2. Description of the Project

2.1 Overview

Adani is proposing to develop a 60 million tonne (product) per annum (Mtpa) thermal coal mine in the north Galilee Basin approximately 160 kilometres (km) north-west of the town of Clermont, Central Queensland. All coal will be railed via a privately owned rail line connecting to the existing QR National rail infrastructure, and shipped through coal terminal facilities at the Port of Abbot Point and the Port of Hay Point (Dudgeon Point expansion). The Carmichael Coal Mine and Rail Project (the Project) will have an operating life of approximately 90 years.

The Project comprises of two major components:

- The Project (Mine): a greenfield coal mine over EPC1690 and the eastern portion of EPC1080, which includes both open cut and underground mining, on mine infrastructure and associated mine processing facilities (the Mine) and the Mine (offsite) infrastructure including:
  - A workers accommodation village and associated facilities (including: industrial area and rail siding)
  - A permanent airport site
  - Water supply infrastructure
- The Project (Rail): a greenfield rail line connecting the Mine to the existing Goonyella and Newlands rail systems to provide for the export of coal via the Port of Hay Point (Dudgeon Point expansion) and the Port of Abbot Point, respectively; including:
  - Rail (west): a 120 km dual gauge portion from the Mine site running west to east to Diamond Creek
  - Rail (east): a 69 km narrow gauge portion running east from Diamond Creek connecting to the Goonyella rail system south of Moranbah

The Project has been declared a 'significant project' under the *State Development and Public Works Organisation Act 1971* (SDPWO Act) and as such, an Environmental Impact Statement (EIS) is required for the Project. The Project is also a 'controlled action' and requires assessment and approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The Project EIS has been developed with the objective of avoiding or mitigating all potential adverse impacts to environmental, social and economic values and enhancing positive impacts. Where unavoidable residual impacts exist these are offset in accordance with State and Commonwealth policies. Detailed descriptions of the Project are provided in Volume 2 Section 2 Project Description (Mine) and Volume 3 Section 2 Project Description (Rail).

Figure 1-1 shows the Project location. The Project (Mine) is located approximately 160 km north-west of the town of Clermont. Clermont is located approximately 100 km north of the major central Queensland regional town of Emerald. The nearest regional town is Moranbah; 200 km east of the Project (Mine). The Project (Mine) is predominantly within the Local Government Area (LGA) of Isaac Regional Council, with the exception of the north-western corner of EPC1690, which is located within the LGA of Charters Towers Regional Council (see Figure 1-1).

The Project (Rail) is approximately 189 km long and runs in an east-west alignment from its connection to the QR National Goonyella rail system south of Moranbah to the Mine (see Figure 1-1). The Goonyella rail system services the Port of Hay Point (Dudgeon Point expansion). This system also connects to the Newlands rail system north servicing the Port of Abbot Point. In addition to the connections to existing rail facilities the Project (Rail) will intersect with both the proposed Alpha Rail and the Galilee North Rail Projects, if they are constructed. The Project (Rail) is located entirely within the LGA of Isaac Regional Council.

2.2 Project Exclusions

The Project EIS excludes the following:

- Development, upgrades or expansion of existing and proposed rail facilities providing the north-south rail connection to Abbot Point. Several greenfield north-south rail projects are currently being investigated by third party proponents. Each of these projects is subject to separate environmental assessment (see Section 1.4).
- Expansion or upgrade of the existing Newlands rail system to accommodate increased haulage capacity requirement, including planned haulage from the Project. QR National, as owner and operator of this system, is currently developing master plans for the expansion of the Newlands rail system to accommodation additional capacity up to 120 Mtpa. The expansion would be the subject of an environmental assessment at the appropriate phase of the QR National expansion project.
- Expansion or upgrade of the existing Goonyella rail system to accommodate increased haulage capacity requirement, resulting from the Project. QR National also has a program in place to increase the capacity of the Goonyella rail system, which will require an environmental assessment to be undertaken at the appropriate phase of that project.
- Development or expansion of coal terminal facilities at either the Port of Abbot Point or the Port of Hay Point (Dudgeon Point expansion), to export the coal product. A number of proposed expansions are currently being investigated at the Port of Abbot Point (see Section 1.4). The Dudgeon Point Coal Terminals expansion at the Port of Hay Point is currently being undertaken by North Queensland Bulk Ports Corporation (NQBP). These proposed expansions are being progressed under separate environmental assessment and are not part of this EIS
- Development, upgrades or expansion of existing and proposed power and water infrastructure by others to supply the Galilee Basin and surrounding region. Any and each of these projects would be subject to separate environmental assessment by relevant proponents.
- Environmental impact assessment of the following activities authorised under other legislation:
  - coal exploration and supporting activities carried out by the Proponent under permits and approvals under various legislation, such as the *Mineral Resources Act 1989* and *Environmental Protection Act 1994*
  - rail corridor investigations regulated under relevant legislation, as triggered, such as the *Vegetation Management Act 1999*
  - pastoral activities carried out on the Moray Downs pastoral lease under the *Land Act 1994*.

2.3 Project (Mine)

A detailed description of the Project (Mine) is provided in Volume 2 Section 2. The following is a brief outline of the Project (Mine) which comprises the following main components:

- Mine and onsite infrastructure
- Offsite infrastructure

The Mine and onsite infrastructure includes the open cut and underground mines and supporting infrastructure within the boundary of EPC1690 and the eastern and northern portion of EPC1080. The Project (Mine) covers a total area of 45,400 ha; 26,000 ha within EPC1690 and 18,700 ha within EPC1080 and approximately 1,850 ha for the offsite infrastructure. Road access to the Mine will be via the Moray Carmichael Road off the Gregory Developmental Road. Adani has entered into an agreement with IRC regarding the long term maintenance and development of the entire lengths of the Elgin Moray and Moray Carmichael Roads which run from the intersection of the Gregory Developmental Road (a State Controlled Road) westerly through the Mine to intersect with the Shuttleworth Carmichael Road. The roads will be upgraded in stages and maintained to a similar engineering standard as the Gregory Developmental Road.

The Carmichael Macro-conceptual Mining Study (Runge Limited, 2011) identified that a coal deposit underlies most of EPC1690. Further development of the mine design identified the need for out of pit waste dumps and supporting infrastructure requirements to be located outside of EPC1690 to avoid sterilising this resource. These items are now located on the eastern part of EPC1080 included in the Project area.

At a production rate peaking at 60 Mtpa (product), it is planned that the operational mine life will be approximately 90 years and will extract most of the coal resources existing in the currently defined economic seams.

The Mine and onsite infrastructure includes:

- Open cut Mine (located within EPC1690)
- Underground Mine (northern, central and southern) (located within EPC1690)
- Mine Infrastructure Area (MIA) (located within EPC1080)
- Out of pit waste rock dumps (mostly located within EPC1080)
- Mine water management dams (located within EPC1080)

The open cut mine has a capacity of 40 Mtpa (product) and will be located along the east of EPC1690. The open cut mine will be predominantly truck shovel/excavator operation, supplemented by draglines and dozers for primary waste removal. A total of 16 open cut pits will be progressively mined. During the early stage of development of each pit, overburden will be transported to out of pit dumps on EPC1080, where it will be profiled and rehabilitated, and a proportion will be used to re-profile the high-wall of the final voids.

The underground mine will operate concurrently with the open cut pits, to provide for coal blending and ensure continuity of production. The underground mine comprises three independent underground longwall mines, producing 20 Mtpa (product), commencing from drifts located down dip

of the final high-wall of the open cut mine. Each underground mine is serviced by above ground infrastructure.

The mine infrastructure area and out of pit dumps are located over in EPC1080. The need for the inclusion of EPC1080 was identified during mine planning, to avoid dumping of overburden over underground mining areas. All run of mine (ROM) coal will be transported by truck and/or overland conveyor to a centralised coal handling facility, where the high-ash (greater than 30 per cent ash) portion will be washed for blending with the bypass coal (un-washed coal). Coal will be stockpiled prior to loading on trains for transportation by rail.

The channel and riparian zone of the Carmichael River will be preserved and the adjacent pits protected from flooding events by a levee.

Offsite infrastructure necessary for the Project (Mine) includes that required for the successful construction and operation of the Mine. All Project (Mine) offsite infrastructure will be situated on the Moray Downs cattle station, Lot 662 on PH1491, to the east of the Mine site including:

- Workers accommodation village
- Permanent airport
- Heavy industrial area
- Offsite water supply infrastructure
- Upgrade and realignment of Moray Carmichael Road

The workers accommodation village will be located approximately 12 km east of the Mine and accessed via the upgraded and realigned Moray Carmichael Road. The village will have capacity to accommodate 3,000 persons to accommodate construction and operational workforces for the Mine. All supporting recreational, health and safety requirements for workers will be provided in the village. The permanent airport will be positioned approximately 5 km west of the workers accommodation village and will provide access for fly-in-fly-out workers. Offsite water supply infrastructure will enable the extraction, storage and delivery of water during the construction and operation phases of the Project (Mine). The infrastructure will extend along the waterways North Creek and Belyando River.

For further detail on Project (Mine) onsite and offsite infrastructure refer to Volume 4, Appendix M Mine Land Use Report.

2.4 Project (Rail)

The Project (Rail) has a track length of approximately 189 km. Rail infrastructure comprises below rail and above rail components. The Project (Rail) alignment is located within a 95 m wide corridor that runs from the terminal facilities at the Mine eastwards to connect with the Watonga Blair Athol Branch Railway of the existing QR National Goonyella Coal Rail System (Goonyella rail system), south of Moranbah. The rail line will have a capacity of 100 Mtpa.

The design response to key environmental features has been developed in line with engineering constraints for a feasible Project (Rail) design. The Project (Rail) concept design is based on:

- Minimising environmental impact
- Minimising disturbance to existing infrastructure
- Limiting fragmentation of land holdings

- Meeting engineering design criteria

The Project (Rail) concept design is sufficiently robust to allow for interfaces with existing and proposed rail systems. The Project (Rail) provides a greenfield west-east link between the Mine site and existing or proposed rail systems to port facilities at the Port of Hay Point (Dudgeon Point Coal Terminals) and the Port of Abbot Point. The existing rail systems comprise the QR National owned and operated Goonyella rail system and the Newlands rail system. The proposed rail systems may also ultimately link to other third party rail infrastructure.

Below rail components include the following elements:

- Terminus facilities located within the mine infrastructure area (on the Mine site) and comprising:
  - A dual gauge reception line of 4.5 km length
  - Balloon loop loading line (18.7 km)
  - Weighbridge/overloaded removal device
  - Dual gauge 4.5 km length departure line
  - Bad order siding
  - A control room for the train loading operator
  - Dragging equipment detector
  - Overload detector instrument
  - Derailment detector
  - Telecommunication system
- Track which will total approximately 247 km (total track length) comprising both narrow and standard gauge for the Rail (west) portion and narrow gauge for the Rail (east) portion. This includes the mainline, passing loops, bad order sidings, loading balloon, etc. (excluding the maintenance yard)
- Passing loops: To provide for operational regimes with a capacity to haul up to 100 Mtpa a total of eight passing loops will be constructed.
- Proposed Maintenance facilities located near the Mine site comprising:
  - Traffic and workshop tracks
  - Locomotive provisioning for up to 25 consists
  - Locomotive and wagon workshops
  - Administration and train crew depot for up to 100 employees
- Holding yards for consists to be kept while not in operation. Based on conceptual track design when the target 100 Mtpa is reached, it is anticipated that train stowage will be required as follows:
  - Eight consist stowed on the Project (Rail) mainline
  - Three consist stowed at the Project (Rail) load-out balloon
  - Two stowed at the Project (Rail) maintenance facility
  - Five stowed at either, or between, Dudgeon Point and the Port of Abbot Point (which will influence loop design and future expansion)

Above rail components including the following elements:

- Rolling stock per train comprises three to four diesel electric locomotives (83 class) with 120 NH class wagons (bottom dump coal hopper, electronically controlled pneumatic brakes, Kwik-Drop door mechanism, coupled in packs of two). The number of trains operating within the rail system reflecting the production of coal from the Project (Mine) comprises:
  - Ten trains per day each way to transport up to 30 Mtpa product, consisting of three locomotives and 120 narrow gauge wagons
  - Twelve trains per day each way to transport up to 60 Mtpa product, consisting of four locomotives and 164 narrow gauge wagons
  - Eighteen trains per day each way, including standard gauge wagons, to transport up to 100 Mtpa product (sourced from the Project (Mine) and potential third party users)
- Signalling and communications consisting of a series of remote control signalling (RCS) systems utilising signalling equipment currently in use within Queensland.


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