
Lot 26 on SP220411	LL	Lot 62 on SP195387	LL
Lot 3 on DC91	FH	Lot 667 on PH1321	LL
Lot 3 on HR1686	FH	Lot 7 on DK17	FH
Lot 3 on HR1711	FH	Lot 80 on K12450	FH
Lot 3 on HR1712	FH	Lot 86 on DK154	LL
Lot 3 on RP737838	FH	Lot 9 on DK17	FH
Lot 3 on RP748508	FH	Lot B on AP20323	LL
Lot 3 on RP748509	FH		

NB: LL = Leasehold, FH = Freehold, SL = Unallocated State Land

As shown in Table 3-2, the proposed 1000 m investigative corridor traverses tenements comprising exploration permits for coal (EPCs), exploration permits for minerals (EPMs) and a petroleum pipeline licence (PPL). However, the NGBR Project is not expected to cross any Mining Lease or Mineral Development Licence areas.

Table 3-2 NGBR Project Tenements (1000 m investigative corridor)

Tenure type and number	Holder name	Status (as at 26 June 2012)
PPL89	North Queensland Pipeline No 1 PTY LTD	Granted
EPM11147	Conquest Mining Pty Ltd	Granted
EPM12527		Granted
EPM13867		Granted
EPM15805		Granted
EPM18568		Granted
EPM14171	Basin Gold Pty Ltd	Granted
EPM14928	Drummond West Pty Ltd	Granted
EPM14933		Granted
EPM16440		Granted
EPM16446		Granted
EPM16527		Application
EPM15485	Energy Minerals Pty Ltd	Granted
EPM17703	Zamia Resources Pty Ltd	Granted
EPM18271	Liontown Resources Pty Ltd	Granted
EPM18297	Navaho Gold Limited	Granted
EPM18336		
EPM18469	Natural Resources Exploration	Granted

Tenure type and number	Holder name	Status (as at 26 June 2012)
EPM19087	Barlyne Mining Pty Ltd	Granted
EPM18444	NQM Gold 2 Pty Ltd	Application
EPM19293	Gold Fields Australasia Pty Ltd	Application
EPC586	Bowen River Coal Pty Ltd	Granted
EPC639	Pelican Creek Coal Pty Ltd	Granted
EPC739	Byerwern Coal Pty Ltd	Granted
EPC768	Rosella Creek Coal Pty Ltd	Granted
EPC773	Xstrata Coal Queensland Pty Ltd	Granted
EPC968	Argos (Qld) Pty Ltd	Granted
EPC1021	Conarco Minerals Pty Ltd	Granted
EPC1320	North Coal Pty Ltd	Granted
EPC1518	Endo Coal Pty Ltd	Granted
EPC1590		
EPC2169	Queensland Coal Investments Pty Ltd	Granted
EPC1321	Brothers Mining Pty Ltd	Application
EPC2401	Civil and Mining Resources Pty Ltd	Application
EPC2446		
EPC2451		
EPC2500		

The EIS will involve consultation and information sessions with each landholder and other stakeholders as relevant (for example, Isaac and Whitsunday Regional Councils) and appropriate mitigation measures will be implemented accordingly. Adani has commenced notifying tenement and land holders of the proposed NGBR Project and has commenced discussions with regard to land access for investigation purposes. Potential impacts on the *Mackay, Isaac and Whitsunday Regional Plan 2012* and the Isaac and Whitsunday Regional Councils' relevant local planning schemes (Belyando and Nebo Shire Planning Schemes – Isaac Regional Council, Bowen Shire Planning Scheme – Whitsunday Regional Council) will be further identified and assessed in the EIS.

A desktop review has been undertaken to identify exploration activities within these tenements and to assess the likelihood and/or potential that a significant resource deposit exists within the area. The EIS will investigate the potential for sterilisation of these resources (if any) and recommend appropriate mitigation measures.

3.3.2 Native Title

The Native Title Act 1993 recognises the rights and interests of Indigenous people under their traditional laws and customs. A Native Title search has been undertaken on properties potentially impacted by the investigative corridor. The search indicated that part of the proposed corridor is located within the external boundaries of the Jangga People (QUD6230/98, QC98/10), Birri People (QUD6244/1998, QC98/12), Juru People (QUD554/2010, QC10/5) and Juru People No.2 (QUD07/2012, QC12/1) registered native title claims. Adani is in discussions with the Jangga People regarding the Carmichael Project and the NGBR Project. Indigenous Land Use Agreements and extinguishment assessments will be progressed with all relevant native title claimants. Adani will continue to engage with the Jangga, Birri and Juru Peoples, and any others as identified.

3.3.3 Topography, Geology and Soils

The topography traversed by the NGBR Project varies across the proposed investigative corridor, however, is dominated by gentle undulating slopes with slight rises and shallow depressions. In addition, the NGBR Project traverses the Leichardt Range in the south and the Clarke Range in the north. The final corridor will intersect a number of waterways and smaller ephemeral streams.

The NGBR Project traverses some areas currently mapped as being Good Quality Agricultural Land and/or Strategic Cropping Land (trigger area). However, the extent of impact on these mapped areas has been minimised during alignment option assessment and refinement, and will be further addressed in the corridor optimisation process during EIS.

A desktop assessment has been undertaken and reveals that the investigative corridor is dominated by low relief, broad to very broad plains of alluvium, black soils, grey clays and sandy red and yellow soils, with low to high relief folded hills and strike-ridges of resistant rocks, such as volcanic ignimbrite, rhyolites, granites, basalt and lower elevation sedimentary rocks including sandstones and siltstones. Geological assessments and engineering will be conducted throughout the EIS to ensure rail design and construction is undertaken in accordance with underlying geological conditions.

Rail construction activities, particularly clearing and earthworks, have the potential to expose erosive and dispersive 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 investigation based on desktop material will also be undertaken to identify potential reactive cracking clay soils, dispersive, erosion prone soils, potential acid sulphate soils and saline soils that may need to be managed during construction. The EMP will identify requirements relating to management measures required as a result of sedimentation, drainage, acidification and erosion.

The Project has the potential to impact agricultural land mapped as being of good quality within the footprint of the alignment, and has the potential to fragment land parcels leading to a reduction and loss of access to agricultural land. The EIS will investigate potential impacts and provide mitigation and management measures to minimise impacts.

Rehabilitation strategies for the NGBR Project 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.

3.3.4 Visual Amenity

The region surrounding the Project is predominantly rural in character.

A detailed visual amenity impact assessment and development of appropriate mitigation measures will be undertaken as part of the EIS process. Community consultation conducted as part of the NGBR Project and the development of the rail corridor will seek to minimise impacts on visual amenity.

3.4 Nature Conservation

3.4.1 Overview

Desktop searches were undertaken within a 10 km buffer of the investigative corridor to gain an understanding of the potential occurrence of important flora and fauna and ecological

communities within and adjacent to the proposed Project's alignment. This considered potentially sensitive environmental areas, flora, fauna and aquatic ecosystems.

3.4.2 Ecological Communities and Regional Ecosystems

Database searches identified regional ecosystems (REs) mapped (Version 6.1, 2011) within and adjacent to the investigative corridor, as listed under the *Vegetation Management Act 1999* (VM Act) and shown on Figure 3-1. This includes three communities also listed under the EPBC Act as threatened ecological communities (TECs): Brigalow 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. The occurrence of these TECs within the investigative corridor will be verified via field survey investigations.

Areas mapped as Essential Habitat for ornamental snake (*Denisonia maculata*), *Acacia ramiflora* wattle, Magnetic Island croton (*Croton magneticus*), tall fuzzweed (*Peripleura scabra*), Dietrich's morning glory (*Bonamia dietrichiana*) and *Ozothamnus eriocephalus* lie between one and ten kilometres of the investigative corridor. At one point the edge of a buffer area surrounding Essential Habitat for *Bonamia dietrichiana* adjoins the Project investigative corridor, which will need to be addressed by the EIS.

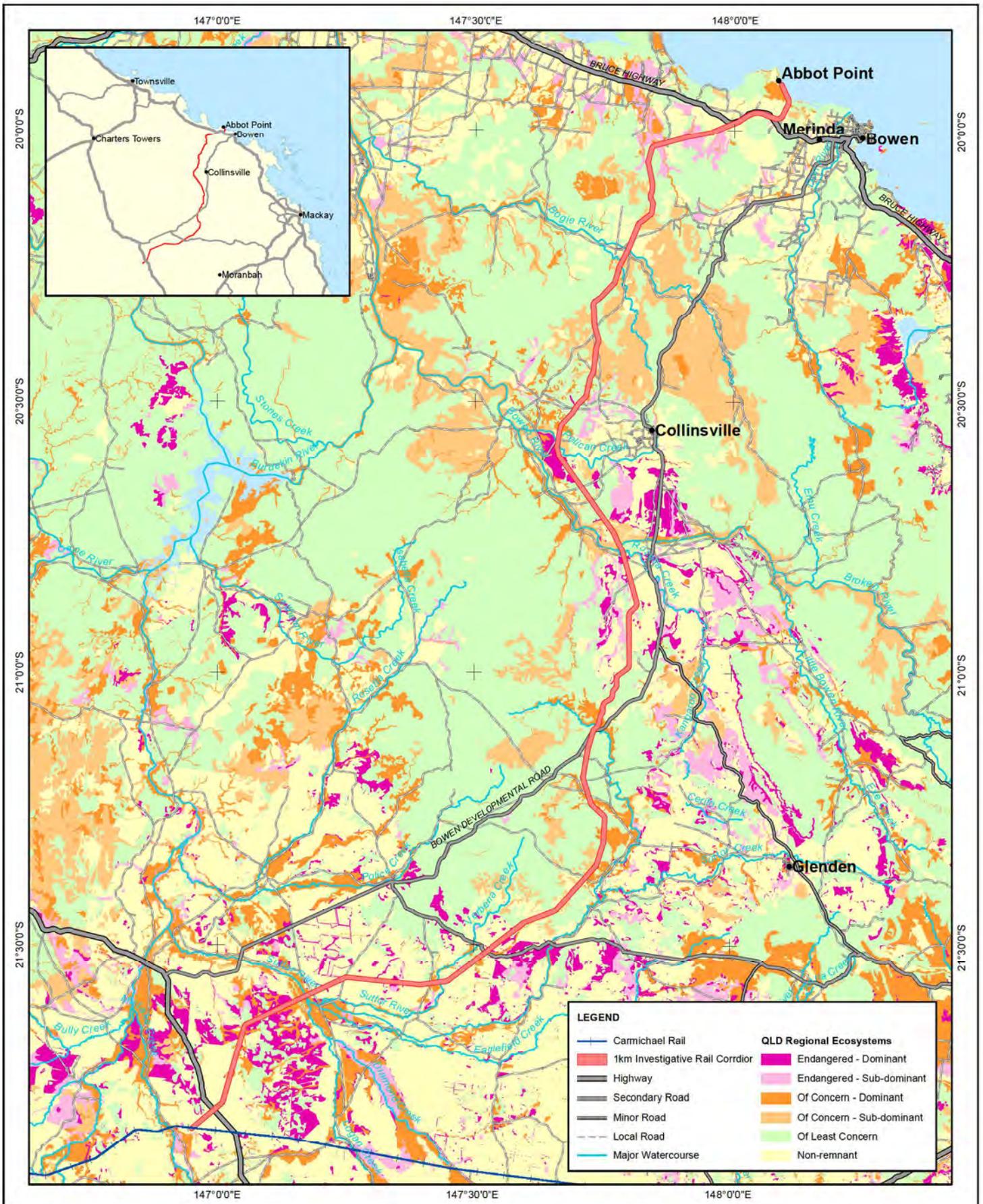
Potential impacts to vegetation communities will be associated with clearing for the rail construction as well as the potential for quality degradation by weed invasion and other secondary impacts (e.g. dust, changes in hydrology). Further studies and ground truthing will be undertaken during the EIS process to confirm which communities will be affected and to what extent.

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 REs and the 'least concern' flora within them, requiring permits under the Regional Vegetation Management Codes.

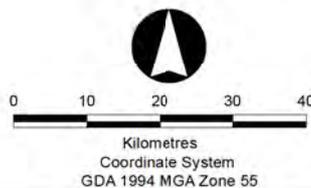
The removal of vegetation is likely to impact the biological and habitat value of the area. Particularly, this could include loss of flora and fauna habitat, restriction of fauna movement, restriction of vegetative dispersal and propagation, and increased edge effects.

Appropriate mitigation measures will be developed as part of the EIS process following detailed ecological investigations. Field verification of remnant vegetation is currently being undertaken and will be used to inform the EIS.



NOTES
Regional Ecosystems 0 1: DERM

DISCLAIMER
In preparing this map, RLMS have endeavoured to ensure that the data and information are as accurate and reliable as possible. However RLMS cannot accept liability for any decisions or actions of whatever kind or nature based on this study. RLMS expressly disclaims any loss or damage that may arise therefrom.



CLIENT ADANI MINING PTY LTD
PROJECT NORTH GALILEE BASIN RAIL (NGBR)
FIGURE 3-1 REGIONAL ECOSYSTEMS
DATE JANUARY 2013



3.4.3 Significant Features

The NGBR Project has the potential to intersect or be within the same catchment as areas protected under State and Federal legislation. No Ramsar wetlands or wetland trigger areas occur in or immediately adjacent to the investigative corridor.

There is not expected to be any direct impact on Ramsar wetlands though some disturbance within the upper catchment may occur as a result of rail creek crossings. One wetland protection trigger area is traversed by the proposed Project investigative corridor at Abbot Point. The potential for the NGBR Project corridor to have indirect impacts on three Nationally Important Wetlands (Abbot Point – Caley Valley, Great Barrier Reef Marine Park, and Southern Upstart Bay) listed within the EPBC Act protected matters search, will likewise be addressed. The Great Barrier Reef Marine Park is additionally classed as a World Heritage Property and National Heritage Place under the EPBC Act. One Commonwealth Marine Area (EEZ and Territorial Sea) and six State Reserves (Nairana (Recovery), Abbot Bay, Aberdeen, Edgecumbe Bay – Bowen, Great Barrier Reef Coast and Mount Aberdeen) fall within the EPBC protected matters 10 km buffer neighbouring, but outside of, the proposed Project investigative corridor.

All creek crossings will be considered areas of high ecological sensitivity and subject to management guidelines outlined in an EMP. Additional investigations undertaken during the EIS process will consider the NGBR 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. Should other significant features be identified during preparation of the EIS, ways to avoid, minimise and mitigate potential impacts will be identified and implemented.

3.4.4 Threatened Flora and Fauna Species

Habitats along the NGBR Project rail alignment 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), *Nature Conservation Act 1992* (NC Act) and other locally conservation significant flora and fauna. A review of databases has identified threatened flora and fauna species potentially occurring within the NGBR Project area that are listed under the NC Act and the EPBC Act as shown in Table 3-3.

Table 3-3 Threatened Flora and Fauna

Threatened species	Number of species (10 km buffer)
Flora and Fauna	
Listed under the EPBC Act	32
Listed under the NC Act	45
Total (EPBC and NC Act listed)	60

A number of other migratory and/or marine species were identified from the EPBC Act Protected Matters search; however, due to the terrestrial nature of the project these species are unlikely to be directly or indirectly impacted by development of the NGBR Project.

Results from the Queensland Wildlife Online database indicate that a total of 1954 species (24 amphibians, 316 birds, 56 mammals, 93 reptiles, 23 insects, 12 fish, 32 ferns and 1398 plants) have been historically recorded within 10 km of the investigative corridor alignment. Of these, forty-three species are listed under the NC Act and/or EPBC Act (Table 3-4).

Table 3-4 Listed Species Historically Recorded on the proposed NGBR Project

Scientific Name	Common Name	Conservation Status	
		NC Act	EPBC Act
Plants			
<i>Acacia ramiflora</i>	-		V
<i>Aristida granitica</i>	-	E	E
<i>Bonamia dietrichiana</i>	Dietrich's morning glory	NT	
<i>Bulbophyllum globuliforme</i>	miniature moss-orchid		V
<i>Cajanus mareebensis</i>	-		V
<i>Cerbera dumicola</i>	-	NT	
<i>Corchorus hygrophilus</i>	-	V	
<i>Croton magneticus</i>	Magnetic Island croton	V	V
<i>Cycas ophiolitica</i>	Marlborough blue cycad		E
<i>Dichanthium queenslandicum</i>	-	V	V
<i>Dichanthium setosum</i>	-		V
<i>Eucalyptus raveretiana</i>	black ironbox	V	V
<i>Leucopogon cuspidatus</i>	-		V
<i>Marsdenia pumila</i>	-	V	
<i>Omphalea celata</i>	-		V
<i>Ozothamnus eriocephalus</i>		V	V
<i>Paspalidium scabrifolium</i>	-	NT	
<i>Peripleura scabra</i>	tall fuzzweed	NT	
<i>Polianthion minutiflorum</i>	-	V	V
<i>Solanum sporadotrichum</i>	-	NT	
<i>Streblus pendulinus</i>	Siah's backbone, Sia's backbone, Isaac wood		V
<i>Taeniophyllum muelleri</i>	-		V
Animals			
<i>Acanthophis antarcticus</i>	common death adder	NT	
<i>Accipiter novaehollandiae</i>	grey goshawk	NT	
<i>Calyptorhynchus lathami</i>	glossy black-cockatoo	V	
<i>Chalinolobus picatus</i>	little pied bat	NT	
<i>Crocodylus porosus</i>	estuarine crocodile	V	
<i>Dasyurus hallucatus</i>	northern quoll		E
<i>Delma labialis</i>	striped-tailed delma	V	V
<i>Denisonia maculata</i>	ornamental snake	V	V
<i>Ephippiorhynchus asiaticus</i>	black-necked stork	NT	
<i>Egernia rugosa</i>	yakka skink		V
<i>Erythriotrionchis radiatus</i>	Red goshawk	E	V
<i>Esacus magnirostris</i>	beach stone-curlew	V	
<i>Fregretta grallaria grallaria</i>	White-bellied storm-petrel		V
<i>Furina dunmalli</i>	Dunmall's snake		V

Scientific Name	Common Name	Conservation Status	
<i>Geophaps scripta scripta</i>	squatter pigeon (southern subspecies)	V	V
<i>Grantiella picta</i>	painted honeyeater	V	
<i>Haematopus fuliginosus</i>	sooty oystercatcher	NT	
<i>Lerista allanae</i>	Retro slider, Allan's lerista	E	V
<i>Lerista vittata</i>	Mount Cooper striped lerista		V
<i>Lewinia pectoralis</i>	Lewin's rail	NT	
<i>Litoria revelata</i>	whirring treefrog	NT	
<i>Lophoictinia isura</i>	square-tailed kite	NT	
<i>Melithreptus gularis</i>	black-chinned honeyeater	NT	
<i>Neophema pulchella</i>	turquoise parrot	NT	
<i>Neochmia ruficauda ruficauda</i>	Star finch (eastern), star finch (southern)	E	E
<i>Nettapus coromandelianus</i>	cotton pygmy-goose	NT	
<i>Ninox rufa queenslandica</i>	rufous owl (southern subspecies)	V	
<i>Numenius madagascariensis</i>	eastern curlew	NT	
<i>Paradelma orientalis</i>	brigalow scaly-foot	V	V
<i>Phascolarctos cinereus</i>	koala	SLC	V
<i>Poephila cincta cincta</i>	black-throated finch (white-rumped/southern subspecies)	E	E
<i>Rhinolophus philippinensis</i>	greater large-eared horseshoe bat	E	E
<i>Rostratula australis</i>	Australian painted snipe	V	V
<i>Sternula albifrons</i>	little tern	E	
<i>Stictonetta naevosa</i>	freckled duck	NT	
<i>Tadorna radjah</i>	radjah shelduck	NT	
<i>Taphozous australis</i>	coastal sheath-tail bat	V	
<i>Xeromys myoides</i>	Water mouse, false water rat		V

Legend: V = vulnerable E = endangered NT = near threatened SLC = special least concern

Additional investigation will be undertaken during the EIS process and will consider the NGBR 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 ground truthing 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. Such measures may include reduction of vegetation clearing extent in areas of high ecological significance to the greatest extent possible. Where impacts are unavoidable and cannot be further reduced an offset strategy will be prepared.

3.4.5 Pest Flora and Fauna Species

A number of pest flora and fauna species are known to inhabit the region where the Project is proposed, including declared species under the *Land Protection (Pest and Stock Route*

Management Act 2002. Pest flora species that may occur in the Project area include prickly pear (*Opuntia* sp.), harrisia cactus (*Harrisia martini*), prickly acacia (*Acacia nilotica*), Rubber vine (*Cryptostegia grandiflora*), lantana (*Lantana camara*), giant sensitive plant (*Mimosa pigra*), parkinsonia (*Parkinsonia aculeata*) and parthenium (*Parthenium hysterophorus*). Pest fauna species that may occur in the Project area include the pig (*Sus scrofa*), dog (*Canis familiaris*), cat (*Felis catus*), European fox (*Vulpes vulpes*), and European rabbit (*Oryctolagus cuniculus*). Further studies will be undertaken in the EIS to further identify and assess impacts on relevant pest species.

EMPs will be developed during the EIS for construction (CEMP) and operation of the NGBR Project. The EMPs will include requirements for the management and control of pest species, for example through the development of a weed seed and plant material hygiene procedure for the movement and wash-down of plant and equipment, and similar procedures as deemed necessary to prevent the spread of pest fauna species.

3.5 Water Resources

3.5.1 Surface Waterways

The landscape of the rail corridor is characterised by a combination of flat floodplains dominated by a number of creeks which have reasonably well defined channels but with wide floodplains that are inundated during flood events, and steeper undulating terrain associated with the Leichardt and Clarke Ranges. A number of nationally important wetlands are located in proximity of the project including the Caley Valley wetland (at Abbot Point) and other wetlands associated with the Great Barrier Reef Marine Park, and the Bowen River: Birralee – Pelican creek aggregation.

Watercourses crossed by the investigative corridor include major waterways (including the Bowen River, Bogie River, Elliot River, Pelican Creek, Suttor River) and several smaller creeks and ephemeral water bodies. Detailed assessments of all watercourse 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 upstream and downstream catchments and local aquatic habitats. The low-lying nature of some rail corridor sites necessitates studies on surface water hydrology and water quality. These will be undertaken as part of the EIS in accordance with relevant guidelines and policy (such as recommendations in the *Queensland Floods Commission of Inquiry: Final Report* dated 16 March 2012).

Surface water hydrology studies will review any potential impact of flooding on the rail line. Hydraulic modelling will be undertaken for pre- and post-development conditions as appropriate to assess potential impacts as a result of changes in afflux which may affect adjoining and nearby land uses/users, as well as floral and faunal communities in the affected areas. Types of waterway crossings and possible stream diversions will also be identified during this stage. An EMP informed by design will be developed to detail procedures and measures to mitigate potential water-quality impacts.

3.5.2 Groundwater

Groundwater investigations will be undertaken as part of the EIS process to discuss existing water resources and the potential impact that the rail infrastructure could have on these

resources during both construction and operation phases of the rail line. The procedures for the management of these impacts will be discussed as part of the EIS.

3.6 Air Quality

An assessment of the existing and potential air quality will be undertaken as part of the EIS process.

The areas surrounding the NGBR Project are predominantly rural in character, supporting grazing and other agricultural activities. Air emissions are likely to be dust generated through cattle-raising, cultivation and harvesting activities, and exhaust emissions from rural machinery. 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. Dust generation will be addressed in the CEMP, and minimised during construction and operational phases using appropriate dust suppression and control techniques.

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 cause impacts; however, this will be investigated in more detail in the EIS.

3.7 Greenhouse Gas Emissions

Construction and operation of the Project 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 EMP 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.

3.8 Noise and Vibration

The existing noise and vibration environment is considered typical of rural areas.

During construction of the rail there will be an increase in vehicle movements along the corridor due to transport of infrastructure materials, construction personnel and associated equipment. The increased vehicle movements have the potential to generate noise audible on occasion from nearby properties. Other construction-specific activities, such as clearing and filling also have the potential to increase ambient noise levels.

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 noise and vibration assessment will be undertaken as part of the EIS process.

Furthermore, the potential for vibration impacts during both construction and operation are expected to be minimal.

3.9 Waste

The waste generated by the NGBR Project will predominantly be associated with the construction phase activities. The types of waste generated by construction activities is likely to include grubbed vegetation and stockpiled topsoil for reuse in rehabilitation activities, as well as

domestic wastes associated with operation of the construction camp, sleeper manufacturing plant, etc. which are planned to be transported to existing local licenced waste disposal facilities. Wastewater is planned to be treated in an onsite package treatment plant with treated effluent reused for dust suppression or otherwise disposed to land via irrigation and treatment sludge disposed to existing local licenced waste disposal facilities.

The Project EMP developed during the EIS will incorporate waste management measures and procedures.

3.10 Transport

The NGBR Project will intersect with the Bruce Highway, Suttor Developmental Road, Bowen Developmental Road, Gregory Developmental Road, Kilcummin-Diamond Downs Road, Cerito Road, Strathmore Road and Strathalbyn Road. Other minor roads and tracks will likely also be traversed. Crossing treatments are expected to be a combination of grade-separated and at-grade crossings, dependent on the nature and size of the road being traversed.

A traffic impact assessment 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.

Construction of the NGBR Project will also require local and State-controlled roads to be traversed for the transport of materials (including bulk earthworks, quarry material for ballast, rail, sleepers and fixings, water for dust suppression, etc.) and personnel to/from and along the alignment. Logistical transport corridors and traffic impacts will be further refined and assessed during development of the EIS. It is expected that standard management practices, such as a Road Use Management Plan with the relevant road authorities, will be incorporated into the Project EMP to be developed during the EIS.

3.11 Rail, Ports and Other Infrastructure

3.11.1 Rail

The northern section of the NGBR Project will cross the Aurizon North Coast Line and interact with other rail infrastructure in the vicinity of Abbot Point. Crossings of all other rail infrastructure are expected to be grade-separated.

The southern section of the NGBR Project will also adjoin the Carmichael Coal Mine and Rail Project's rail infrastructure around Mistake Creek. The design of rail infrastructure for the Project is expected to be similar to, and compatible with, the design of the Carmichael Project's rail infrastructure, with capacity of each of the two projects at the point of intersection being the same (100 Mtpa). The NGBR Project is being proposed as a means of enabling product coal from the Carmichael Mine to be transported directly to the Port of Abbot Point, avoiding the already constrained (particularly in proximity to Moranbah) and at-capacity Aurizon Goonyella and Newlands rail systems. Therefore, the NGBR Project has the potential to reduce impacts on the Goonyella and Newlands rail systems associated with the Carmichael Project.

A number of other rail projects are currently proposed in proximity to the Project. Adani has considered these projects as alternatives to the NGBR Project (refer Section 1.6.2); however none are considered feasible due to the timeframes and uncertainty regarding development of these projects, besides other associated technical issues.

Potential impacts from the NGBR Project on existing and proposed rail infrastructure will be further identified and assessed during the EIS. Various mechanisms to avoid, mitigate and manage impacts will be identified in the EIS, which may include additional sections within the Project EMP and/or infrastructure agreements or memoranda of understanding with various infrastructure managers or proponents.

3.11.2 Ports

The NGBR Project will facilitate transport of product coal from the Carmichael Mine and other third-party user facilities to coal export facilities at the Port of Abbot Point. However, the east-west Carmichael Project rail infrastructure shall facilitate transportation of coal to the Port of Hay Point (Dudgeon Point expansion).

Ports expansion projects are currently being investigated and developed at both the Port of Abbot Point and Port of Hay Point, including the following on behalf of Adani:

- Abbot Point Coal Terminal 0 (T0) Project, a new initially 35 Mtpa and ultimately 70 Mtpa Terminal for Adani Abbot Point Terminal Pty Ltd; and
- Dudgeon Point Coal Terminals Project (a significant (now coordinated) project under the SDPWO Act), 180 Mtpa expansion by North Queensland Bulk Ports Corporation for Adani Mining Pty Ltd (90 Mtpa) and Dudgeon Point Project Management Pty Ltd (90 Mtpa).

Further information on these projects is available on the North Queensland Bulk Ports Corporation's website at www.nqbp.com.au, and DSEWPaC's website at <http://www.environment.gov.au/epbc/recent-notice.html>.

Various mechanisms to avoid, mitigate and manage impacts will be identified in the EIS, which may include additional sections within the Project EMP and/or infrastructure agreements or memoranda of understanding with various infrastructure managers or proponents.

3.11.3 Other Infrastructure

Due to the nature of the NGBR Project, a linear railway infrastructure development, it is not anticipated that the NGBR Project will require substantial external infrastructure beyond the construction phase, except the rolling stock maintenance and loco fuel storage facilities.

Construction of the NGBR Project is expected to require temporary construction camps, local power generation (via onsite generators), local water supply (via existing and new bores and surface water storages in the locality), and communications (predominantly UHF and VHF radio transmissions in addition to the 3G mobile telephonic network).

Potential impacts from the NGBR Project on existing and proposed infrastructure will be further identified and assessed during the EIS. Various mechanisms to avoid, mitigate and manage impacts will be identified in the EIS, which may include additional sections within the Project EMP and/or infrastructure agreements or memoranda of understanding with various infrastructure managers or proponents.

3.12 Indigenous Cultural Heritage

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 CHMPs. The Act states that where an EIS is required under a

legislative framework then a CHMP must be prepared to manage all aspects of cultural heritage for the construction and operation of the NGBR project.

Cultural heritage investigations for the Project have commenced. Adani has executed a Cultural Heritage Management Plan (CHMP) with the Jangga People with regard to the Carmichael Project and it is expected that this will be extended across the southern portion of the NGBR Project. A CHMP will be developed with other affected traditional owners, which are expected to include the Birri, Juru and Juru No. 2 Peoples. Adani has commenced consultation with the four Aboriginal parties for the NGBR Project Corridor in accordance with the Act. Further negotiations and investigations will be undertaken during the EIS process and matters addressed in accordance with the provisions of the *Aboriginal Cultural Heritage Act 2003* as appropriate. Appropriate strategies for the management of known indigenous cultural heritage items or places, as well as management of unplanned finds, will be included in the Project EMP.

3.13 European Cultural Heritage

Preliminary searches of public databases do not indicate the presence of European heritage sites within the NGBR Project corridor. Further investigations will be undertaken during the EIS and appropriate avoidance, mitigation and management strategies will be developed for identified known European heritage sites and management of unplanned finds. Management strategies will be included in the Project EMP.

3.14 Social Values

The most significant townships in the vicinity of the NGBR Project are Moranbah and Glenden within the Isaac Regional Council area and Bowen and Collinsville in the Whitsunday Regional Council area. The region is presently dominated by rural and agricultural activities (primarily livestock grazing) and increasing activity associated with mining projects and other resource-related developments. The resources sector accounts for a significant proportion of direct and indirect employment opportunities regionally.

Further studies will be undertaken with respect to direct and indirect impacts at a regional and state level. The NGBR Project is not expected to have significant direct impacts on social amenities and services in the vicinity of the area.

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 (relative to the scale of the NGBR Project) 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 operations.

Various mechanisms to avoid, mitigate and manage impacts will be identified in the EIS, which may include additional sections within the Project EMP or other management plan and/or

through other mechanisms identified in conjunction with the Social Impact Assessment Unit of the Coordinator-General's Office.

3.15 Economic Values

Due to the prevalence of both agrarian and resource based sectors in the region, economic values are reliant on both sustaining agricultural primary production and growth in resources-related activities.

It is anticipated that the NGBR Project development will require a total investment of approximately \$2.2 billion. The railway is expected to employ approximately 3800 people during construction (at peak) and a permanent work force (train crew) of approximately 125 people.

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.

Potential impacts on land values and property management processes of affected landholdings will be identified and assessed in the EIS. Mitigation measures will be identified (such as sufficiently spaced stock and private crossings to minimise impacts on property management practices) and commitments made to implementation.

4. Environmental Risk Management

4.1 Project Environmental Management System

An Environmental Management System (EMS) for the NGBR 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 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.

4.2 Project Environmental Management Plan

A NGBR 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 NGBR Project EMP are to:

- Define the management structure of the NGBR Project and the environmental roles and responsibilities of Adani and contractors on the said 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.

4.3 Construction Environment Management Plan

A Construction Environment Management Plan (CEMP) will be prepared for the NGBR Project. The CEMP 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 CEMP during construction will ensure environmental risks are appropriately managed in a way which satisfies relevant legislative requirements and stakeholder expectations.

4.4 Hazard, Risk and Health and Safety Issues

Hazards and associated risks are presented by the construction and operation of the NGBR 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 during the EIS to assist in the management of risks through construction and operation of the Project.

4.5 Closure and Decommissioning

It is not expected that the NGBR Project corridor will require decommissioning within the next 30 years. A decommissioning strategy will be developed as part of the Project's operational management system for the rail corridor.

5. Relevant Environmental Legislation

5.1 Overview

Given the nature, scale and location of the rail corridor and the potential impact on surrounding areas, there will be a need for various approvals from Commonwealth, State and Local Government departments. Adani is seeking coordinated project declaration under the SDPWO Act to enable a coordinated approach to obtaining required approvals throughout and following the EIS process in accordance with relevant environmental legislation, including but not limited to those summarised in Table 5-1.

The likely environmental approvals potentially required for each key component of the Project during the construction and operation phases that will be sought during the EIS process are outlined in Table 5-2 (NB: these exclude standard building, plumbing and drainage approvals as well as land and tenure acquisition processes, which are yet to be fully identified and/or are subject to detailed design).

Table 5-1 Relevant Environmental Legislation

Legislation	Administering Authority	Approvals trigger/s	Relevance to the Project
Commonwealth			
EPBC Act	DSEWPaC	Impacts on Matters of National Environmental Significance (MNES).	The EPBC Act identifies eight MNES, of which “nationally threatened species and communities”, “listed migratory species” are likely to have relevance to the Project, while “The Great Barrier Reef Marine Park”, “National Heritage places” and “World Heritage values” (all relating to the Great Barrier Reef) may have relevance to the Project. A person must not take an action that has or is likely to have a significant impact on a MNES unless that person can rely on an exemption, or obtains an approval from the Commonwealth Minister. Adani will be referring the Project to the Commonwealth in relation to potential impacts on MNES and expects that, due to the scale of the Project, that it will require further assessment under the EPBC Act. It is proposed that the EIS be undertaken under the Bilateral agreement between Queensland and the Commonwealth.
<i>Native Title Act 1993</i>	National Native Title Tribunal	Impacts on land subject to Native Title.	The <i>Native Title Act 1993</i> recognises the rights and interests of Indigenous people under their traditional laws and customs (DERM, 2012). Searches with the National Native Title Tribunal indicate that Native Title Claims registered over the investigative corridor belong to the Jangga, Birri, Juru and Juru No.2 Peoples. An additional area in the north of the investigative corridor is unclaimed. Adani has entered into discussions with Native Title claimants and seeks to enter into Indigenous Land Use Agreements in parallel with the EIS.
Queensland			
<i>Aboriginal Cultural Heritage Act 2003</i>	Department of Environment and Heritage Protection (DEHP)	Duty of care to avoid harm to cultural heritage.	A separate, parallel assessment of the occurrence of and extent of the Aboriginal cultural heritage items and places will be undertaken and a CHMP prepared. Adani has executed an early works agreement and CHMP with the Jangga People (refer section 3.12) in accordance with the Act, and expect to enter into similar agreements with the Birri, Juru and Juru No.2 Peoples, in addition to any other traditional owners identified. The overall assessment process and management requirements will be documented in the EIS.
<i>Coastal Protection and Management Act 1995</i>	DEHP	Any works that take place within a coastal management district or involving tidal works.	Where works are required to take place in the tidal zone or coastal management districts around Abbot Point, assessment will be undertaken against the Queensland Coastal Plan.
<i>Environmental</i>	DEHP	Duty of care to avoid	The EIS will assess environmental values and potential impacts against

Legislation	Administering Authority	Approvals trigger/s	Relevance to the Project
<i>Protection Act 1994 and Environmental Protection Regulation 2008</i>		environmental harm.	environmental protection policies established under the <i>Environmental Protection Act 1994</i> . The Project will also require approvals for activities that may cause environmental harm, including Environmentally Relevant Activities and activities that may cause land contamination.
<i>Fisheries Act 1994</i>	Department of Agriculture, Fisheries and Forestry (DAFF)	Interfering with fish habitat or marine plants or undertaking waterway barrier works.	Marine plants are not likely to be encountered outside the Abbot Point State Development Area/port area. Waterway barrier works may be required in some stream crossings and Adani will consult with DAFF in relation to fish passage and potential impacts on fish habitat. An assessment of potential impacts on fisheries and fish habitat will be included in the EIS.
NC Act and the <i>Nature Conservation (Wildlife) Regulation 2006</i>	DEHP	Taking or destruction of certain listed flora and fauna species or any vegetation on State land.	The EIS will assess the extent of the potential impact on relevant areas and species of conservation significance under the NC Act Nature Conservation (Wildlife) Regulation 2006. 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 DEHP in regard to their obligations under section 73 of the NC Act. The Project will require vegetation clearing potentially affecting protected plants. As such it is expected that permits will be required under the NC Act.
SDPWO Act	Department of State Development, Infrastructure and Planning	Declaration as a Coordinated Project for which an EIS is required.	The SDPWO Act establishes an environmental assessment process for projects declared to be a 'coordinated project'. Adani is seeking to have the Project declared a 'coordinated project' in accordance with Section 26(1)(a) of the Act, and has prepared this IAS in support of this application. Under this process, the Coordinator-General can administer the EIS process and state conditions to be included in subsequent approvals under the following: <ul style="list-style-type: none"> — <i>Environmental Protection Act 1994</i>; — <i>Sustainable Planning Act 2009</i>; and — Other approvals as required. In addition, the Coordinator-General may also impose conditions (in the absence of a relevant legislative requirement) and/or make recommendations regarding the Project.
<i>Sustainable Planning Act 2009 (SP Act)</i>	Department of Local Government and Planning / Isaac Regional Council	Infrastructure related to the Project.	The SP Act provides a streamlined framework for assessment of developments through the Integrated Development Assessment System (IDAS), incorporating processes for applications triggered under the following acts relevant to the Project: <ul style="list-style-type: none"> — <i>Environmental Protection Act 1994</i>

Legislation	Administering Authority	Approvals trigger/s	Relevance to the Project
			<ul style="list-style-type: none"> — <i>VM Act</i> — <i>Fisheries Act 1994</i> — <i>Water Act 2000</i> — <i>Land Title Act 1994</i> — <i>Transport Infrastructure Act 1994</i> — <i>Land Protection (Pest and Stock Route Management) Act 2002</i> — <i>Queensland Heritage Act 1992</i> — <i>Aboriginal Cultural Heritage Act 2003.</i> <p>The Project may require additional approvals for quarry and borrow facilities and associated infrastructure outside the area to be covered in the EIS, which may be pursued as separate applications under IDAS.</p> <p>The Project will also be assessed against State Planning Policies (SPPs) established under the SP Act, including:</p> <ul style="list-style-type: none"> — SPP 1/92 – Development and the Conservation of Good Quality Agricultural Land; — SPP 2/02 – Planning and Managing Development Involving Acid Sulphate Soils — SPP 1/03 – Mitigating the Adverse Impacts of Flood, Bushfire and Landslide; — SPP 1/07 – Housing and Residential Development; — SPP 2/07 – Protection of Extractive Resources; — SPP 4/11 – Protecting wetlands of high ecological significance in Great Barrier Reef catchments; and — SPP 1/12 – Protection of Queensland's strategic cropping land. <p>The SP Act establishes for the development of regional and local planning schemes. The Project is located within the 'Regional Landscape and Rural Production Area' and 'Urban Footprint' designations under the <i>Mackay, Isaac and Whitsunday Regional Plan 2012</i>. The Project is located within the Isaac and Whitsunday Regional Council Local Government Areas, affecting land within both the Nebo and Belyando Shire Planning Schemes – Isaac Regional Council and Bowen Shire Planning Scheme – Whitsunday Regional Council.</p>
<i>Transport Infrastructure Act 1994</i>	Department of Transport and Main Roads (DTMR)	Interfering with State-controlled roads	The traffic impact assessment will be based on DTMR Guidelines for Assessment of Road Impacts of Development. Discussions will be held with DTMR to review assessment outcomes and appropriate mitigation measures.

Legislation	Administering Authority	Approvals trigger/s	Relevance to the Project
VM Act	DEHP	Clearing of native vegetation, excluding grasses and mangroves	<p>The EIS will assess the occurrence and extent of potential impacts on native vegetation and vegetation on State land. Assessment against policies and codes established under the VM Act will be required, including the relevant Regional Ongoing Clearing Code.</p> <p>Should the Project be declared a coordinated project, Adani will apply to the Chief Executive for confirmation that the project is a relevant purpose under Section 22A of the VM Act.</p>
<i>Water Act 2000</i>	Department of Natural Resources and Mines (DNRM)	Take water (including groundwater) and/or interfere with flow within a watercourse and/or overland flow. Disturb bed and banks of a watercourse.	<p>The EIS will assess impacts on watercourses and water resources. Key approvals regulated by the <i>Water Act 2000</i> that the Project may trigger include riverine protection permits and water licences and permits.</p> <p>Adani will consult with DNRM in relation to groundwater and surface water matters.</p>
<i>Water Supply (Safety and Reliability) Act 2008</i>	DNRM	Construction or modification of a referable dam	<p>A failure impact assessment to determine if dams are referable dams may be required for large water storages developed for construction of the Project. A water supply strategy will be developed and associated potential impacts assessed in the EIS.</p>

Table 5-2 Likely Approvals Required for Key Components of Construction and Operation

Legislation	Potential environmental approval / permit / licence requirement	Approval to be sought as part of EIS process (as applicable)	Comments	Project phase									
				Project-wide	Construction					Operation			
					Site preparation and civil works#	Camps^	Water supply *	Laydown areas&	Quarries and borrows	Haulage and transport	Operation and management of a railway	Rolling stock%	Staff crib, accommodation and training facilities
Commonwealth													
EPBC Act	Controlled action assessment via Environmental Impact Statement	Yes	Assessment by bilateral agreement	Yes	-	-	-	-	-	-	-	-	-
<i>Native Title Act 1993</i>	ILUA	No	Concurrent process	Yes	-	-	-	-	-	-	-	-	-
Queensland													
<i>Aboriginal Cultural Heritage Act 2003</i>	CHMP	No	Concurrent process	Yes	-	-	-	-	-	-	-	-	-
	Cultural heritage clearance	No	Concurrent process	Yes	-	-	-	-	-	-	-	-	-
<i>Coastal Protection and Management Act 1995</i>	Approval for development within a coastal management district or requiring tidal works	Yes	Only applies in the northern-most portion of the proposed investigative corridor	No	✓	✓	✓	✓	✓	-	-	-	-
<i>Environmental Protection Act 1994 and Environmental Protection Regulation 2008</i>	ERA 8: Chemical storage	Yes	-	No	-	✓	-	✓	-	-	-	✓	✓
	ERA 15: Fuel burning	Yes	-	No	-	✓	-	✓	-	-	-	-	-
	ERA16: Extractive and screening activities	Yes	-	No	✓	-	-	✓	✓	-	-	-	-
	ERA 17: Abrasive blasting	Yes	-	No	-	-	-	✓	-	-	-	✓	-
	ERA 18: Boilermaking or engineering	Yes	-	No	-	-	-	✓	-	-	-	✓	-
	ERA 21: Motor vehicle workshop operation	Yes	-	-	No	-	-	-	✓	-	-	✓	✓

Legislation	Potential environmental approval / permit / licence requirement	Approval to be sought as part of EIS process (as applicable)	Comments	Project phase									
				Project-wide	Construction						Operation		
					Site preparation and civil works#	Camps^	Water supply *	Laydown areas&	Quarries and borrows	Haulage and transport	Operation and management of a railway	Rolling stock%	Staff crib, accommodation and training facilities
	ERA 33: Crushing, milling, grinding or screening	Yes	Where not already covered by ERA 16	No	✓	-	-	✓	✓	-	-	-	-
	ERA 38: Surface coating	Yes	-	No	-	-	-	✓	-	-	-	✓	-
	ERA 43: Concrete batching	Yes	Mobile and temporary	No	✓	✓	-	✓	-	-	-	-	-
	ERA 63: Sewage treatment	Yes	-	No	-	✓	-	-	-	-	-	-	✓
	ERA 64: Water treatment	Yes	-	No	-	✓	✓	✓	-	-	-	✓	✓
	Notifiable Activity	Yes	-	No	-	-	-	✓	-	-	-	✓	-
	Registration certificate	No	To be sought within 10 days of ERA approvals	No	✓	✓	✓	✓	✓	-	-	✓	✓
	Development Permit for Material Change of Use of premises for development on contaminated land	Yes	Required if the land on EMR or last used for a notifiable activity or industrial activity and that activity is not continuing and there is no site suitability statement.	No	✓	✓	✓	✓	✓	-	-	-	-
	Disposal permit for removing or disposing of contaminated soil	Yes	Required should any fill from sites that are contaminated need to be removed or disposed of (only to a site that is listed on the EMR or to a licensed landfill site).	No	✓	✓	✓	✓	✓	-	-	-	-
<i>Explosives Act 1999</i>	Permit for use, handling or transport of explosives	Yes	-	No	✓	-	-	✓	✓	✓	-	-	-

Legislation	Potential environmental approval / permit / licence requirement	Approval to be sought as part of EIS process (as applicable)	Comments	Project phase									
				Project-wide	Construction						Operation		
					Site preparation and civil works#	Camps^	Water supply *	Laydown areas&	Quarries and borrows	Haulage and transport	Operation and management of a railway	Rolling stock%	Staff crib, accommodation and training facilities
	Blasting notification form	No	As required	No	✓	-	-	-	✓	-	-	-	-
<i>Fisheries Act 1994</i>	Development permit for carrying out Operational Works / Waterway Barrier Works Permit	Yes	-	No	✓	✓	-	✓	✓	-	-	-	-
	Temporary Waterway Barrier works permit (Code Compliant)	Yes	Construction within a waterway where flow is diverted or interrupted for a period of less than 40 days (non-tidal)	No	✓	✓	-	✓	✓	-	-	-	-
<i>Forestry Act 1959</i>	Permit to Search for and to get samples of Quarry Material	No	To occur early to inform the EIS process.	No	-	-	-	-	-	-	-	-	-
	Sales Permit	Yes	-	No	-	-	-	-	✓	-	-	-	-
<i>Land Protection (Pest and Stock Route Management) Act 2002</i>	Development Permit for activity in a Stock Route area.	Yes	-	No	✓	-	-	-	-	-	-	-	-
<i>NC Act and the Nature Conservation (Wildlife) Regulation 2006</i>	Tampering with Breeding Places of least concerned fauna	Yes	Potential exemption through a Deed of Agreement with DEHP	No	✓	✓	✓	✓	✓	-	-	-	-
	Tampering with Breeding Places of iconic and Endangered, Vulnerable or Rare species	Yes	To be covered in Species Management Plan	No	✓	✓	✓	✓	✓	-	-	-	-

Legislation	Potential environmental approval / permit / licence requirement	Approval to be sought as part of EIS process (as applicable)	Comments	Project phase									
				Project-wide	Construction						Operation		
					Site preparation and civil works#	Camps^	Water supply *	Laydown areas&	Quarries and borrows	Haulage and transport	Operation and management of a railway	Rolling stock%	Staff crib, accommodation and training facilities
	Clearing of protected plants (includes all native vegetation)	Yes	Permit to clear protected native plants is required unless exemption. (Possible Exemption under S41 <i>Nature Conservation (Protected Plants) Conservation Plan 2000</i> - clearing undertaken under authority by Governor in Council (Works Regulation)).	No	✓	✓	✓	✓	✓	-	-	-	-
SDPWO Act	Coordinated Project assessment via Environmental Impact Statement	Yes	-	Yes	-	-	-	-	-	-	-	-	-
<i>Strategic Cropping Land Act 2011 and Strategic Cropping Land Regulation 2011</i>	Strategic Cropping Land Declaration of Exceptional Circumstances	Yes	-	No	✓	-	-	-	✓	-	-	-	-
<i>Sustainable Planning Act 2009 (SP Act)</i>	Material Change of Use for ERA	Yes	-	No	✓	✓	✓	✓	✓	-	-	✓	✓
	Development permit for reconfiguration of a lot	Yes	Also requires processing in accordance with the Land Title Act 1994	No	✓	-	-	-	-	-	-	-	-
	Development permit for Operational Works - impact assessable	Yes	-	No	✓	✓	✓	✓	✓	-	-	✓	✓

Legislation	Potential environmental approval / permit / licence requirement	Approval to be sought as part of EIS process (as applicable)	Comments	Project phase									
				Project-wide	Construction						Operation		
					Site preparation and civil works#	Camps^	Water supply *	Laydown areas&	Quarries and borrows	Haulage and transport	Operation and management of a railway	Rolling stock%	Staff crib, accommodation and training facilities
	Development permit for Operational Works - code assessable	Yes	-	No	✓	✓	✓	✓	✓	-	-	✓	✓
	Owner's consent	No	To be obtained for submission of application/s	No	✓	✓	✓	✓	✓	-	-	✓	✓
<i>Transport Infrastructure Act 1994</i>	Road Use Management Plan	Yes	-	No	-	-	-	-	-	✓	-	-	-
	Railway Manager accreditation	No	Concurrent process	No	-	-	-	-	-	-	✓	-	-
	Traffic Control Permit	No	Required to control traffic during works in a state controlled road, as required	No	✓	-	-	-	-	✓	-	-	-
	Way leave agreement	No	Written approval to interfere with a railway / access a railway corridor, as required	No	✓	-	-	-	-	-	-	-	-
<i>VM Act</i>	Development permit for Operational Works - clearing vegetation	Yes	-	No	✓	✓	✓	✓	✓	-	-	-	-
	Property Map of Assessable Vegetation (PMAV) and Property Vegetation Management Plan	Yes	Where clearing of assessable vegetation is required	No	✓	✓	✓	✓	✓	-	-	-	-
	Clearing notification	No	As required	No	✓	✓	✓	✓	✓	-	-	-	-
	Owner's consent	No	To be obtained for submission of application/s	No	✓	✓	✓	✓	✓	-	-	-	-
<i>Water Act 2000</i>	Riverine protection permit	Yes	-	No	✓	✓	✓	✓	✓	-	-	-	-

Legislation	Potential environmental approval / permit / licence requirement	Approval to be sought as part of EIS process (as applicable)	Comments	Project phase									
				Project-wide	Construction						Operation		
					Site preparation and civil works#	Camps^	Water supply *	Laydown areas&	Quarries and borrows	Haulage and transport	Operation and management of a railway	Rolling stock%	Staff crib, accommodation and training facilities
	Temporary take water permit	Yes	Potentially surface or ground water sources	No	-	-	✓	-	-	-	-	-	-
	Water allocation	Yes	May also be required under the relevant resource operations plan	No	-	-	✓	-	-	-	-	-	-
	Water licence	Yes	Potentially surface or groundwater sources. Concurrent process	No	-	-	✓	-	-	-	-	-	-
<i>Water Supply (Safety and Reliability) Act 2008</i>	Recycled Water Management Plan	Yes	Camps	No	-	✓	✓	-	-	-	-	-	-
	Failure Impact Assessment	Yes	Construction or modification of a referrable dam	No	-	-	✓	-	-	-	-	-	-

Notes: '✓' indicates environmental approval / permit / licence potentially required; '-' indicates approval not anticipated but may apply in some circumstances.

Site preparation and civil works includes: Rail corridor site preparation (clearing and grubbing vegetation, temporary drainage and fencing, establishment of site access), bridges and culverts, Formation earthworks (cut & fill), Track works and Signalling.

^ Camps includes: Accommodation camps, Waste treatment/storage/disposal (solid and liquid), water treatment

* Water supply includes: Water supply infrastructure (to support construction and later ongoing operation activities)

& Laydown areas includes: Laydown areas, Construction depot, Sleeper manufacturing, Flash-butt welding

% Rolling stock includes: Rolling stock maintenance (provisioning, marshalling yards, fuel storage and refuelling, maintenance, etc.), Track and signalling maintenance facilities

6. Community and Stakeholder Consultation

6.1 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 NGBR Project and for these to be documented for consideration as part of the environmental assessment.

Early and ongoing engagement is being undertaken with directly affected landholders to introduce the NGBR project, identify potential issues, impacts and mitigation measures including design considerations in selecting the proposed alignment.

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.

6.2 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 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;
- Undertake a range of community and stakeholder engagement and consultation activities, which may include development and distribution of fact sheets, holding community and stakeholder information sessions, and the establishment of a 1800 number and email address for NGBR Project-related queries;
- Meet the requirements for community and stakeholder consultation as outlined in the Project ToR; and
- Provide a community and stakeholder consultation report for inclusion in the *draft* environmental assessment document, in accordance with the NGBR Project's ToR.

These objectives will be refined where required in the finalisation of this Community and Stakeholder Consultation Plan.

Further to the EIS, Adani has a dedicated Stakeholder Engagement Manager responsible for liaison with the community and landholders. A Rail Site Superintendent has been appointed to deal with day-to-day Project related queries. Adani has commenced notification of tenement and

land holders of the proposed NGBR Project and has commenced discussions in this regard and will continue to liaise with stakeholders throughout the EIS. Adani has engaged with State agencies and will refer the Project to the Commonwealth.

6.3 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 decision¹. Stakeholders for the NGBR Project include Federal, State and Local Government representatives, affected landholders, local business and residents, environmental and cultural heritage groups and surrounding communities.

¹ International Association for Public Participation (IAP2), 2006.

7. Costs and Benefits Summary

7.1 Local, State and National Economies

The NGBR Project will have significant economic benefits as it will increase the efficiency of the existing and proposed rail systems by providing a more direct route to the Port of Abbot Point, and reducing projected capacity constraints on the existing 'bottleneck' in the system currently being experienced at Moranbah, while simultaneously enabling use of existing rail capacity by others.

It is estimated that the NGBR Project will require a capital investment of \$2.2 billion. Combined with the opportunities arising from the Carmichael Project, there will be a significant increase in employment opportunities in the region during construction and operation of the Project.

It is likely 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, which may be in the order of 1000 – 1500 indirect employment opportunities at peak construction.

In addition to economic benefits from increased direct and indirect employment opportunities, the NGBR Project will provide economic benefits to the State and Commonwealth economies by facilitating the generation of royalties from the production and sale of coal and payment of the Minerals Resource Rent Tax. These royalties and taxes are fed back to the local and regional economies via the State Royalties for the Regions initiative and other State and Commonwealth mechanisms.

7.2 Natural and Social Environments

The NGBR Project is proposed to have an operational capacity of 100 Mtpa product. This will accommodate use by both Adani and third-party users in the Galilee Basin, reducing the need for new independent corridors resulting in additional environmental footprints and adverse impacts to landowners in the region.

The NGBR Project will also limit impacts on the townships along, and impacted by, operation of the Goonyella and Newlands Rail system associated with the Carmichael Project, particularly the constrained area of rail near the township of Moranbah.

Potential impacts on the landscape and natural environments as a result of developing the NGBR Project have been limited during concept level planning of the alignment, ensuring where possible, already cleared lands are selected for disturbance. Protected and other sensitive area impacts have also been minimised as far as practicable at the concept planning stage.

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Document Status

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