


Taroborah Coal Project
Initial Advice Statement

Prepared for:
Shenhuo International Group

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arc
AustralAsian Resource Consultants

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LIST OF ABBREVIATIONS

AARC	-	Australasian Resource Consultants Pty Ltd
ABS	-	Australian Bureau of Statistics
BoM	-	Bureaux of Meteorology
CHPP	-	Coal Handling and Preparation Plant
DERM	-	Department of Environment and Resource Management
EIS	-	Environmental Impact Statement
EM Plan	-	Environmental Management Plan
EP Act	-	*Environmental Protection Act 1994 (Qld)*
EPBC Act	-	*Environment Protection and Biodiversity Conservation Act 1999 (Cth)*
EPC	-	Exploratory Permit for Coal
EPP	-	Environmental Protection Policy
ERAs	-	Environmentally Relevant Activities
ha	-	hectares
IMC	-	International Mining Consultants
kL	-	kilolitres
km	-	kilometres
L	-	litre
m	-	metres
mm	-	millimetres
MNES	-	Matters of National Environmental Significance
MR Act	-	*Mineral Resources Act 1989 (Qld)*
Mtpa	-	Million tonnes per annum
MW	-	megawatts
NGER Act	-	National Greenhouse Gas and Energy Reporting Act 2007
QLD	-	Queensland
REDD	-	Regional Ecosystem Description Database
ROM	-	Run of Mine
Shenhuo	-	Shenhuo Group International Pty Ltd
t	-	Tonnes
ToR	-	Terms of Reference
TSF	-	Tailings Storage Facility

1.0 PROJECT OVERVIEW

1.1 INTRODUCTION

Shenhuo International Group Pty Ltd is proposing to develop the Taroborah Project (the "Project"), a combined open-cut and underground coal mining operation. The Project is located within the Taroborah resource area (Bowen Basin) due west of Emerald, in Central Queensland and is expected to commence construction works during 2014. The Project tenure is currently in the form of an Exploration Permit - Coal (EPC) 1011.

The Project proposes the development of a mine for the extraction and export of thermal coal, utilising both underground and open-cut methods, in conjunction with the development of an onsite Coal Handling and Preparation Plant (CHPP). The Project involves the mining of a total determined resource of 188.2 Mt, at an eventual rate of approximately 2.1 - 2.3 Million tonnes per annum (Mtpa) run of mine (ROM) for the open-cut operation and 1.9 - 4.9 Mtpa for the underground operation, based upon the coal extraction techniques that have currently been proposed.

Note that the Taroborah Pre-feasibility Study developed by IMC Mining Solutions Pty Ltd (2009) has been used as a significant source of information for this IAS.

1.2 THE PROPONENT

The Proponent for the Project is Shenhuo International Group Pty Ltd (Shenhuo) - a coal exploration, mining and marketing company- and the mining tenements are, and will continue to be, held in the name of Shenhuo International Group Pty Ltd. The Proponent's contact details are as follows:

Shenhuo International Group

Level 9, Suite 19

320 Adelaide Street

Brisbane

QLD 4000

Australia

1.3 PROJECT LOCATION

The Project is located approximately 22 km west of Emerald in Central Queensland (refer to Figure 1 for the regional Project location, Figure 2 for local Project location and Figure 3 for EPC location details). The Project extends north and south of the Capricorn Highway and Central West Rail System. The Project is wholly located in the Central Highlands Regional Council area.

Note that the Environmental Impact Statement (EIS) study area does not cover all of the EPC1011 (refer to Figure 3 for details), since viable coal reserves and required surface facilities area do not extend any further south than the current EIS study area.

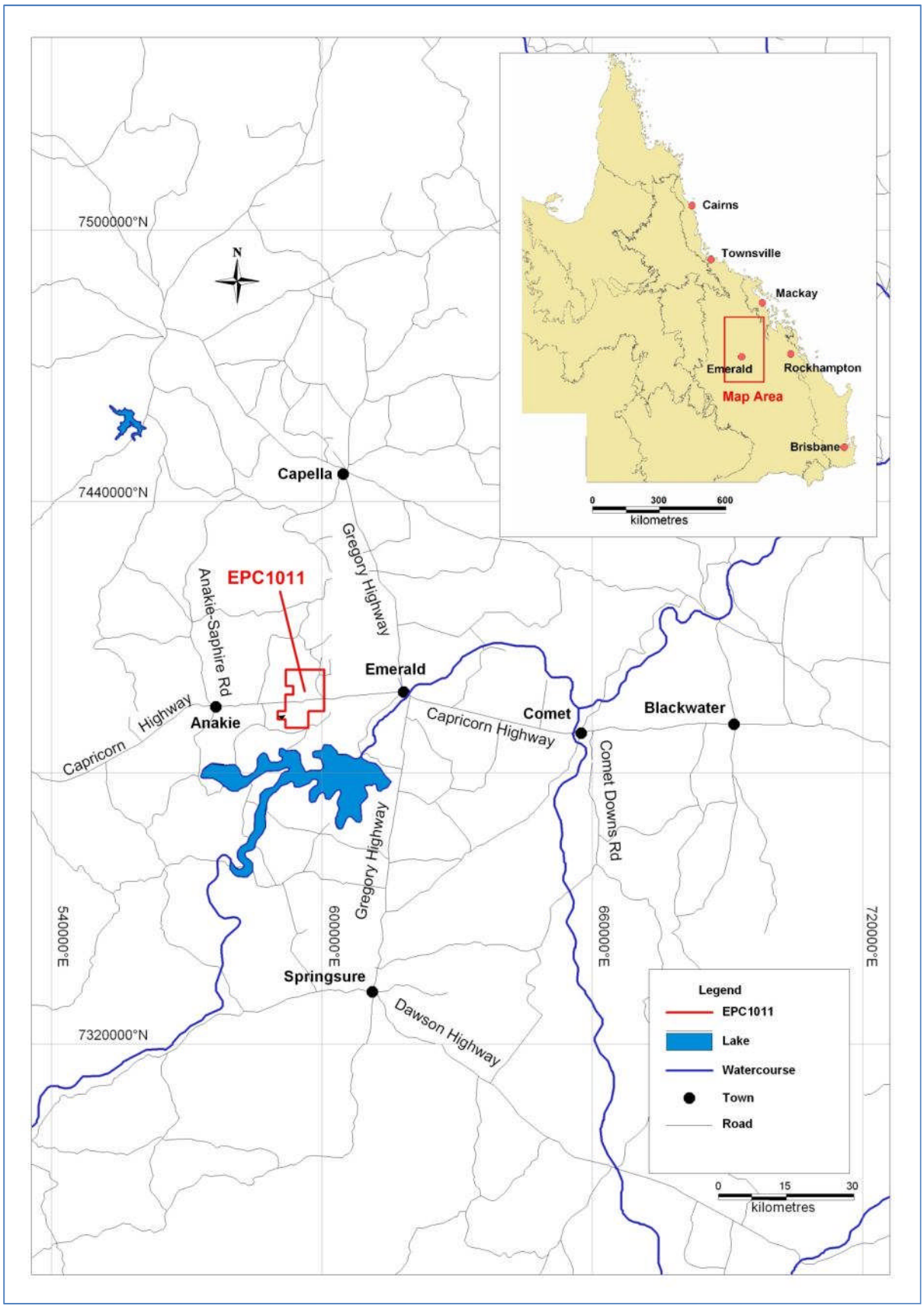
1.4 PROJECT NEED

The Taroborah Coal Project will be developed to supply export demands for thermal coal. World consumption of thermal coal has continued to grow and maintain a stable share of the electricity generation market. Australia's thermal coal exports have an expected annual average growth of 4% from 2009 - 2014 (Department of Resources, Energy and Tourism, *Coal Supply and Demand Outlook*, 2009).

1.5 PROJECT TENURE

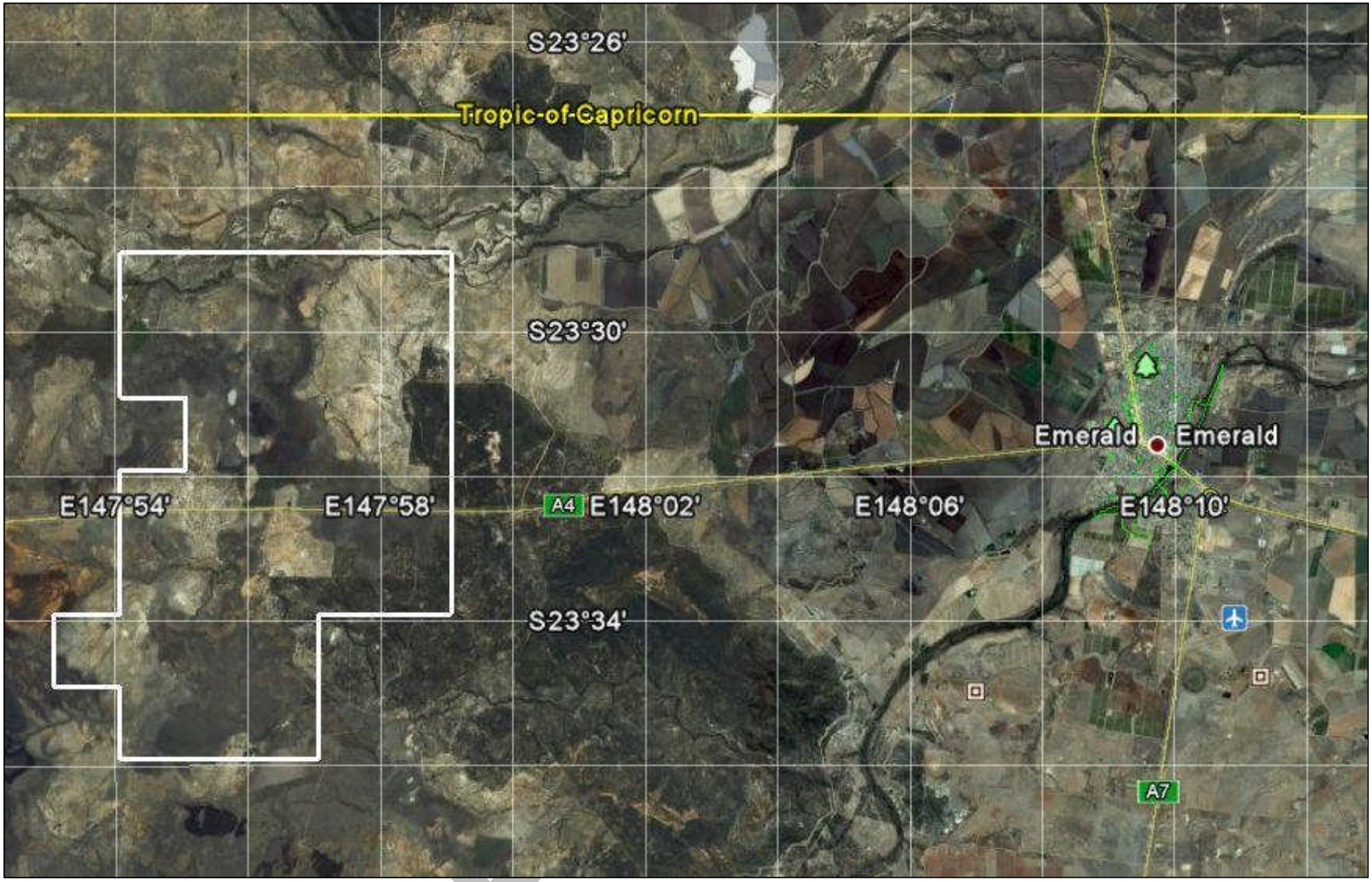
The following land tenure Lot and Plans underlie EPC1011:

Lot 124	PT367
Lot 4	PT352
Lot 13	DSN703
Lots 20, 203	DSN377
Lot 201	DN40176
Lot 126	PT372
Lot 23	DN40176
Lot 96	SP227975
Lot 24	DN40201
Lot 1	CLM78
Lot 21	DSN29
Lot 15	PLA4029
Lots 12-14	RP881318
Lot 5	PT132
Lot 12	PT352
Lot 81, 82	SP122079
Lot 101	SP122080
Lot 76	PT372
Lot 223	FTY1531



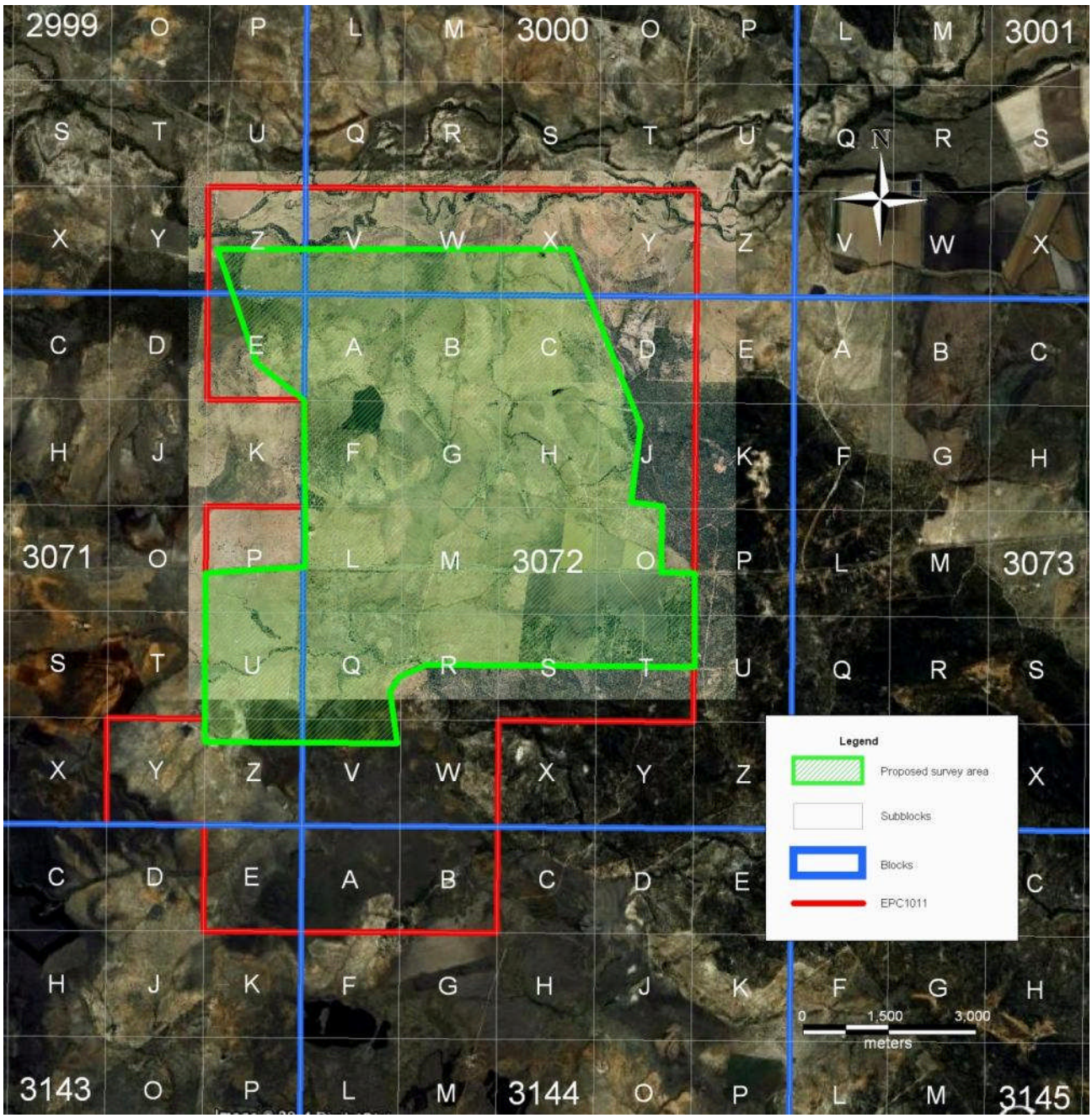
Source: AARC

Figure 1 Regional Project Location



Source: AARC

Figure 2 Local Project Location (white polygon = EPC1011 Boundary)



Source: AARC

Figure 3 EPC1011 Location Details, Associated Blocks and Sub-blocks

2.0 PROPOSED PROJECT ACTIVITIES

2.1 MINERAL RESOURCE

A geological report produced by IMC Mining Solutions (IMC), has determined that resources over the proposed EPC1011 open-cut and underground mining areas total 43.0 Mt of Measured Resource, 127.0 Mt of Indicated Resource, and 18.2 Mt of Inferred Resource (IMC, 2009).

2.2 PROPOSED OPERATIONS

The Taroborah Coal Project is currently managed under EPC1011, which exhibits an area of approximately 10,667 hectares (ha). Major Project activities proposed are as follows:

- Open cut mining, via hydraulic excavator and dump truck, in the southern part of the proposed mining area;
- Underground mining, either through Longwall mining or Bord and Pillar extraction techniques, in the northern part of the proposed mining area;
- Processing of mined coal at a coal handling and preparation plant (CHPP), processing includes coal sizing, handling and washing; and
- Transport of the coal to the port of Gladstone via the Central West and Blackwater Rail System.

2.3 EXPLORATION

Exploration and other investigation activities will continue to be undertaken on all exploration and mining tenements, in order to determine and prove further resources and provide data for Project development.

2.4 LAND USE AND CAPABILITY

The land within EPC1011 is currently, predominantly used for low-intensity cattle grazing and cropping (such as wheat and sorghum). It is expected that following completion of mining activities, the Project site will be returned to similar land uses.

2.5 LAND DISTURBANCE

Significant disturbance of the Project site will only occur where open-pit mining takes place (in the southern section of the Project area), where topsoil will be removed from the footprint of the open-cut operation and stockpiled. The preferred option for the disposal of large items of vegetation is to appoint a contractor to clear and use the timber for milling, wood-chipping or other economically viable application. If this is not possible, large items of vegetation will be windrowed and burnt under controlled conditions.

The current, estimated disturbance area for the open cut operation and mine infrastructure is 775 ha, whilst the estimated area of underground mining is 2,745 ha.

In contrast, the current, estimated disturbance area for non-beneficial post-mining land use is 471 ha, assuming that all mine infrastructure has been removed. This non-beneficial land use will be comprised of access roads, waste dumps, rejects impoundment and open cut pits.

Smaller herbs, forbs and grasses will be stripped with the topsoil and where necessary, stockpiles will be seeded to establish vegetation growth. This seeding process will also help to increase water infiltration, encourage microbial activity and prevent erosion.

Rehabilitation of the site will occur as soon as possible, in order to maximise the viability of the topsoil seed bank. The final size and location of infrastructure and mining boundaries is dependent on continued exploration, project investigation / design and identification of environmental issues.

Post mining land-use has been planned (wherever possible) to be similar to that of the pre-mining land-use, ie. cattle grazing and cropping.

2.6 MINE INFRASTRUCTURE

The following mine infrastructure and operations facilities will be required for the Project:

- Waste water treatment facilities;
- Tailings dam;
- Light vehicle access roads and heavy vehicle haul roads;
- Fuel and oil storage facilities;
- Offices and workshops;
- CHPP; and
- Train-loading facility and rail spur.

2.7 COAL MINING HANDLING AND PROCESSING METHODS

The Project will utilise both open-cut and underground mining methods. A CHPP will be included onsite which has the following features:

- Two separate ROM stockpiles and sizing stations for the open-cut and underground feed types;
- Flexibility to bypass product from open-cut to transport;
- Capacity to wash all upper seam production;
- Capacity to bypass all underground production to transport;
- Ability to measure the quality of product that has been bypassed;
- Flexibility to divert bypass product that does not conform, to the washing plant;
- Capacity to wash additional non-conforming bypass feedstock;
- Ability to measure the quality of washed product; and

- Capacity to stockpile a single or dual product type and quarantine non-conforming product.

2.8 STOCKPILING

A radial stacking-type stockpile arrangement is anticipated, with the ability to store two separate product types. Stockpiled material will be reclaimed via dozer push and transported to a fit-for-purpose train load-out system. Such a system will be integral to the stockpile arrangements.

2.9 PRODUCT TRANSPORT

Mined and processed coal will be transported from the Project site to the port of Gladstone via the Central West and Blackwater Rail Systems. This coal will then be exported to a number of overseas markets. This transport option will require the construction of a rail-loading facility onsite, as well as associated train loop and upgrade of the Central West track system.

2.10 WATER REQUIREMENTS AND SUPPLY

Data from exploratory drilling indicates that a substantial quantity of water (with acceptable quality for mining and coal processing operations) is available via the aquifer which underlies Taroborah EPC1011.

One of the landholders has also constructed a large water storage dam in the north west of the underground mining area. It is proposed that this dam be utilised for the provision of a fresh water supply for the operations, assuming that a water take-off agreement has been reached with the landholder. It is intended that a pipeline will be run from the dam to water treatment facilities, where a 200 kilolitre (kL) storage tank at the mine infrastructure area, will be used as buffer water storage.

2.11 POWER REQUIREMENTS AND SUPPLY

It is estimated that there is sufficient electrical capacity available via the Emerald substation, to supply the maximum Project power needs (approximately 25 Mega Watts (MW) for the combined open-cut and underground operations). Consequently, the only power infrastructure that is required for the Project is an overhead feeder line from the Emerald substation to the mine industrial area and a substation to service the CHPP and the underground mine.

2.12 STAFFING AND ACCOMMODATION

Accommodation facilities will be required for personnel during both the construction and operation phases of the Project. Although the exact number of staff that will be required is currently unknown, a number of accommodation options will be explored, including an onsite accommodation village.

2.13 ENVIRONMENTALLY RELEVANT ACTIVITIES

Table 1 and Table 2 outline the proposed Project activities which represent Environmentally Relevant Activities (ERAs).

Although coal mining is not covered by an ERA in Schedule 2 of the Environmental Protection Regulation 2008, it is addressed separately in Schedule 6. The relevant annual fee for the Project is calculated from the Aggregate Environmental Score.

Table 1 **ERAs Associated with the Project**

Environmentally Relevant Activity	Threshold	Aggregate Environmental Score
ERA 8 (1) -Chemical Storage	Storing >50 tonnes (t) of chemicals of dangerous goods Class 1 or Class 2	51
ERA 15 - Fuel Burning > 500kg / hour	Operation using equipment capable of burning > 500 kg / hour	35
ERA 33 - Crushing, Milling, Grinding or Screening	Crushing, milling, grinding or screening material: > 5,000 t / annum	0
ERA 50 (1b) - Bulk Material Handling	Stockpiling 50,000 t or more of minerals or loading or unloading 100 t / day or more of minerals at another place	49
ERA 63 (2b)(i) Sewage Treatment Plant	Treatment plant for 100 – 1,500 equivalent persons	53
ERA 21.3a ii – Vehicle Workshop Operation	-	7

Table 2 **Mining Projects and their Aggregate Environmental Score**

Item (Mining Activity)	Activity	Aggregate Environmental Score
Level 1 Mining Project	5. Mining Black Coal	128

2.14 NOTIFIABLE ACTIVITIES

The notifiable activities (as per schedule 3 of the Queensland *Environmental Protection Act 1994)* that will be conducted on the Project site are presented in Table 3.

Table 3 **Notifiable Activities Associated with the Project**

Title of Activity	Description
Chemical Storage	Storing more than 10 t of chemicals (other than compressed or liquefied gases) that are dangerous goods under the dangerous goods code
Petroleum Product or Oil Storage	Storing petroleum products or oil - (a) in underground tanks with more than 200 L capacity; or (b) in above ground tanks with: (i) for petroleum products or oil in class 3 in packaging groups 1 and 2 of the dangerous goods code-more than 2,500 L capacity; or (ii) for petroleum products or oil in class 3 in packaging groups 3 of the dangerous goods code-more than 5,000 L capacity; or (iii) for petroleum products that are combustible liquids in class C1 or C2 in Australian Standard AS 1940, 'The storage and handling of flammable and combustible liquids' published by Standards Australia-more than 25, 000 L capacity
Mine Wastes	(a) storing hazardous mine or exploration wastes, including, for example, tailings dams, overburden or waste rock dumps containing hazardous contaminants; or (b) exploring for, or mining or processing, minerals in a way that exposes faces, or releases groundwater, containing hazardous contaminants.

2.15 REHABILITATION

All land disturbances on the Project will be rehabilitated either progressively, where possible, or on decommissioning.

It is proposed to return the majority of the Project site back to its pre-mining land suitability and a land use of low intensity grazing and cropping.

Topsoil will be stripped and stockpiled from disturbed areas for re-use in the rehabilitation program to provide a seed bank and growth media for revegetation activities.

Ongoing revegetation and erosion monitoring of rehabilitation works will be conducted on an annual basis to ensure that rehabilitated areas are progressing towards completion criteria for rehabilitated landforms and the land use of low intensity grazing and cropping.

2.15.1 Exploration

Exploration disturbances will be rehabilitated as per the following steps:

- Capping of drill holes;
- Evaporation of water from drilling muds in the sumps;
- Backfilling of drilling sumps;
- Scarifying the disturbed surfaces; and
- Should natural regeneration not be successful after the first year, seed from suitable pasture species will be sown in disturbed exploration areas, before the following wet season in order to enhance revegetation.

2.15.2 Out-of-pit Spoil Dump

The final rehabilitation plan for out-of-pit spoil (overburden) dumps will be detailed in the EIS and Environmental Management Plan (EM Plan). Conceptual planning has assumed that the final slope ration of the overburden dump face will be approximately one vertical to three horizontal, depending on the competency of the waste material. Where necessary, berms will be constructed on the outer dump faces and graded to slope back towards the dump; such berms will act as a water control structure for any stormwater flowing from the spoil above.

The slopes and top of the dumps will be topsoiled and deep ripped, in order to bind in the material. Revegetation will use species suitable for the final land use.

2.15.3 Final Voids

Where the quality of water stored in on-site voids is not found to be suitable for stock, then the remaining final void will have a bund-wall constructed around its perimeter, in order to prevent stock from drinking this water.

The exclusion bund wall will be constructed as described in *Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland* (Department of Environment and Resource Management (DERM) 1995). This guideline states that the bund wall should be constructed to a minimum height of 2 m, with a minimum base width of 4 m and be located at least 10 m beyond the area potentially affected by any instability of the pit edge.

Where water quality within the void is suitable for stock, a safe access to the water may be provided, or the water may be pumped to a stock watering point. Consultation with the land holder will be undertaken, in order to determine the best means of pumping or access.

2.15.4 CHPP and Infrastructure

The CHPP and associated buildings and equipment will be dismantled and removed following cessation of mining operations or alternatively, following agreement with the landholder, left for use by the land holder. Areas where infrastructure is removed will be rehabilitated.

2.15.5 Tailings Storage Facility

The tailings storage facility (TSF) which stores dewatered coal fines will be designed and constructed in order to minimise environmental impacts both during TSF operations and following TSF closure, these design features may include a compacted clay base, liner, above-liner seepage collection system, safety bund and peripheral surface-water and seepage collection-system.

At the end of mine life, this structure will be rehabilitated, in order to minimise environmental impacts (due to contaminated surface water run-off, seepage from the TSF and sediment transport from the TSF). A water-shedding engineered cover will be constructed over the TSF, once the tailings have dried to a suitable consistency. This cover will be contoured, in order to direct surface water run-off to the local drainage system.

A growth medium will be applied to the top of this cover, in order to promote re-vegetation of the TSF.

2.15.6 Access Roads

Access roads that are required for pastoral activities will not be rehabilitated, where negotiated with the landholder. Roads that are to be rehabilitated will be deep ripped and, where appropriate, seeded with a mix of species suitable for the intended land use.

2.15.7 Revegetation Methods

Prior to revegetation, the land surface will be prepared via surface contouring, ripping and topsoil spreading. Surface contouring will be conducted in order to minimise soil erosion. Contour ripping within the depth range 200 to 500 millimetres (mm) will then take place. Topsoil will be stockpiled for use in rehabilitation as it contains organic material and local seed banks. Preserved topsoil will be spread to a thickness similar to that of the original topsoil or an average of 0.2 metres (m), where possible.

Following appropriate surface preparation as outlined above, disturbed land will then be revegetated as follows:

- Fertiliser and / or other ameliorates such as gypsum will be spread across the prepared land at an appropriate rate, if required;
- Native vegetation species occurring naturally in the local area, will be selected for areas that require re-establishment of the local native habitat;
- Where an agricultural land use is planned, the species planted will be those commonly used for pasture and known to be successful on soils of similar texture; and
- Where practicable, revegetation will occur through direct seeding of selected species. Where direct seeding is not possible (e.g. small areas with limited access), seeds will be manually broadcast.

3.0 LEGISLATION AND APPROVALS

The following legislation and approvals apply to the Project.

3.1 COMMONWEALTH LEGISLATION

The following Commonwealth legislation applies to the Project:

3.1.1 Environmental Protection and Biodiversity Conservation Act 1999

The Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) applies to actions which are likely to have an impact on Matters of National Environmental Significance (MNES). The eight matters of MNES protected under the act are:

- World heritage properties;
- National heritage places;
- Wetlands of international significance (under the Ramsar Convention);
- Listed threatened species and ecological communities;
- Migratory species protected under international agreements;
- Commonwealth marine areas;
- The Great barrier Reef marine park; and
- Nuclear actions.

The determination of the existence of any significant controlled actions under the EPBC Act and the subsequent level of environmental assessment will be determined as a result of the EPBC referral. Should the Project be identified as a controlled action, it is anticipated that the Project will be progressed as an accredited assessment process through a bilateral agreement between Queensland and the Commonwealth Governments.

3.1.2 National Greenhouse and Energy Reporting Act 2007

The *National Greenhouse and Energy Reporting Act 2007* (NGER Act) establishes a national framework for Australian corporations to report greenhouse gas emissions, reductions, removals and offsets and energy consumption and production as of 1 July 2008.

Under the NGER Act corporations are required to register and report if they emit greenhouse gases, produce energy or consume energy at or above the following annual thresholds:

- They control facilities that emit 25 kilotonnes or more of greenhouse gas, or produce / consume 100 terajoules or more of energy; or
- Their corporate group emits 50 kilotonnes or more of greenhouse gas, or produce / consume 200 terajoules or more of energy by 2010 / 2011.

This Act dictates the manner in which reporting needs to be undertaken.

3.2 STATE (QUEENSLAND) LEGISLATION

The Project is a Mining Activity and will be assessed under the Queensland Environmental Protection Act 1994 as a Level 1 Mining Activity. The following State legislation applies to the Project:

3.2.1 Environmental Protection Act 1994

The EP Act was established to protect Queensland's environment, while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends.

The EP Act utilises a number of mechanisms to achieve its objectives. These include:

- Licensing or approving all Environmentally Relevant Activities (ERA);
- Issuing Environmental Protection Policies (EPP);
- Allowing for improvement through Environmental Management Programs; and
- Creating a general Environment Duty.

Under the EP Act, the DERM has assumed responsibility for environmental impact assessment, administration of environmental authorities, as well as compliance, auditing and monitoring of environmental management of mining.

The amendments to the EP Act by the Environmental Protection and Other Legislation Amendment Act 2000 created a head of power for the DERM to facilitate government decision-making on environmental matters associated with mining activities.

The objective of the legislation is to give responsibility to the DERM for the assessment and decision-making on applications for environmental authorities (mining activities) and enforcement of the conditions of the authority.

Under the EP Act a proponent will be required to prepare an EIS if the DERM or the Minister decides an EIS is appropriate for the mining project. The EP Act also provides for the proponent to prepare a voluntary EIS if it is considered the project may require an EIS. The proponent must apply to the DERM for approval to do so.

Section 36 of the EP Act established a duty for a person to take all reasonable and practicable measures for protecting the environment from harm when carrying out an activity that causes, or is likely to cause, environmental harm. The general environmental duty places a clear onus on operators of industrial sites to develop and implement measures for preventing environmental harm.

The EP Act also provides the instrument under which the State may establish Environmental Protection Policies (EPP) applicable to government, industry and individuals.

3.2.2 Environmental Protection Regulation 2008

The objective of the Environmental Protection Regulation 2008 (EP Regulation) is to provide the basis for effective and efficient administration and enforcement of the object and provisions of the EP Act.

The EP Regulation sets out the criteria that define what constitutes a level 1 or 2 mining activity. Level 2 mining activities are lower risk activities which have comparatively less potential to cause environmental harm. Level 1 mining activities have a potentially greater risk of causing environmental harm. Schedule 6 of the EP Regulation advises how to calculate an aggregate environmental score for Level 1 mining activities.

This score is emissions based and is used to calculate the fees for mining. In addition the EP Regulation defines Environmentally Relevant Activities (ERAs) that may also be undertaken on a mine site, such as crushing and grinding.

3.2.3 Environmental Protection (Air) Policy 2008

The Environmental Protection (Air) Policy 2008 (EPP (Air)) was developed to identify and protect environmental values of the atmosphere that are conducive to the health and well-being of humans and biological integrity. The administering authority must consider the requirements of the EPP (Air) when it decides an application for an environmental authority, amendment of a licence or approval of a draft environmental management plan. Schedule 1 of the EPP (Air) specifies air quality indicators and goals for Queensland.

3.2.4 Environmental Protection (Noise) Policy 2008

The Environmental Protection (Noise) Policy 2008 (EPP (Noise)) provides the framework for the administration and enforcement that aims to meet the objectives of the EP Act with respect to acoustic environmental values.

Section 10 of the EPP (Noise) states:

The environmental values to be enhanced or protected under this policy are the qualities of the acoustic environment that are conducive to:

(a) The wellbeing of the community or a part of the community, including its social and economic amenity; or

(b) The wellbeing of an individual, including the individual's opportunity to have sleep, relaxation and conversation without unreasonable interference from intrusive environmental noise.

3.2.5 Environmental Protection (Water) Policy 2009

Environmental Protection (Water) Policy 2009 (EPP (Water)) provides the basis for the effective administration and enforcement of the EP Act.

Section 6 of the EPP (water) states that the document's purpose is to provide a framework for:

(a) identifying environmental values and management goals for Queensland waters; and

(b) stating water quality guidelines and water quality objectives to enhance or protect the environmental values; and

(c) providing a framework for making consistent, equitable and informed decisions about Queensland waters; and

(d) monitoring and reporting on the condition of Queensland waters.

3.2.6 Environmental Protection (Waste Management) Policy 2000

The Environmental Protection (Waste Management) Policy 2000 (EPP (Waste Management)) aims to enhance and / or protect environmental values through provisions for the preparation of waste management programs, guidance for the preparation of industry waste reduction programs, and aiding government planning for waste management.

Section 7 of the EPP (Waste Management) states:

The environmental values to be enhanced or protected under this policy are:

(a) the life, health and wellbeing of people;

(b) the diversity of ecological processes and associated ecosystems; and

(c) land use capability, having regard to economic considerations.

3.2.7 Mineral Resources Act 1989

The Mineral Resources Act 1989 (MR Act) provides for the authorisation of mining tenures in the form of Prospecting Permits, Mining Claims, Exploration Permits, Mineral Development Licenses and Mining Leases. Schedule 4 of the Mineral Resources Regulation 2003 administers restricted areas, including the construction of water reservoirs. 'Mining' itself is defined in Section 6A of the MR Act 1989.

Specifically, two principal objectives of the MR Act 1989 are to:

- Promote responsible land care management; and
- Encourage environmental responsibility.

3.2.8 Water Act 2000

The Water Act 2000 governs the construction, control and management of works with respect to water conservation and protection, irrigation, drainage, water supply, flood control and prevention. It also governs the safety and surveillance of dams.

3.2.9 Nature Conservation Act 1992 and Nature Conservation (Wildlife) Regulation 2006

The most relevant portions of the Nature Conservation Act 1992 (NC Act) to the Project are the sections which pertain to Wildlife and Habitat Conservation. The classes of wildlife to which the NC Act 1992 applies includes protected wildlife, which is defined as:

- Presumed extinct wildlife;
- Endangered wildlife;
- Vulnerable wildlife;
- Rare wildlife; and
- Common wildlife.

Species listed under the above classes are published in the associated Nature Conservation Wildlife Regulation 2006 (NCWR).

The NC Act 1992 defines 'threatening processes' as:

a) Threatening the survival of any protected area, area of major interest, protected wildlife, community of native wildlife or native wildlife habitat; or

b) Affecting the capacity of any protected area, area of major interest, protected wildlife, community of native wildlife or native wildlife habitat to sustain natural processes.

The NC Act is relevant to the Project should any flora or fauna species of conservation significance, as detailed in the NCWR, be found on the Project.

3.2.10 Vegetation Management Act 1999

The Vegetation Management Act 1999 (VM Act) was proclaimed as part of a planning framework for the management of native vegetation across Queensland. The Vegetation Management Regulation 2000 (VMR) prescribes the status of each of the Regional Ecosystems identified to occur within Queensland.

Although the VM Act does not apply to the clearing of vegetation on a mining tenement, the scientific basis for biodiversity conservation is still valid and can be used to assess the conservation significance of the vegetation communities on the Project.

3.2.11 Land Protection (Pest and Stock Route Management) Act 2002

The objectives of the Land Protection (Pest and Stock Route Management) Act 2002 (LP Act) are to consolidate, amend and provide laws for the management, control, prohibition, and regulation of the introduction, spread and keeping of certain plants and animals declared under the Act. The LP Act is relevant to the Project with regard to the control and management of declared pest plant (weed) and animal species.

3.2.12 Aboriginal Cultural Heritage Act 2003

The main purpose of the Aboriginal and Cultural Heritage Act 2003 is to provide effective recognition, protection and conservation of Aboriginal Cultural Heritage.

The Aboriginal and Cultural Heritage Act 2003 prescribes Duty of Care provisions as:

“A person who carries out an activity must take all reasonable and practicable measures to ensure that the activity does not harm Aboriginal cultural heritage”.

The Aboriginal and Cultural Heritage Act 2003 requires a Cultural Heritage Management Plan or another approved agreement be prepared for any project undertaking an EIS.

3.2.13 Queensland Heritage Act 1992

The Queensland Heritage Act 1992 exists for the protection of Queensland’s historical Cultural Heritage since the time of non-indigenous settlement. It provides for the maintenance of a Queensland Heritage Register that records places of significance. Criteria for such places of significance are listed in the Act. The main objectives of the Act are to:

- Provide for the establishment of Queensland heritage council;
- Provide maintenance of a register of places of significance;
- Regulate development of registered places;
- Provide heritage agreements to encourage conservation of regulated places;
- Regulate excavation of sites that contain or may contain objects of significance to Queensland’s Cultural Heritage; and
- Provide appropriate powers of protection enforcement.

3.2.14 Fisheries Act 1994

The main purpose of the Fisheries Act 1994 is to provide for the use, conservation and enhancement of the community fisheries resources and fish habitats as a way to apply and promote the principles of ecologically sustainable development. This means using, conserving and enhancing the community's fisheries so that ecological processes on which life depends are maintained and the total quality of life, both now and in the future can be enhanced.

3.2.15 Sustainable Planning Act 2009

The purpose of the Sustainable Planning Act 2009 is to seek to achieve ecological sustainability by:

(a) Managing the process by which development takes place, including ensuring the process is accountable, effective and efficient and delivers sustainable outcomes;

(b) Managing the effects of development on the environment, including managing the use of premises; and

(c) Continuing the coordination and integration of planning at the local, regional and State levels.

Section 232(2) of the Sustainable Planning Act 2009 legislates that the Sustainable Planning Regulation 2009 may define development that is not covered by the Act. Schedule 4 Table 5 Items 1 and 2 of the Sustainable Planning Regulation 2009 defines that activities authorised under the MR Act or mining activities subject to an EA under the EP Act are not declared to be a development under the Sustainable Planning Act 2009.

Should any development be proposed on areas off the ML, the above exemptions would not apply and a development application would be required.

4.0 PROJECT ALTERNATIVES

4.1 PROJECT LOCATION

No alternatives are available for the Project's location, because the proposed mining area is dictated by the location of the *in situ* coal resource. Mine planning and engineering studies have identified the fact that the proposed coal resource can only feasibly be extracted via a combination of open-cut and underground mining methods, in order to meet government expectations in terms of maximising coal resource recovery as required under State legislation.

4.2 THE 'NO ACTION' OPTION

The proposed Project has a direct, positive economic impact for the State of Queensland, via the development of the mine to make best use of the existing resource. A no action approach will result in the sterilisation of a valuable thermal coal resource, as well as a loss of socio-economic benefit to Federal, State and Local governments.

4.3 OPERATIONAL METHODS

A pre-feasibility study, produced by IMC (2009) has developed alternative mine operating scenarios involving varying timeframes for both the open-cut and underground mining operations. These alternative mine operating scenarios have been summarised as follows:

- Case A1 - Open-cut mining beginning in Year 1 and continuing for 12 years at up to 2.3 Mtpa ROM together with underground longwall mining beginning in Year 7 and continuing for 16 years at up to 5.1 Mtpa ROM.
- Case 1B – Open-cut mining beginning in Year 1 and continuing for 7 years at around 2.2 Mtpa together with underground longwall mining beginning in Year 7 and continuing for 16 years at up to 5.1 Mtpa.
- Case 1C – Underground longwall mining only, beginning in Year 1 and continuing for 16 years at up to 5.1 Mtpa.
- Case 2A – Open-cut mining beginning in Year 1, continuing for 12 years at up to 2.3 Mtpa together with underground bord and pillar mining beginning in Year 7 and continuing for 27 years at up to 1.9 Mtpa.
- Case 2B – Open-cut mining beginning in Year 1 and continuing for 7 years at up to 2.3 Mtpa together with underground bord and pillar mining beginning in Year 7 and continuing for 27 years at up to 1.9 Mtpa.
- Case 2C – Underground bord and pillar mining only beginning in Year 1 and continuing for 27 years at up to 1.9 Mtpa.

4.4 PORT OPTIONS

The above scenarios were designed to analyse the value of extracting the maximum resource possible as well as testing how varying port and rail capacities affect the economics of the Project.

Although Gladstone is considered to be the port that exhibits the greatest potential for the Project, it is advised that port alternatives still be considered in the future.

4.5 ENVIRONMENTAL MANAGEMENT STRATEGIES

The following environmental management strategies will be developed for the Project site, in order to provide an environmental management framework for use by mine site staff. The aim of these plans will be to minimise the potential impacts of Project activities upon the local environment:

- Site water management – a site water management plan will be developed for the management of clean and contaminated stormwater on the Project site;
- Groundwater management – in order to protect groundwater from potentially adverse impacts of mining, a groundwater management plan will be developed;
- Noise and dust control plan –emissions of noise, air contamination and dust from the Project site will be managed via a Noise, Air Contamination and Dust Control plan
- Sediment and erosion control – a sediment and erosion control plan will be developed for use on site, in order to minimise the release of sediments into local water courses and control erosion damage for sectors of the Project site which are prone to erosion;
- Waste rock management – a waste management plan will be developed to address the management of overburden, CHPP waste streams and sub-standard coal that will be stored on the Project site;
- Waste management – a waste management plan will be developed, in order to address all wastes that are produced and stored on site,
- Chemical storage – suitable plans will be developed for the management of large volumes of chemicals and hazardous products that may be stored, handled and used on the Project site;
- Weed and Pest Management plan- the control of weeds and pests on site will be conducted via the Weed and Pest Management plan;
- Site rehabilitation – a rehabilitation plan will be developed for the Project site in order to identify suitable rehabilitation options and manage the site rehabilitation process.

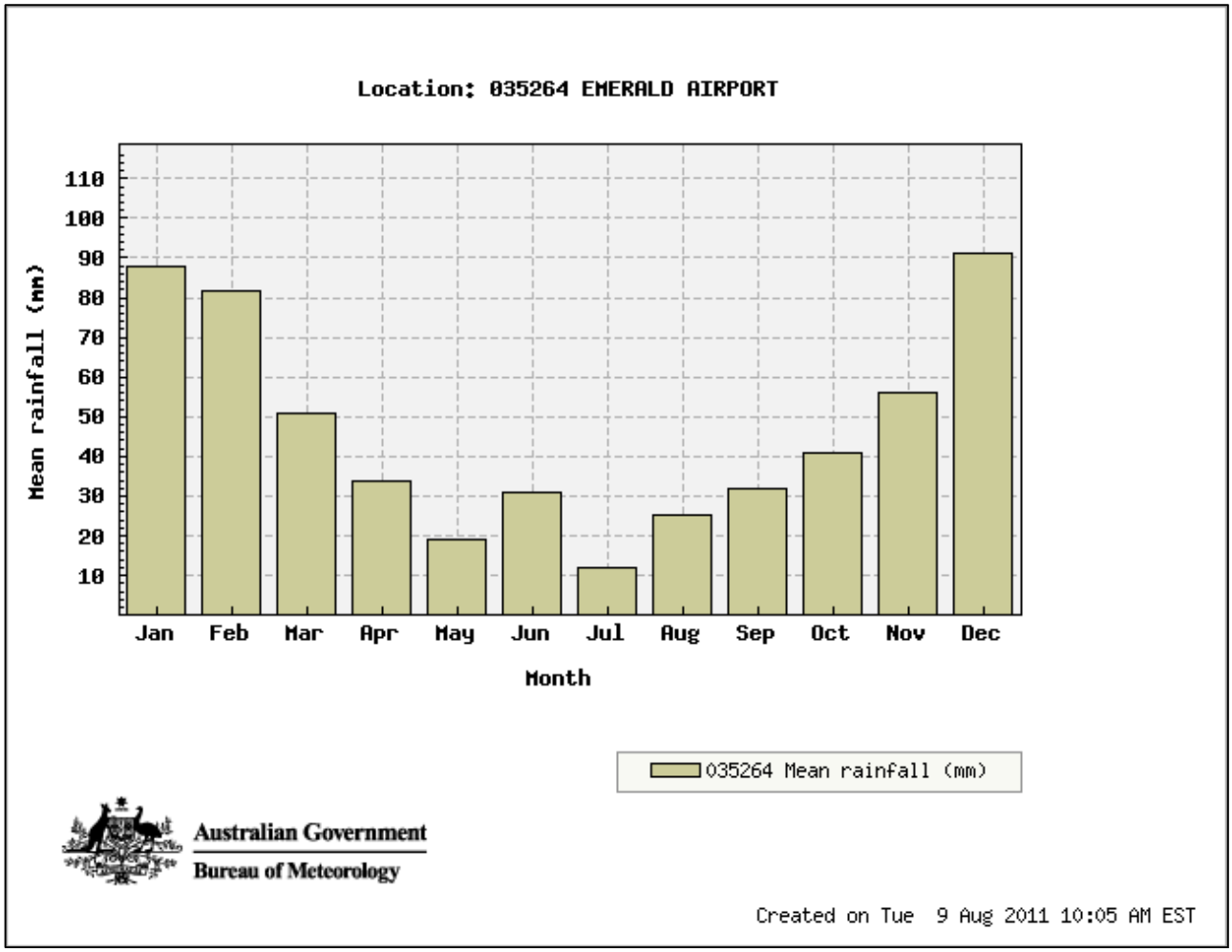
5.0 DESCRIPTION OF THE EXISTING ENVIRONMENT

5.1 REGIONAL CLIMATE

Climate data from 1992 to 2011 has been obtained from the Bureau of Meteorology (BoM) (which includes rainfall and temperature data) from the Emerald Airport Weather Station (BoM site number 035264; which is located 23.9 km from Project site).

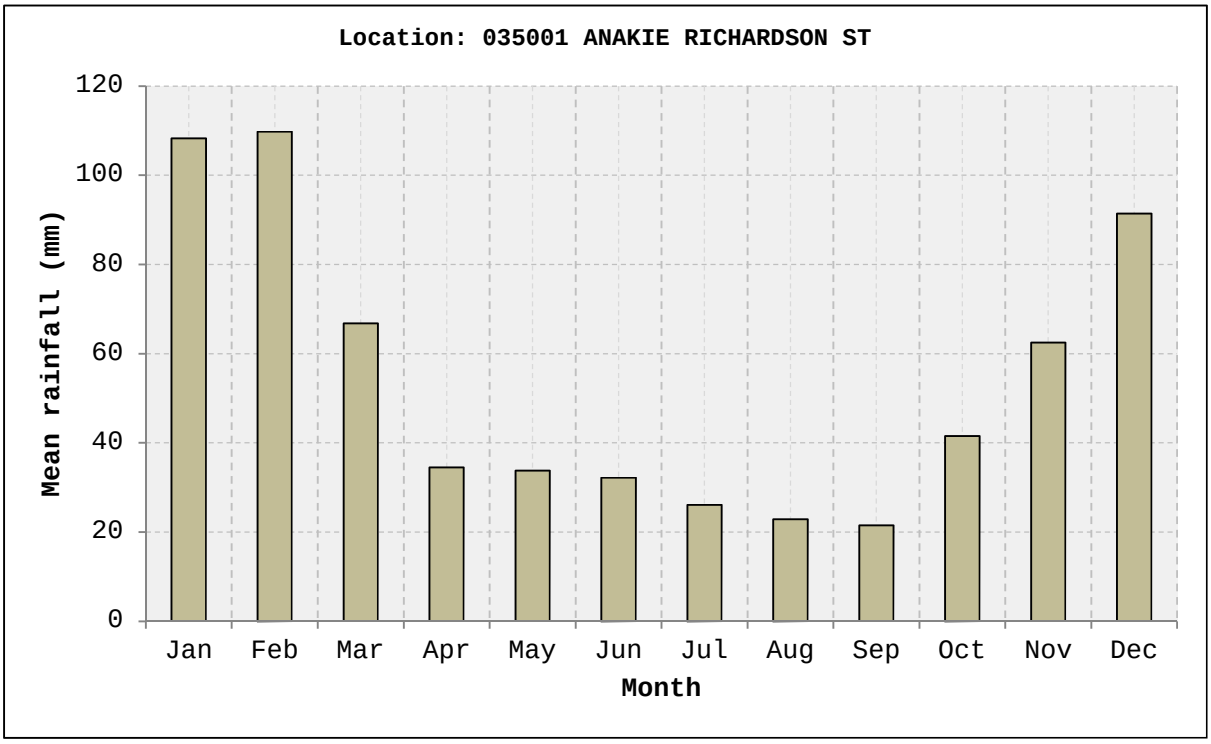
The average annual rainfall for the region (based on data for the Emerald Airport Weather Station over the period stated above) is approximately 561 mm. Rainfall is typically greater in late spring and summer, with the highest average rainfall occurring in December and the lowest level in July. Rainfall data from the Emerald Airport Weather Station is summarised in Figure 4.

Rainfall data from another nearby weather station, Anakie Richardson St Weather Station (BoM site number 035001; located 20.0 km from Project site), is presented in Figure 5. Note that there is no temperature data from this station, however rainfall data has been collected from the year 1889 to 2011 so that this provides insight into historical rainfall patterns in the Project area. Rainfall is typically seasonal with the most rain falling from December to February.



Source: Bureau of Meteorology 2011

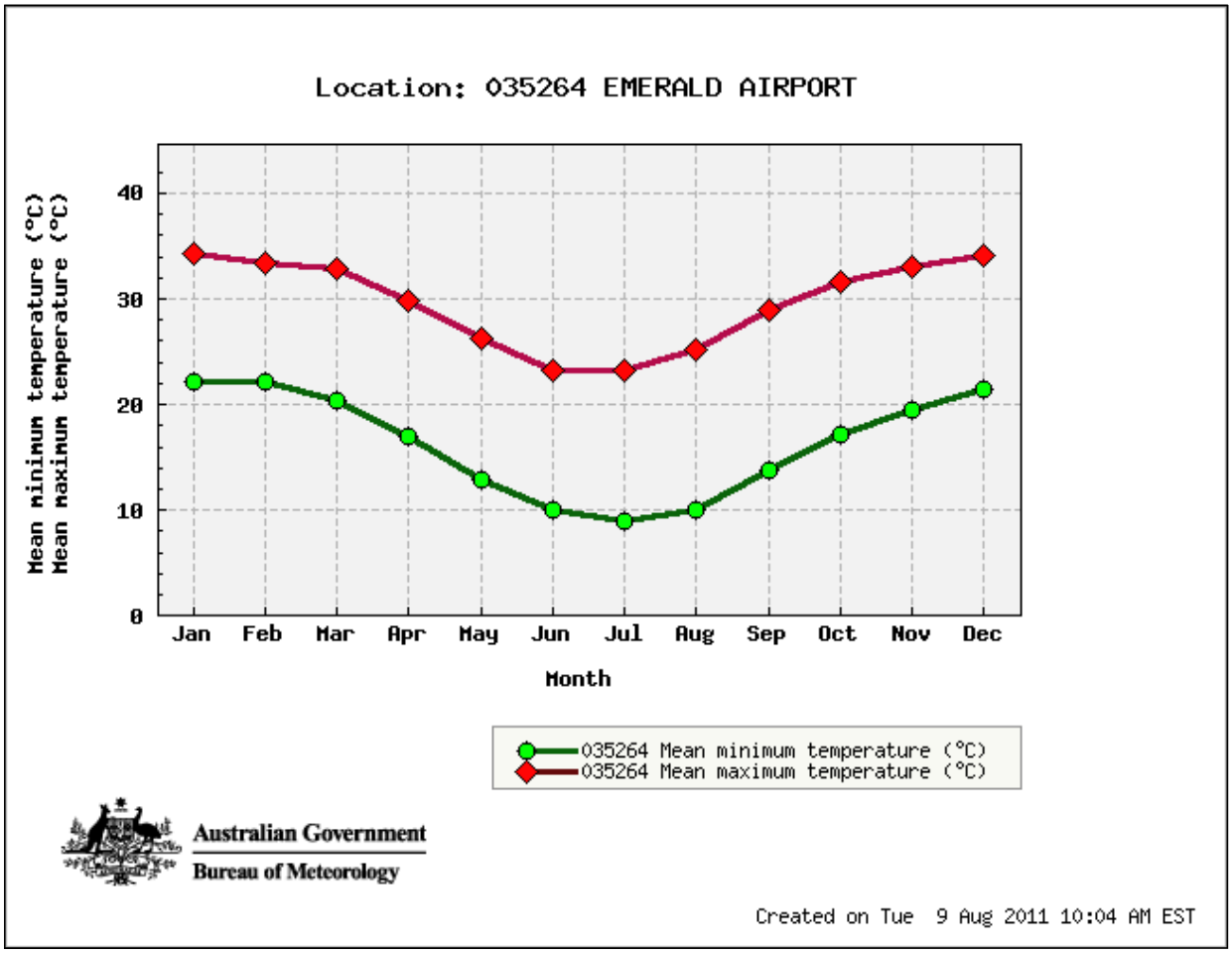
Figure 4 Mean rainfall by month from Emerald Airport Weather Station from the year 1992 to 2011



Source: Bureau of Meteorology 2011

Figure 5 Mean rainfall by month from Anakie Richardson St Weather Station from the year 1889 to 2011

Mean maximum and minimum temperatures from the Emerald Airport Weather Station are presented in Figure 6. For these years the mean maximum temperature was 29.7° C and the mean minimum temperature was 16.3° C. Temperature values are also seasonal, with both the mean maximum and minimum temperatures being greatest between October and March.



Source: Bureau of Meteorology 2011

Figure 6 Mean maximum and minimum temperatures by month from Emerald Airport Weather Station from the year 1992 to 2011

5.2 LAND RESOURCES

5.2.1 Land Use and Topography

Low intensity cattle grazing is the dominant land use on the Project site, together with crops such as wheat and sorghum. The topography is undulating to nearly flat terrain, refer to Photo Plate 1: for a typical view of the Project site's landscape.

5.2.2 Geology

The Project site is located in the southwest part of the Bowen Basin. During the Permian period, the Bowen Basin was an area of shallow water or terrestrial sedimentation, providing conditions suitable for coal accumulation. The basin is made up of sedimentary troughs, which separate platforms and, on the western side, overlay older metamorphic rocks. The Taroborah Coal Project is located on the Western edge of the Denison Trough and contains a substantial thickness of Permian sediments, overlain by Tertiary sediments.

Source: AARC

Photo Plate 1: Project Site Landscape

5.3 HYDROLOGY

5.3.1 Surface Water Resources

The hydrology of the site is dominated by a number of small creeks, namely Taroborah Creek in the southern area of EPC1011 and Retreat Creek in the north. It is understood that there is limited information concerning surface water quality for the Project site, as these creeks are ephemeral in nature.

5.3.2 Groundwater

There are three distinct groundwater aquifers that occur beneath the Project Site:

- Tertiary basalt aquifer;
- Permian Aldebaran Sandstone; and
- Permian coal seams.

Coal bearing sandstone and siltstone within the Bowen Basin carry varied amounts of water through the internal aquifer systems. During exploratory drilling, groundwater was encountered in aquifers within the Tertiary Basalt and Permian Aldebaran. A groundwater flow model was developed during the pre-feasibility study, to determine mine inflow rates and found that inflow to the open cut and underground areas, while potentially significant, can be managed using appropriate pumping strategies.

5.3.3 Wetlands

Both palustrine and lacustrine water bodies have been identified in the centre and north of the Project site, however no wetlands of national or international importance have been recorded on the Project site, including those nominated under the Ramsar Convention.

5.4 ECOLOGY

To gain an understanding of the potential occurrence of important flora and fauna species within and adjacent to the Project, database searches were undertaken via the Wildlife Online Database, Regional Ecosystem Description Database (REDD) and the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Database. These searches are described as follows and discussed in subsequent sections of this IAS:

- Wildlife Online Database – This database is administered by the Queensland DERM and is derived from sources such as specimen collections, research and monitoring programs, literature records and wildlife permit returns (DERM 2011b). Species of conservation significance under the NC Act are listed in this database;
- REDD – This database is administered by DERM and is a compilation of the information presented in Sattler and Williams (1999) and mapped by the Queensland Herbarium. It lists the status of regional ecosystems as gazetted under the *Vegetation Management Act 1999* (VM Act) and the Biodiversity Status as recognised by DERM (DERM 2011a); and
- EPBC Act Protected Matters Search Tool – This database is administered by the federal Department of Sustainability, Environment, Water, Population and Communities. It generates a record of EPBC Act listed species that are predicted to occur in a given search area, general guidance on matters of national environmental significance and other matters protected by the EPBC Act (Department of Sustainability, Environment, Water, Population and Communities 2011).

5.4.1 EPBC Threatened Ecological Communities

A desktop survey of threatened species and ecological communities listed under the EPBC Act was conducted for the Project site in September 2011. The EPBC Act Protected Matters report was generated from a square 100 km x 100 km search area around the Project site centroid (23^{o} 31’ 38” S and 147^{o} 56’ 47” E) and identified five threatened ecological communities, 13 threatened fauna species and 6 threatened flora species potentially occurring within the Project site. In addition, 12 migratory and 11 marine avian species were also identified. Refer to Table 4 for a list of the EPBC Threatened Ecological Communities that potentially occur within the Project site.

Table 4 **EPBC Threatened Ecological Communities**

Name	Status	Presence
Brigalow (*Acacia harpophylla* dominant and co-dominant)	Endangered	Community known to occur within area
Natural Grasslands of the Queensland Central Highlands and the northern Fitzroy Basin	Endangered	Community likely to occur within area
Weeping Myall Woodlands	Endangered	Community likely to occur within area
Coolibah – Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	Community likely to occur within area
Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions	Endangered	Community likely to occur within area

5.4.2 Flora

Table 5 presents the Regional Ecosystems within the Project area and their status under the VM Act and DERM Biodiversity Status. This information was generated using a central point for the Project site of 23° 32' 7.08" S, 147° 56' 32.64" E and data extracted from the above databases.

Table 5 **Regional Ecosystems Identified in the Project Area**

Regional Ecosystem ID	Description	VMA Status	DERM Biodiversity Status
11.3.1	*Acacia harpophylla* and / or *Casuarina cristata* open forest on alluvial plains	Endangered	Endangered
11.3.2	*Eucalyptus populnea* woodland on alluvial plains	Of concern	Of concern
11.3.25	*Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines	Least concern	Of concern
11.3.3	*Eucalyptus coolabah* woodland on alluvial plains	Of concern	Of concern
11.4.2	*Eucalyptus spp*. and / or *Corymbia spp*. grassy or shrubby woodland on Cainozoic clay plains	Of concern	Of concern

Regional Ecosystem ID	Description	VMA Status	DERM Biodiversity Status
11.4.8	*Eucalyptus cambageana* woodland to open forest with *Acacia harpophylla* or *A. argyrodendron* on Cainozoic clay plains	Endangered	Endangered
11.4.9	*Acacia harpophylla* shrubby open forest to woodland with *Terminalia oblongata* on Cainozoic clay plains	Endangered	Endangered
11.8.5	*Eucalyptus orgadophila* open woodland on Cainozoic igneous rocks	Least concern	No concern at present
11.8.11	*Dichanthium sericeum* grassland on Cainozoic igneous rocks	Of concern	Of concern
11.10.3	*Acacia catenulata* or *A. shirleyi* open forest on coarse-grained sedimentary rocks. Crests and scarps	Least concern	No concern at present
11.10.7	*Eucalyptus crebra* woodland on coarse-grained sedimentary rocks	Least concern	No concern at present
11.10.12	*Eucalyptus populnea* woodland on medium to coarse-grained sedimentary rocks	Least concern	No concern at present
11.11.2	*Acacia shirleyi* or *A. catenulata* low open forest on old sedimentary rocks with varying degrees of metamorphism and folding	Least concern	No concern at present
11.11.12	*Eucalyptus persistens* low woodland on deformed and metamorphosed sediments and interbedded volcanics	Least concern	No concern at present
11.9.1	*Acacia harpophylla-Eucalyptus cambageana* open forest to woodland on fine-grained sedimentary rocks	Endangered	Endangered

A summary of flora species of EPBC conservation significance that may occur in the Project area is presented in Table 6. This information was sourced from the EPBC Act Protected Matters database using a central point for the Project site of 23^{o} 31' 38" S and 147^{o} 56' 47" E and a 100 km x 100 km square search zone around this point. A search of the Wildlife Online database using the same central co-ordinate and four 10 km x 10 km search areas was also conducted to identify any flora species listed under the *Nature Conservation (Wildlife) Regulation 2006* that are likely to occur in the Project region (refer to Table 6 for details).

Note that no flora species of conservation significance were actually recorded on the Project site.

Table 6 **Flora Species of EPBC Conservation Significance That May Occur In the Project Area**

Scientific Name	Common Name	Conservation Status		Presence
		EPBC Act	NC Act	
Aristida annua	-	Vulnerable	-	Species or species habitat likely to occur within area
Cadellia pentastylis	Ooline	Vulnerable	-	Species or species habitat likely to occur within area
Marsdenia brevifolia	-	Vulnerable	Vulnerable	Species or species habitat likely to occur within area
Cymbonotus maidenii	-		Endangered	Species or species habitat likely to occur within area
Wahlenbergia islensis	-		Near Threatened	Species or species habitat likely to occur within area
Eucalyptus sicilifolia	-		Vulnerable	Species or species habitat likely to occur within area
Cyperus clarus	-	-	Vulnerable	Species or species habitat likely to occur within area
Dichanthium queenslandicum	King Blue-grass	Vulnerable	Vulnerable	Species or species habitat likely to occur within area
Dichanthium setosum	-	Vulnerable	Near Threatened	Species or species habitat likely to occur within area
Digitaria porrecta	Finger Panic Grass	Endangered	Near Threatened	Species or species habitat likely to occur within area

Species and communities of conservation significance, identified in database searches, will be targeted during the baseline flora and fauna surveys that are to be undertaken on the Project site. A technical report will be produced to identify flora conservation values for the Project site and provide mitigation strategies to combat potential impacts from Project activities.

5.4.3 Fauna

Table 7 presents a summary of fauna species of EPBC Act or NC Act conservation significance, which may occur in the Project region. This information was sourced from the EPBC Act Protected Matters and Wildlife Online databases. Both database searches were conducted using the same central co-ordinate, 23° 31' 38" S and 147° 56' 47" E and a 100 km search area. Note that the Wildlife Online database search is comprised of four search tiles, each 10 km x 10 km and clustered around the central co-ordinate.

Note that no fauna species of conservation significance were actually recorded on the Project site.

Table 7 **Fauna Species of Conservation Significance That May Occur In The Project Area**

Scientific Name	Common Name	Conservation Status		Presence
		EPBC Act	NC Act	
Birds				
Erythrotriorchis radiatus	Red Goshawk	Vulnerable	Endangered	Species or species habitat likely to occur within area
Accipiter novaehollandiae	Grey Goshawk	-	Near Threatened	Species or species habitat likely to occur within area
Phaethon rubricauda	Red-Tailed Tropicbird	-	Vulnerable	Species or species habitat likely to occur within area
Melithreptus gularis	Black-chinned honeyeater	-	Near Threatened	Species or species habitat likely to occur within area
Tadorna radjah	Radjah Shelduck	-	Near Threatened	Species or species habitat likely to occur within area
Geophaps scripta scripta	Squatter Pigeon (southern)	Vulnerable	Vulnerable	Species or species habitat likely to occur within area
Nettapus coromandelianus	Cotton Pygmy-Goose	-	Near Threatened	Species or species habitat likely to occur within area
Ephippiorhynchus asiaticus	Black-necked stork	-	Near Threatened	Species or species habitat likely to occur within area
Neochmia ruficauda ruficauda	Star Finch (eastern), Star Finch (southern)	Endangered	-	Species or species habitat likely to occur within area
Rostratula australis	Australian Painted Snipe	Vulnerable	Vulnerable	Species or species habitat may occur within area

Scientific Name	Common Name	Conservation Status		Presence
		EPBC Act	NC Act	
Mammals				
Dasyurus hallucatus	Northern Quoll	Endangered	-	Species or species habitat may occur within area
Chalinolobus picatus	Little Pied Bat	-	Near Threatened	Species or species habitat may occur within area
Nyctophilus timoriensis (South-eastern form)	Greater Long-eared Bat, south-eastern Long-eared Bat	Vulnerable	-	Species or species habitat may occur within area
Reptiles				
Delma torquate	Collared Delma	Vulnerable	-	Species or species habitat may occur within area
Denisonia maculata	Ornamental Snake	Vulnerable	Vulnerable	Species or species habitat likely to occur within area
Acanthophis antarcticus	Common Death Adder	-	Near Threatened	Species or species habitat likely to occur within area
Hemiaspis damelii	Grey Snake	-	Endangered	Species or species habitat likely to occur within area
Egernia rugosa	Yakka Skink	Vulnerable	Vulnerable	Species or species habitat likely to occur within area
Furina dunmalli	Dunmall's Skink	Vulnerable	-	Species or species habitat may occur within area
Strophurus taenicauda	Golden-tailed Gecko	-	Near Threatened	Species or species habitat likely to occur within area
Lerista allanae	Allan's Lerista, Retro Slider	Endangered	-	Species or species habitat may occur within area
Paradelma orientalis	Brigalow Scaly-foot	Vulnerable	Vulnerable	Species or species habitat may occur within area
Rheodytes leukops	Fitzroy River Turtle, Fitzroy Tortoise	Vulnerable	Vulnerable	Species or species habitat may occur within area
Cyclorana verrucosa	Rough Collared Frog	-	Near Threatened	Species or species habitat may occur within area

- = not listed

Table 8 presents a summary of species listed as either Migratory or Marine under EPBC Act. This information is sourced from the same EPBC Protected Matters Report described above.

Table 8 **Bird Species Listed as Migratory and/or Marine Under the EPBC Act**

Scientific Name	Common Name	Migratory			Listed Marine Species
		Marine Birds	Terrestrial Species	Wetland Species	
Anseranas semipalmata	Magpie Goose				X
Apus pacificus	Fork-tailed Swift	X			X
Ardea alba	Great Egret, White Egret	X		X	X
Ardea ibis	Cattle Egret	X		X	X
Gallinago hardwickii	Latham's Snipe			X	X
Haliaeetus leucogaster	White-bellied Sea-Eagle		X		X
Hirundapus caudacutus	White-throated Needletail		X		X
Merops ornatus	Rainbow Bee-eater		X		X
Myiagra cyanoleuca	Satin Flycatcher		X		X
Nettapus coromandelianus albipennis	Australian Cotton Pygmy-goose			X	X
Rostratula benghalensis s. lat.	Painted Snipe			X	X

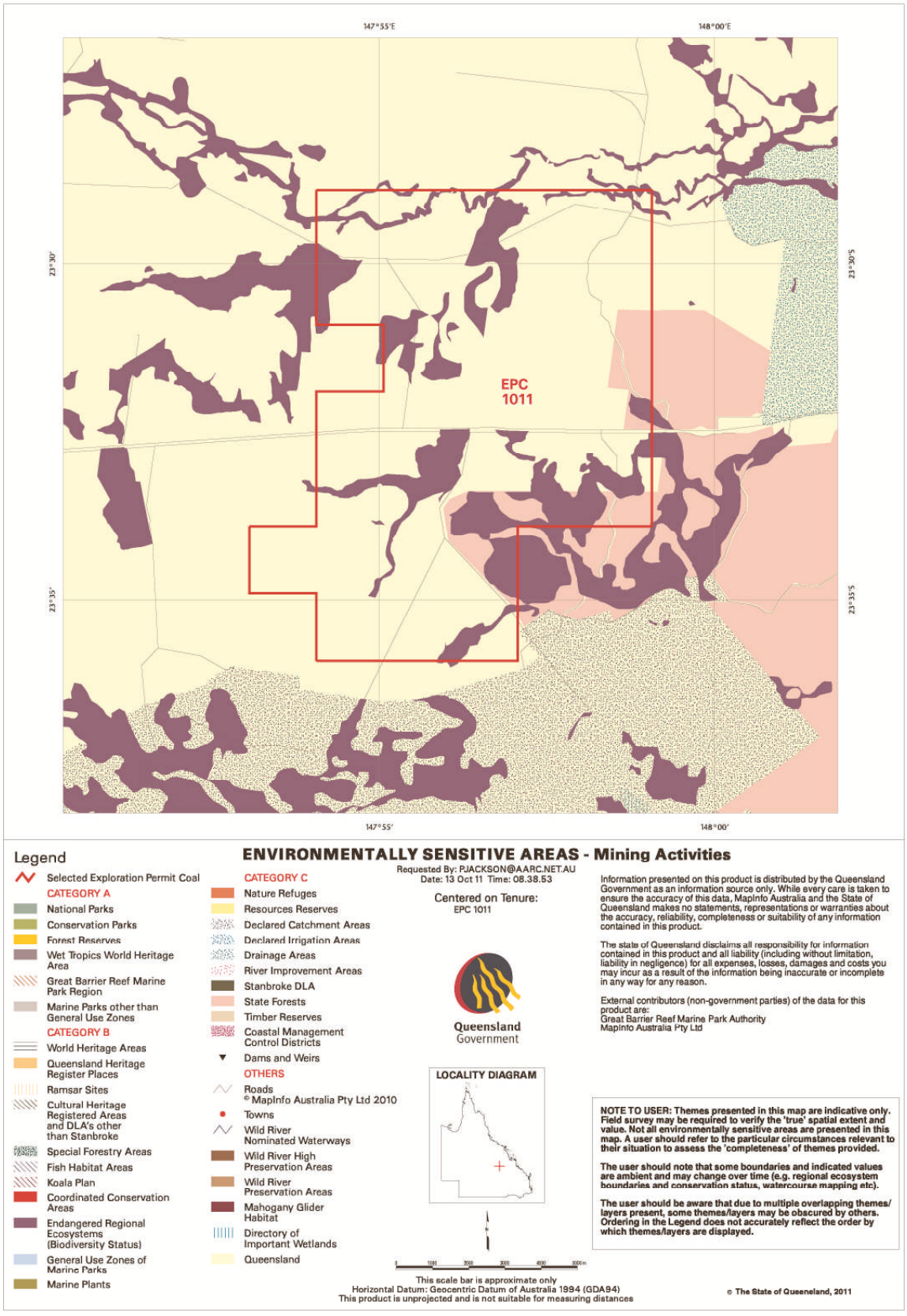
5.4.4 Environmentally Sensitive Areas

Figure 7 presents the environmentally sensitive areas which surround the Project site. Fairbairn State Forest forms part of the southeast corner of EPC1011 (shown in pink) however, only a limited percentage of the State Forest area underlies EPC1011and occurs in the footprint of the open-cut mining operation.

Endangered regional ecosystems are also identified in Figure 7 (shown in purple), as described in Table 5.

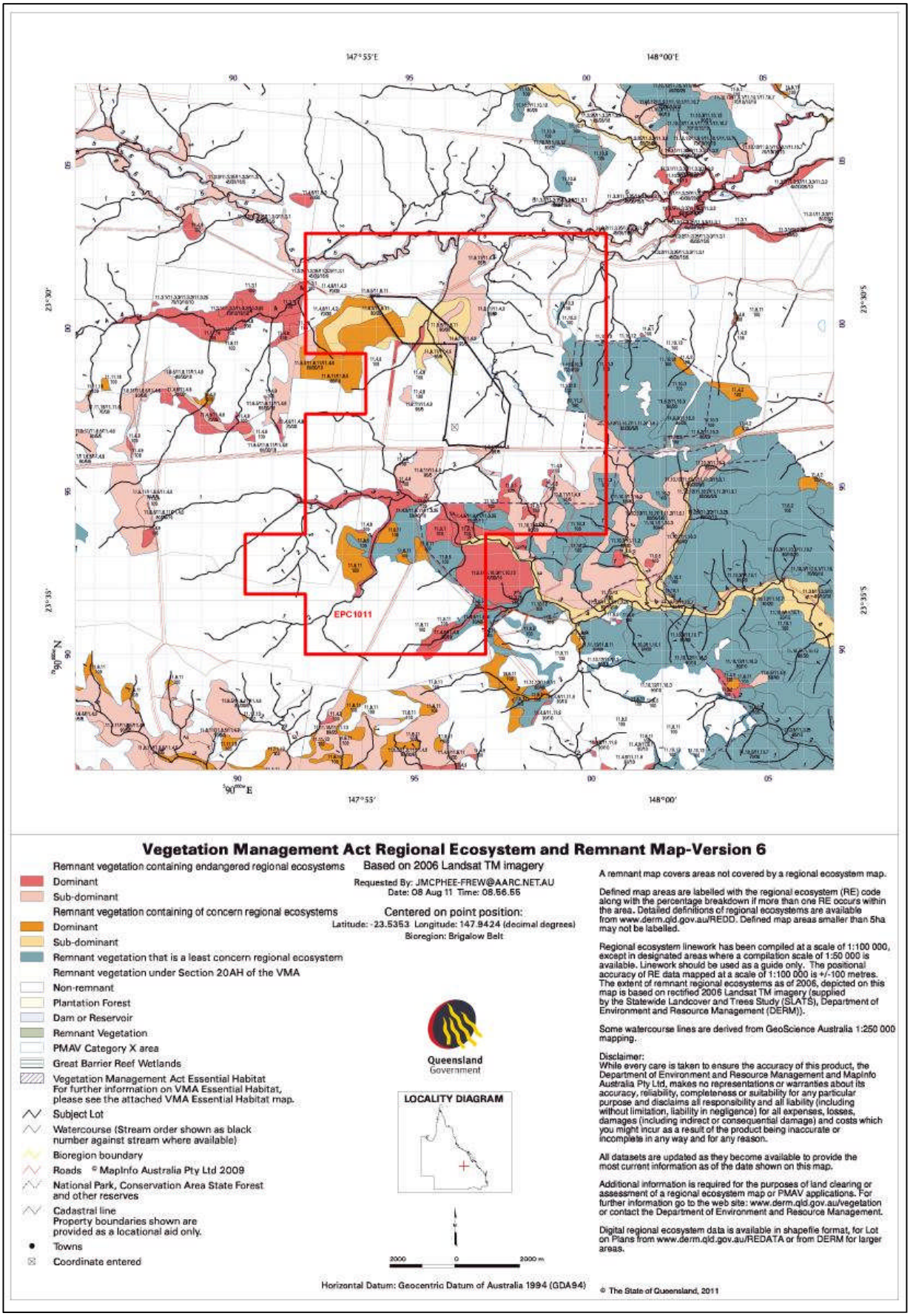
Figure 8 presents the remnant vegetation and regional ecosystems within the project site, as described in Table 5.

There are no National Parks or World Heritage Areas in the area surrounding the town of Emerald or within the exploratory permit for coal (EPC1011).



Source: DERM

Figure 7 Environmentally Sensitive Areas for EPC1011



Source: DERM

Figure 8 Regional Ecosystem and Remnant Vegetation Map of the Project Site

5.5 EPBC ACT REFERRAL

The Proponent is awaiting the results of an EPBC Act referral, to determine whether or not the Project constitutes a Controlled Action as per the EPBC Act 1999. Should the Project be identified as a Controlled Action, it is anticipated that the Project will be progressed as an accredited assessment process through a bilateral agreement between Queensland and the Commonwealth Governments.

5.6 TRAFFIC AND TRANSPORT

A traffic and transport assessment will be conducted for the Project, to identify the product, materials and staff transport routes required for the Project, identify any significant impacts that the Project may have upon local and regional transport systems and present potential transport management options to address these impacts where required.

5.7 SOCIO-ECONOMIC CONDITIONS

The Project site is located in a rural area, approximately 22 km west of Emerald. The total number of persons that will be employed by the mine is currently unknown, however a number of accommodation alternatives will be considered, including onsite accommodation villages, and these will take into account post-work travel distances and safety.

5.8 CONSERVATION ESTATES

Figure 7 indicates that Fairbairn State Forest underlies part of EPC1011 (shown in pink), however only limited areas of the proposed mining operations areas fall within the State Forest. There are no National Parks or World Heritage Areas in the area surrounding the town of Emerald or within EPC1011. The Project site and associated activities will have no influence on marine parks, due to the distance from the Project site to the coastline.

5.9 CULTURAL HERITAGE

5.9.1 Indigenous

An Aboriginal and Torres Strait Islander cultural heritage map of Queensland, produced by the Department of Environment and Resource Management indicates three sites of cultural heritage within the general vicinity of the Project site. Two are identified as story places or cultural sites and one is classified as engravings and paintings. They are all located south of Lake Maraboon, approximately 20 km to the south of the Project site. Therefore, it is not anticipated that the proposed Project activities will have an adverse impact upon sites of significant indigenous cultural heritage.

All activities will be undertaken with due consideration to the Duty of Care Guidelines prescribed under the Aboriginal Cultural Heritage Act 2003.

The representative group for the Aboriginal area which covers the Project site is the Western Kangoulu People. Note that there is no Native Title at EPC1011 and that the Western Kangoulu People are liaised with directly on cultural heritage issues.

5.9.2 Non-indigenous

There are no heritage listed places on the Queensland Heritage Register within the Project Site. There are also no Commonwealth Heritage Places listed on the Australian Heritage Database within the Project site.

5.10 AIR QUALITY

Air quality in the region is mainly influenced by pastoral conditions, effects from cattle grazing, open-cut mining operations and nearby road and rail transportation.

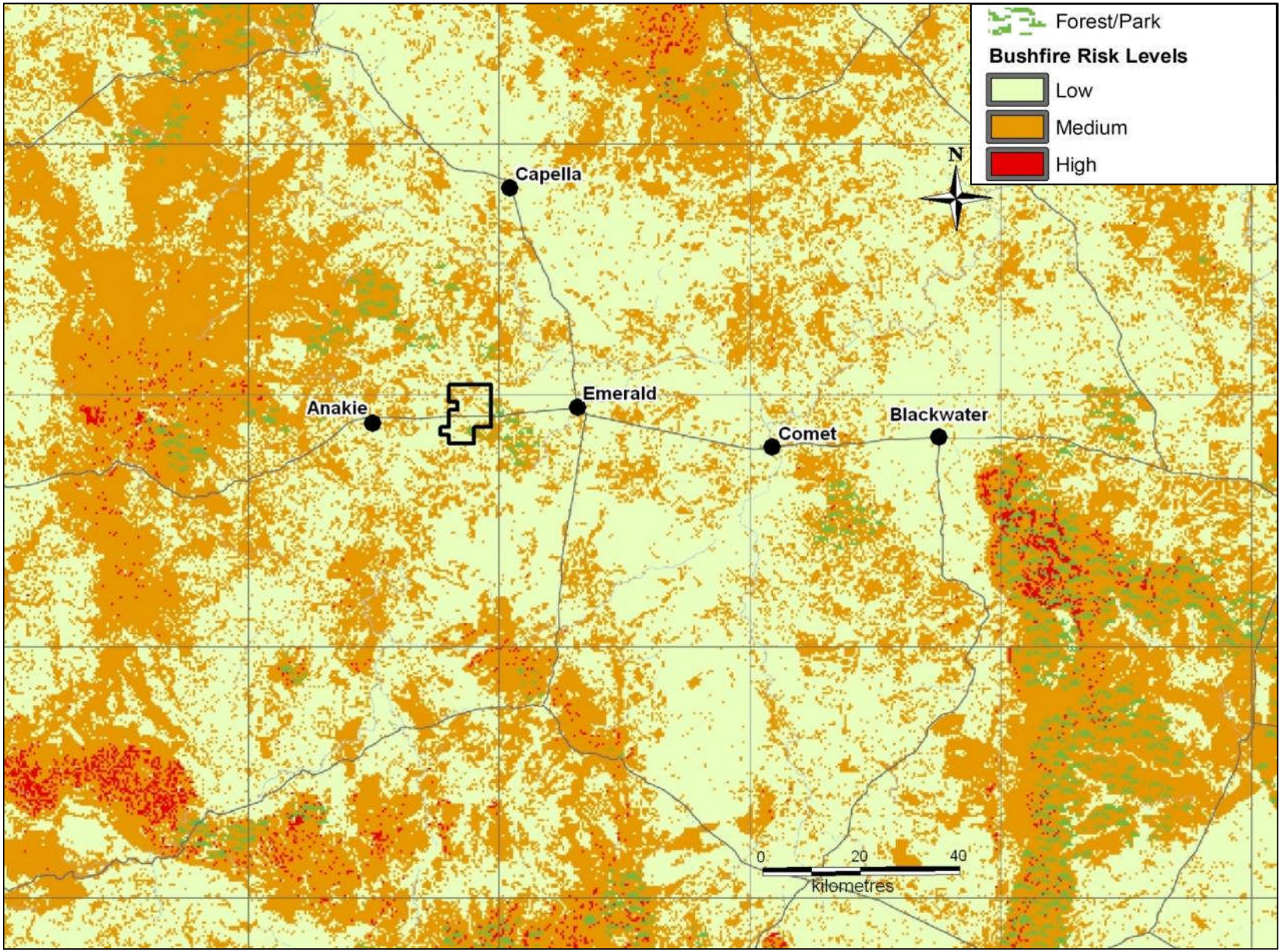
5.11 NATURAL ENVIRONMENTAL HAZARDS

5.11.1 Bushfire Prone Areas

A bushfire risk analysis map for the Central Highlands Regional Council (produced by the Queensland Fire and Rescue Service (2008)), shows that within the Project area, there are small areas identified as medium bushfire risk, but no areas of high bushfire risk. Refer to Figure X for details of this bushfire risk assessment.

5.11.2 Cyclonic Influence

The coastal area to the east of the Project site experiences an average of 0.2 cyclones per year (Bureau of Meteorology 2010). However, as the Project site is located approximately 275 km from the coastline, the potential for cyclonic damage is assumed to be minimal.



Source: Central Highlands Regional Council

Figure 9 Bushfire Risk Analysis Map

6.0 COMMUNITY CONSULTATION

6.1 INTERESTED AND AFFECTED PERSONS

The closest town to the Project site is Emerald, which lies approximately 22 km to the east, with a population of 10,999 people (Australian Bureau of Statistics (ABS) 2008). In the 2006 Census, the Central Highlands Region had a population of 28,256 people (ABS 2011). The regional Centre of Rockhampton, located approximately 275 km to the west, has a population of 60,827 people (ABS 2008).

The main employment industries in Emerald and the surrounding region are mining, retail trade and construction, accounting for 2,521 people out of 6,169 of people in the workforce (ABS 2008). Approximately one fifth of the working population are employed in the mining industry, highlighting the dominance of the industry in this area.

Social impacts of the Project will be investigated as part of the EIS. Whilst the Project will provide employment opportunities and economic benefits for the local towns and nearby regional centres, it is also likely that there will be some migration to the area. An assessment of the expected population increase, along with potential impacts such as demand for housing and other services, will be addressed in the EIS.

6.2 CONSULTATION PROCESS

Any persons who are interested in, or affected by, the Project will be included in the community consultation program and will be provided with a copy of the Terms of Reference (ToR) Notice and EIS Notice for public comment. As part of the EIS, all correspondence with interested and affected persons will be recorded in the Consultation Register. Any required meetings with interested and affected persons will be conducted as part of the community consultation program.

The draft ToR will be released for public comment for at least 30 business days and any member of the public may comment on the draft ToR. At the end of the comment period, copies of all remarks received by DERM will be provided to the Proponent (Shenhuo International Group) who will then prepare the following documentation:

- A written summary of the comments;
- A response to the comments; and
- Proposed amendments to the ToR as a result of the comments received.

Note that the final ToR will be issued by DERM.

7.0 POTENTIAL IMPACTS AND MANAGEMENT REQUIREMENTS

7.1 LAND SYSTEMS

During Project construction, the majority of physical impacts upon the local area will arise as a result of road use and bulk earthwork movements. The final landform will be approved as part of the DERM EIS process and will be adhered to, so as to avoid unnecessary impacts occurring.

Out-of-pit spoil dumps will be reshaped, topsoiled and revegetated. As the mine develops, dump sites and other areas will continue to be rehabilitated, in order to minimise the total land area disturbed by the operation at any one time.

Land use impacts will be limited to those areas directly affected by the mining operations. The EIS will describe the degree to which the operation will affect land use capability, including plans for rehabilitation and decommissioning.

7.2 BIOLOGICAL IMPACTS

Clearing of regrowth vegetation and possibly, some sparse remnant vegetation, will be required for the open-pit area of the mine and associated infrastructure. It is intended that during the mine life, low-intensity grazing will continue on those parts of the mine where operations do not inhibit the ability to do so.

Much of the proposed mine site has already been cleared of remnant vegetation (refer to Figure 8), and is used for cattle grazing and cropping, however a detailed flora and fauna assessment will be undertaken as part of the EIS process, to identify how Project activities will impact those species identified in section 5.4.

7.3 SOCIO-ECONOMIC IMPACTS

It is expected that the workforce who construct and operate the mine will be made up of a combination of residents from local townships and regional centres, and workers brought in from elsewhere, based on their relevant experience.

A wide range of social factors will be addressed in the EIS.

7.4 HEALTH AND SAFETY

Health and safety issues associated with both Project construction and operations will be identified in the EIS, significant risks associated with these activities identified and appropriate risk control measures developed.

A Health and Safety Plan will be developed for the Project site, in order to control Project risks and record any incidents / changes to the plan.

7.5 WATER SUPPLY AND QUALITY

Water issues for the Project include potential groundwater impacts from mining and groundwater pit inflows to the open pit and underground, which require dewatering to ensure safe mining operations.

The water quality of onsite surface water may be affected by sediment run-off and erosion. Where roads are required to cross waterways, creek crossings will be designed to withstand projected flood events and appropriate erosion and control measures will be implemented.

Further studies will be conducted regarding surface water quality and management, and the hydrology study as part of the EIS will consider overall water balance for the Project, including total water supply required.

7.6 AIR QUALITY

The Project will be required to meet the air quality standards for dust under the EP Act, and an assessment of air quality and suitable mitigation methods will be outlined in further detail in the EIS.

Dust from disturbed areas and haul roads is expected to represent the primary air quality impacts associated with the Project. Dust deposition gauges will be installed on the Project site, in order to collect background levels representative of the region under typical circumstances. Air quality modelling will be undertaken to predict the impact of dust levels and emissions upon sensitive receivers during Project operations.

7.7 TRANSPORT IMPACTS

The potential increases in road traffic during the construction and operation phases of the Project will be addressed in a transport impact assessment and during the EIS process, when a road impact assessment will be developed in consultation with Queensland Transport and the Queensland Department of Main Roads.

The impacts from product being transported via the Central West / Blackwater Rail System and Gladstone Port are currently unknown, however, they will be investigated further during the EIS process.

7.8 MINE INFRASTRUCTURE IMPACTS

7.8.1 Storage of Materials

During both the construction and operation phases of the Project, it is not expected that significantly large quantities of fuel and oil will be stored onsite. Any hazardous materials which are stored onsite will be done so in accordance with the relevant Australian standards to ensure that spillages are contained. Standard operating procedures will be implemented, including spill procedures and an emergency response process.

Other benign materials associated with both Project construction and operations will also be stored on site.

7.8.2 Waste Generation

Wastes likely to be generated during the construction phase of the Project include green waste, concrete materials, timber, metals, hydrocarbons, sewage, exhaust emissions, tyres and paint materials. Wastes likely to be produced during the operation phase include green waste, batteries, scrap metal, tyres, water treatment plant waste, tailings and other general waste. Tailings will be generated from the washing or ROM coal. Water availability and consumption will influence the mode of tailings disposal and such tailings disposal options will be investigated further in the EIS.

7.9 VISUAL AMENITY

The EIS will assess whether or not Project construction and operation activities will impact the visual amenity of the site and present measures to reduce any impacts where required. The continued rehabilitation of spoil areas, such as out-of-pit dumps, may reduce the visual impacts of the mine operation.

7.10 NOISE AND VIBRATION

Noise studies will include the deployment of background environmental noise loggers to obtain noise levels representative of the local area under typical circumstances. Noise levels from the Project, and the potential impact on sensitive receivers, will be predicted based upon the proposed mine plan. Modelling will be undertaken to assess the impact of noise and vibration upon local sensitive receivers during both Project construction and operations.

7.11 HAZARD ASSESSMENT AND CONTROLS

The following controls have been developed, in order to avoid or reduce the impacts of environmental hazards associated with the mining operation. The following list represents a preliminary assessment of Project hazards and controls, but does not represent a comprehensive hazard and risk control assessment.

<u>Mineral Exploration</u>

- To reduce hazards associated with drilling, the following controls will be included:
    - Dust suppression with water;
    - Construction of drill sumps; and
    - Effective drill site rehabilitation.
- Vegetation clearing will only occur after the following procedures have been adopted:
    - Vegetation clearing approval processes are instigated;
    - Erosion and sediment control structures are installed;
    - The clearing footprint has been clearly identified; and
    - All personnel and contractors are aware of the potential presence of any species or communities with conservation significance.

Project Construction

- Impacts from bulk earthworks and mine development will be mitigated via the following actions:
    - Approval of the final landform as part of the DERM EIS process;
    - Creek crossings designed to withstand projected flood events; and
    - Appropriate erosion and sediment control measures implemented.
- Hazardous waste and spill mitigation controls include the following:
    - Operators are trained in spill management and reporting;
    - Spill kits are located throughout the site; and
    - Hazardous waste will be stored in appropriate areas.
- As part of vehicle wash-downs, all wash-down pads will have oil / water separators and will be cleaned regularly.

Mining Drill and Blast Procedures

- All hydrocarbons will be stored according to AS 1940; and
- Staff will be trained in the use of spill containment kits.

Mining Production

- The following controls will be implemented during the construction of waste rock dumps:
    - Rehabilitation and stabilisation of areas disturbed during Project construction will be completed as soon as possible;
    - Dumps will be situated at particular locations on the Project site, in order to avoid interference with overland flows of surface water;
    - Upstream and downstream groundwater monitoring programmes will be conducted;
    - Site run-off / seepage will be intercepted and diverted. Retention structures will also be utilised; and
    - Run-off from all disturbed areas will pass through sediment dams and bunds, which will be installed downstream of Project infrastructure, in order to prevent the release of sediment into the environment.
- To avoid the loss of structural integrity of fines dams, resulting in the release of fines and the subsequent contamination of surface water and soil the following dam activities will be conducted:
    - Dams should be designed by a qualified engineer;
    - DERM will approve and licence the design prior to construction; and
    - Dams should be inspected annually by a qualified engineer.
- To avoid burst tailings lines and the contamination of surface water and soil, tailings lines will be inspected regularly.

Fuel Supplies

- To avoid hydrocarbon spills during storage and refuelling:
    - Operators will be trained in spill management and reporting procedures;
    - Spill clean-up kits are located throughout the site; and
    - All hydrocarbons will be stored according to AS 1940.

Mining Maintenance

- The runoff from the vehicle wash-down facility will flow into a sediment trap.

Village Services Management

- The landfill where food waste is disposed of will be covered and fenced to avoid feral animal occurrence.
- The sewage treatment plant will :
    - Be designed to match the camp's maximum requirements; and
    - Be operated in accordance with the manufacturer's instructions.

Vehicular Transport

- To avoid animal strikes:
    - Vehicles should be driven to legal / site speed limits;
    - Lighting on vehicles should be well maintained; and
    - Driver fatigue should be managed.

Site Decommissioning

- During the creation of the final void:
    - The project will be provided with an EA which will outline the monitoring and management of any salinity issues;
    - The designer of the final void will be approved by the relevant authority; and
    - Diversions are used to prevent the release of pit water.
- During rehabilitation:
    - Chemical herbicides and mechanical control measures will be used for severe weed outbreaks during the maintenance phase of the rehabilitation works; and
    - Site run-off will pass through sediment dams.

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