TERESA COAL PROJECT

INITIAL ADVICE STATEMENT

OCTOBER 2011

Contents

Table Index

Figure Index

Appendices

Abbreviations

Abbreviation	Description
AADT	Average Annual Daily Traffic Volumes
AMD	Acid Mine Drainage
ASX	Australian Stock Exchange
CHMP	Cultural Heritage Management Plan
CHPP	Coal Handling and Preparation Plant
CO_2	Carbon dioxide
DEEDI	Department of Employment, Economic Development and Innovation
DERM	Department of Environment and Resource Management
DSEWPAC	Department of Sustainability, Environment, Water, Population and Communities
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EPC	Exploration Permits for Coal
EM Plan	Environmental Management Plan
EPP	Environmental Protection Policy
ESAL	Equivalent Standard Axle Load
GARID	Guideline for Assessments of Road Impacts of Development
GIS	Geographic Information System
GHG	Greenhouse gas
GTL	Gas to Liquids
ha	Hectares
IAS	Initial Advice Statement
km	Kilometre
kV	Kilovolt
ML	Megalitre

MLpa	Megalitres per annum
MLA	Mining Lease Application
MNES	Matters of National Environmental Significance
Mtpa	Million tonnes per annum
NGA	National Greenhouse Accounts
PCI	Pulverised Coal Injection
QCISP	Queensland Coal Infrastructure Strategic Plan
RE	Regional Ecosystem
ROM	Run Of Mine
SCR	State Controlled Road
TMR	Department of Transport and Main Roads
ToR	Terms of Reference
tph	Tonnes per hour
UCG	Underground Coal Gasification

1. Introduction

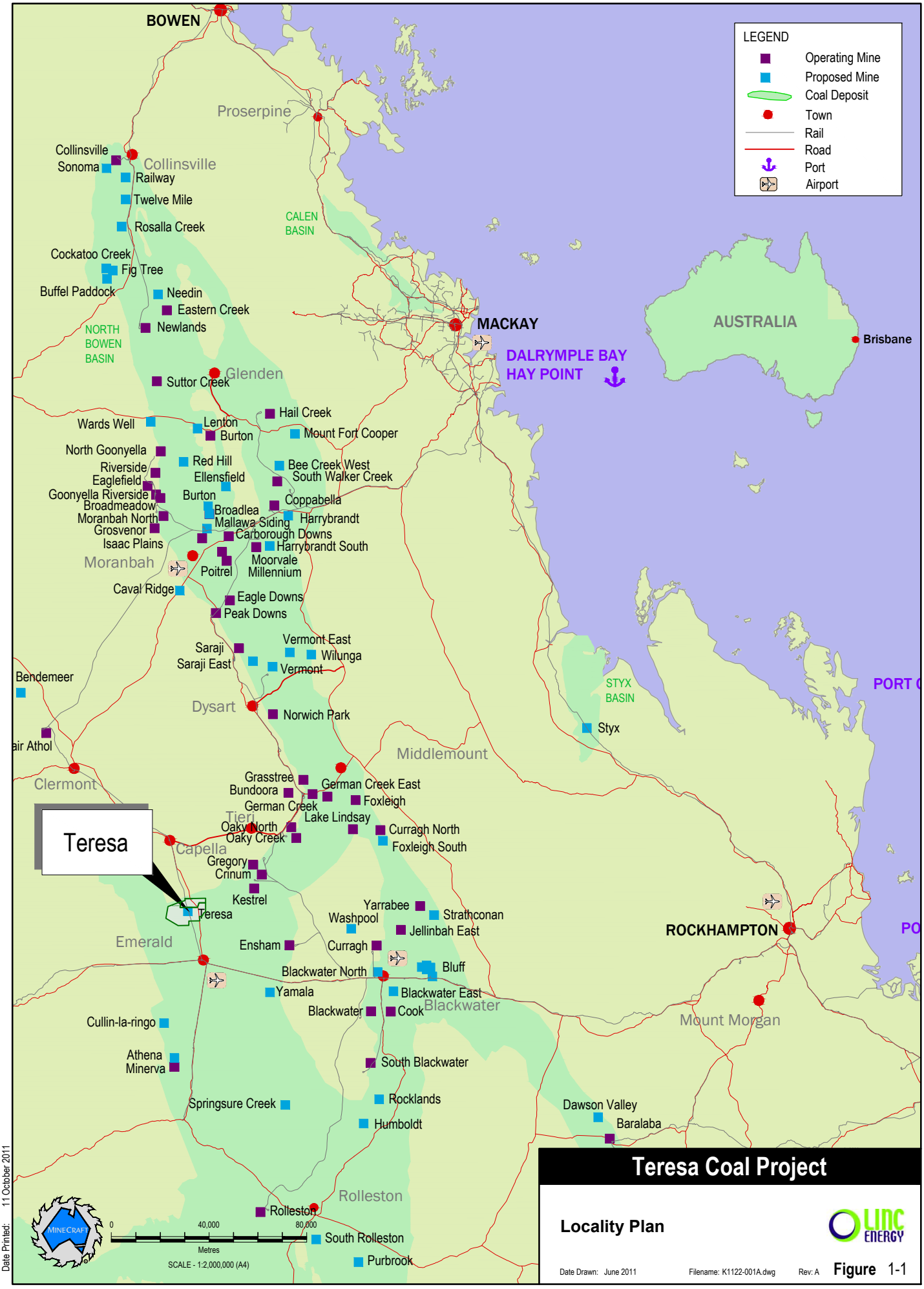
Linc Energy Ltd (the Proponent) is proposing to develop the Teresa Coal Project (the Project) approximately 17 km from Emerald in the Bowen Basin, Queensland (Figure 1-1 and Figure 1-2).

The proposed longwall mine will produce up to 8 million tonnes per annum (Mtpa) of Run of Mine (ROM) coal with a product yield of approximately 80%. The product will be an export quality PCI coal. The life of the mine is dependent on final production numbers, but is expected to be 20 to 30 years. Transport infrastructure connecting the mine to the existing rail system will also be constructed.

This Initial Advice Statement (IAS) has been prepared to provide information about the Project for the purpose of identifying potential environmental, cultural or community issues and the necessary regulatory approvals required prior to the development of the Project.

This IAS is intended to scope the potential impacts that will be investigated in detail in an EIS prepared under Chapter 5 of the Queensland *Environmental Protection Act 1994* (EP Act). Terms of Reference (ToR) for the EIS will be developed based on the advice and outcomes of this IAS, the requirements of relevant government agencies and the submissions of other interested stakeholders.

The IAS will support a voluntary EIS that will be prepared under Sections 70 to 71 of the EP Act.

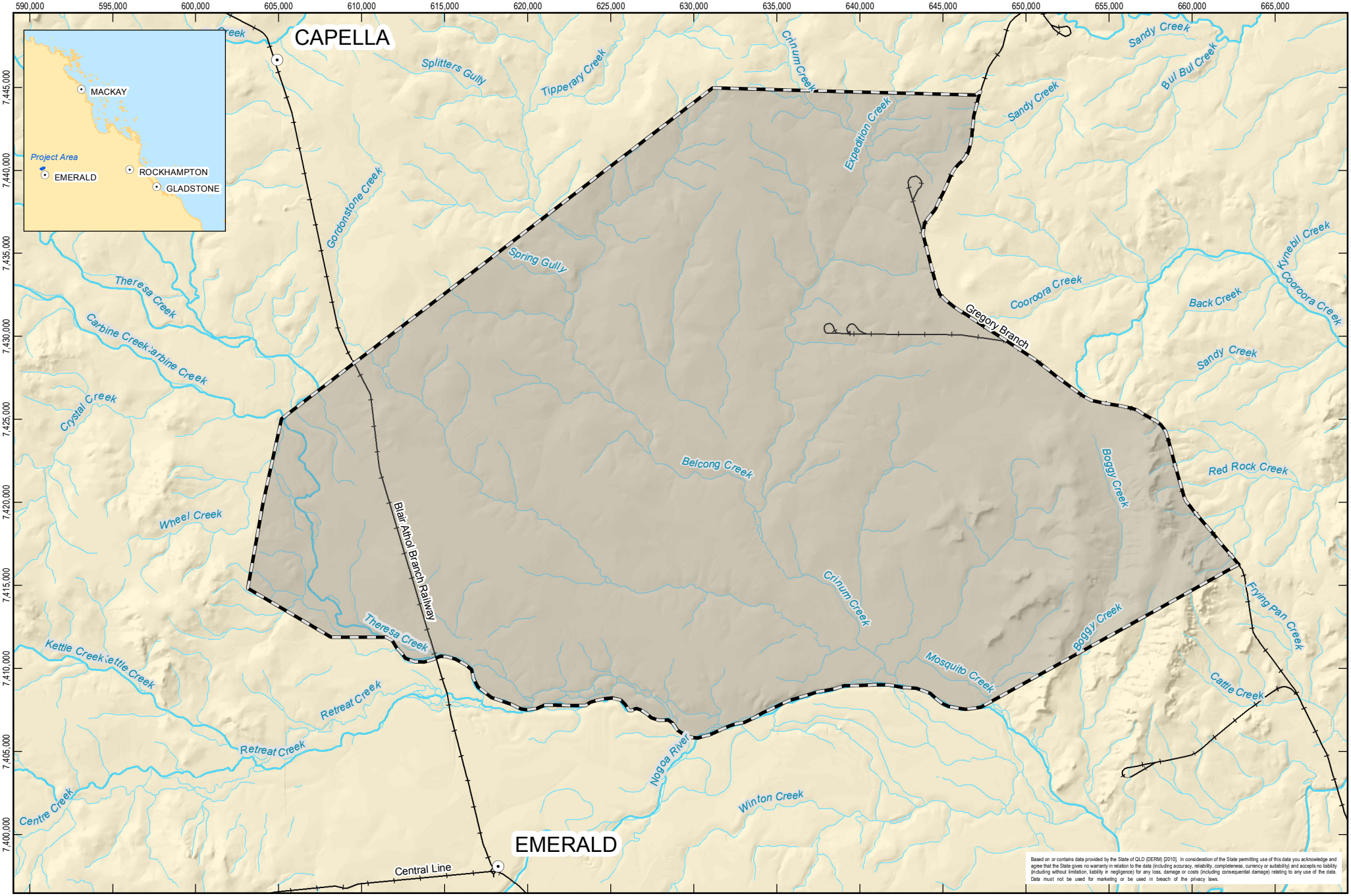


Teresa Coal Project

Locality Plan

Date Drawn: June 2011 Filename: K1122-001A.dwg Rev: A

Figure 1-1



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

N

Legend

- Major Town
- Major Watercourse
- Study Area
- Railway

Linc Energy
Teresa Coal Mine Project

Job Number 41-23969
Revision A
Date 11 Oct 2011

Study Area

Figure 1-2

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

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Data Source: ©Commonwealth of Australia (Geoscience Australia): Localities, Railway, Waterways; Linc Energy: Teresa EIS Mine Lease (2011); GHD:Study Area (2011); ESRI: Hill Shade (2009) Created by: KJ

2. The Proponent

2.1.1 Linc Energy

Linc Energy is an Australian publically listed, diversified energy company with significant coal and petroleum interests in Queensland's Surat, Bowen, Galilee and Callide basins as well as in South Australia and the United States of America.

It is Linc Energy's goal to unlock the value of its resources to produce energy to fuel the future. With a strong exploration campaign Linc Energy is on a rapid global expansion path to commercialise its portfolio of resources, with established offices across three continents in the United States of America, the United Kingdom and Australia. Linc Energy also holds substantial infrastructure, technological and operational knowledge focusing upon Underground Coal Gasification (UCG), Gas to Liquids (GTL), Enhanced Oil Recovery (EOR) and power generation.

To explore and develop coal resources, Linc Energy undertakes coal exploration with a view to characterising and further increasing the understanding of coal within its extensive exploration tenements. Where coal resources are discovered that are suitable for conventional mining, Linc Energy aims to commercialise the resource either independently or as part of a joint venture.

Linc Energy was listed on the Australian Securities Exchange (ASX) on 10 May 2006 (ASX:LNC) and later on the OTCQX in New York in December 2007.

2.1.2 Tenure

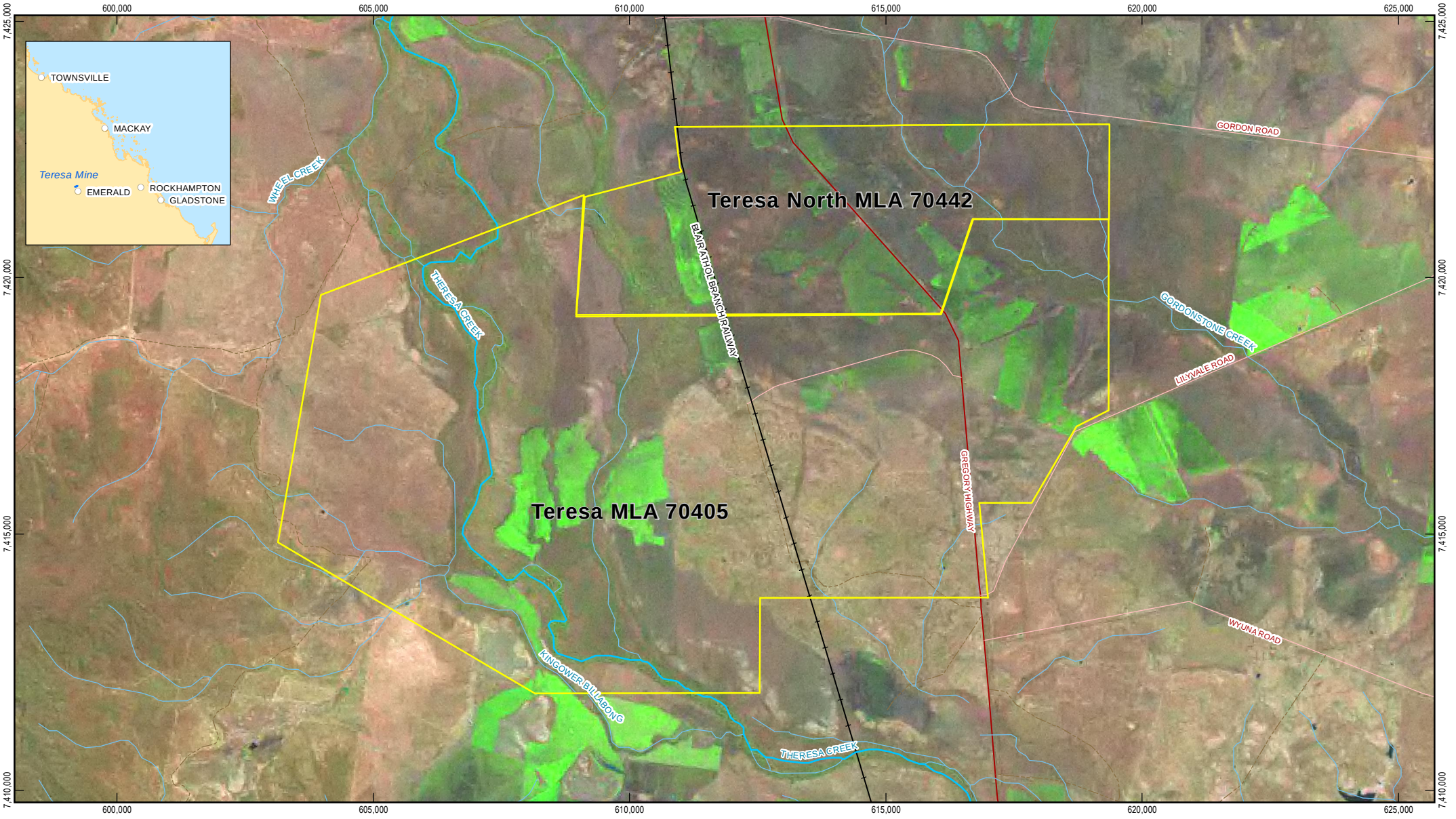
The Project is located within the area described by two Mining Lease Applications (MLA) and adjoins three Exploration Permits for Coal (EPC) 980, 1226, and 1267. MLA 70405 (the southern sector) was submitted in 2008 and is approximately 7000 hectares (ha) in size. MLA 70442 (the northern sector) was submitted in February 2011 and is approximately 3000 ha (Figure 2-1).

A joint environmental authority application was submitted in February 2011 for both MLA 70405 and MLA 70442.

2.1.3 Commitments to Local Communities

Linc Energy aims to develop and maintain good relationships with landowners, local communities and other stakeholders. Linc Energy takes pride in ensuring all stakeholders are kept up-to-date with information on its activities. In all interactions with Linc Energy's stakeholders, the aim is to:

- treat communities and individuals with respect;
- always be accessible;
- communicate in a timely fashion with relevant information; and
- achieve win-win situations.



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Kilometres

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

N

LEGEND

- Locality
- Teresa Mine Lease Boundary
- Watercourse
- Railway
- Principal Road
- Secondary Road
- Minor Road
- Track

Linc Energy Limited
Teresa Coal Project

Job Number 41-23969
Revision A
Date 16 Sep 2011

Mine Lease Application Area

Figure 2-1

G:\41\23969\GIS\Maps\MXD\IAS_Report\41_23969_006_A4_rev_a_figure_2_1.mxd Level 4, 201 Charlotte St Brisbane QLD 4000 T +61 7 3316 3000 F +61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

Data Source: Linc Energy: Teresa Coal Mine Site (2011);DME: Mining Lease (12-04-2011); © Copyright Commonwealth of Australia - Geoscience Australia: Mainland, Road, Watercourse, Landsat (2007); Created by: KJ.

2.1.4 Commitment to Climate Change

Linc Energy continues to pursue carbon mitigation strategies to ensure it continually reduces its carbon footprint to remain one of the cleanest coal based energy producers. Linc Energy's UCG technology, combined with commercially available GTL technologies, is capable of creating energy products with significantly reduced greenhouse gas emissions. The enhanced capability for sequestration is also being explored.

2.1.5 Contact Details

Linc Energy

GPO Box 1315

Brisbane, Queensland 4001

Ph: 1800 802 848

3. Project Need and Justification

3.1 Coal Reserves

The Project coal deposit lies within the German Creek Coal Formation of the Blackwater Group in the Bowen Basin. The Project focuses on the Corvus II coal seam which averages approximately 2.6 metres thickness across the Project area.

The current mining model provides a resource estimate of 310 Mt for the primary resource, the Corvus II coal seam.

Favourable attributes of the Project include:

- a low incidence of geological structures;
- favourable mining height;
- a low gas environment;
- moderate strength roof;
- minimal surface constraints; and
- close proximity to regional services and a rail network.

3.2 Coal Export Demand and Markets

Queensland is Australia's fastest growing state, with a strong emphasis on exports, particularly from the natural resources sector. Rural industries such as agriculture and mining are important contributors to growth within the Queensland economy, with mining production in 2010 valued at over $32 billion (Trade and Investment Queensland 2011).

Demand for coal has increased significantly over the past decade and this growth is expected to continue. This growth is a significant contributor to Queensland's overall economic performance.

Future indicators suggest strong coal demand from China with coal demand from this region expected to remain strong.

3.3 Investment

It is anticipated the Project will require a total capital investment of approximately $750 million.

3.4 Benefits

Queensland will benefit from the development of the Project through long-term contributions of royalties to the State economy, employment and small business opportunities in areas surrounding the Project.

Some of the benefits that will occur from the Project are:

- Economic – the operation of the Project will support and enhance the development of coal fields in the Bowen Basin;
- Regional Communities – the development of the Project will provide opportunities for jobs, growth and community development within the Emerald region; and
- Infrastructure – the Project is a strategic development for the region's coal reserves and is likely to have positive implications for transport infrastructure and port linkages.

The construction of the mine is expected to employ approximately 500 people, with a permanent workforce of approximately 380 people once the Project is operational. It is projected that a large 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 Emerald region.

The increased population size (including both temporary and permanent residents) will stimulate demand for social infrastructure and foster community development. It is anticipated that the Project will positively influence:

- sporting clubs and facilities;
- recreation groups;
- neighbourhood networks (i.e. expanded resident relationships); and
- social opportunities for youth groups and younger adults.

4. Description of Proposed Development

4.1 Overview

The Project is located approximately 17 km north of Emerald and contained within Mining Lease Applications 70405 and 70442 (Figure 2-1). The existing Emerald – Clermont rail line (Blair Athol Branch Railway) traverses the leases as does the Gregory Highway, one of the region's major highways.

The Project will extract up to 8 Mtpa of ROM coal over a projected life of 20 to 30 years depending on production levels. Coal mined via underground methods will be fed to a Coal Handling and Preparation Plant (CHPP) prior to load-out and rail shipment to port for export.

Construction is scheduled to commence in late 2013 subject to the gaining of all necessary approvals. The site has minimal surface features and infrastructure constraints.

4.2 Geology and Resource

The Project area has been the subject of various exploration programs since the 1970s by successive owners culminating in the current geological model. The German Creek Formation subcrops in an east-west orientation across the tenements with the coal seam dipping gradually to the south south-east.

The Project contains a total resource of approximately 310 Mt (within the Corvus II seam only). The Corvus II subcrop lies at a depth of approximately 130 m which identifies that the resource is amenable to underground extraction methods (Figure 4-1). Seam thickness averages 2.6 m over the potential mining area.

Geological features identified in the area include two major faults to the west and a zone of seam thinning to the east and south-east, both of which form constraints to mining. No dykes, sills or washouts have been identified. The depth of overburden ranges from 130 m at the sub-crop to 340 m in the south.

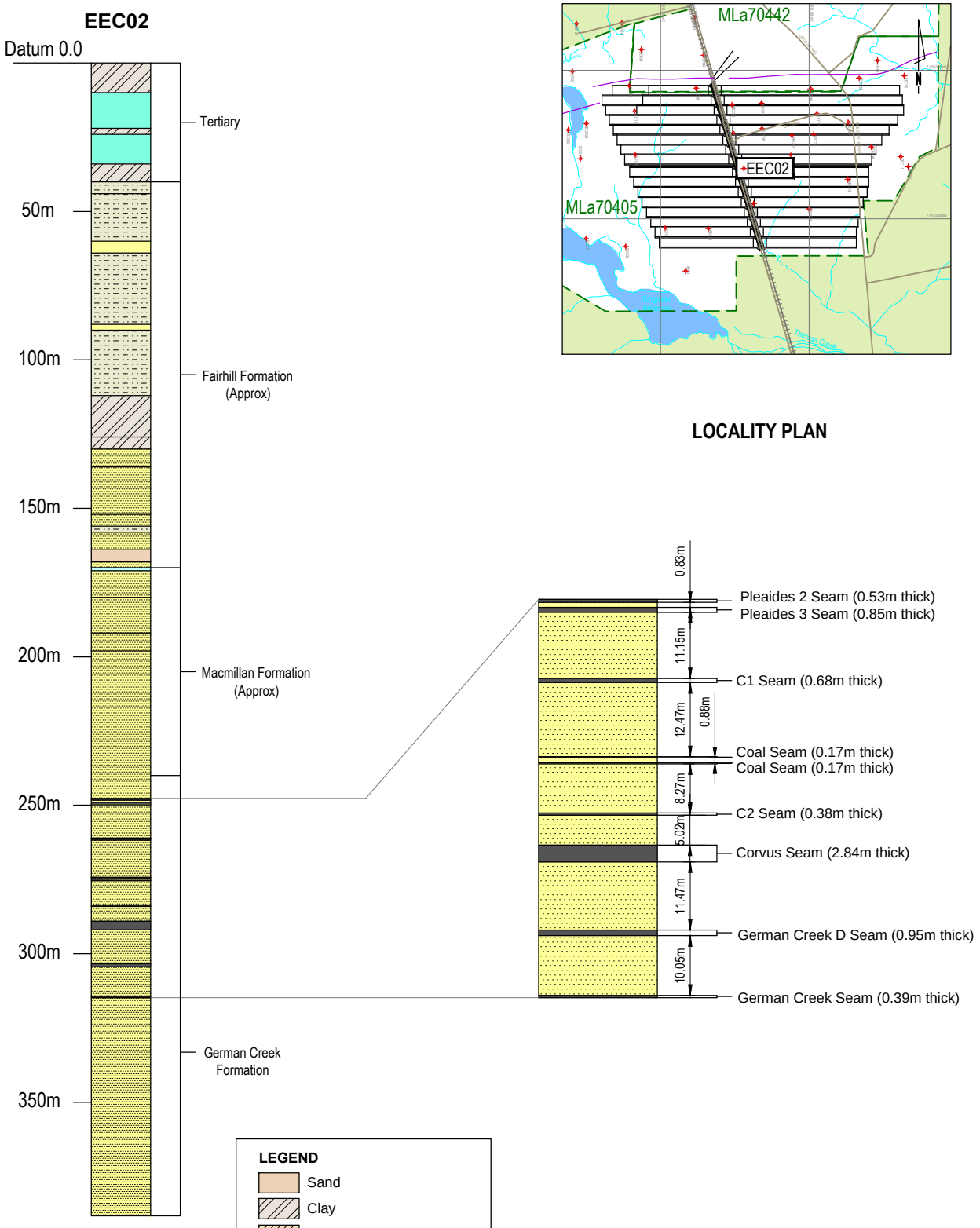
4.3 Proposed Operations

4.3.1 Mine Layout

In designing a mine layout, the constraints that have been applied include the seam subcrop to the north, the tenement boundary to the south, the major fault to the west and the 1.8 m seam contour to the east. In consideration of these constraints (i.e. the position and shape of the lease, maximising resource coverage, mine access and positioning of the main headings below the rail corridor), a logical mine layout has been developed featuring east-west oriented longwall panels with drift access to the seam located at the shallowest depth (Figure 4-2). Panel widths are set at 300 m.

This layout provides for long panel lengths extending up to 6.0 km in length in the east. The main headings are designed with seven roadways to accommodate ventilation flows and minimise ventilation pressure losses in the mains in order to maximise air flow into the two heading gate roads.

Mine access will be via two drifts (a 840 m conveyor drift and 1,200 m personnel and equipment drift) extending from the surface to the seam at an approximate depth of 140 m (Figure 4-3). Initially a 6.5 m diameter exhaust ventilation shaft will be required close to the pit bottom. The location of this shaft still needs to be determined. Further shafts will be required along the mains as mining progresses.



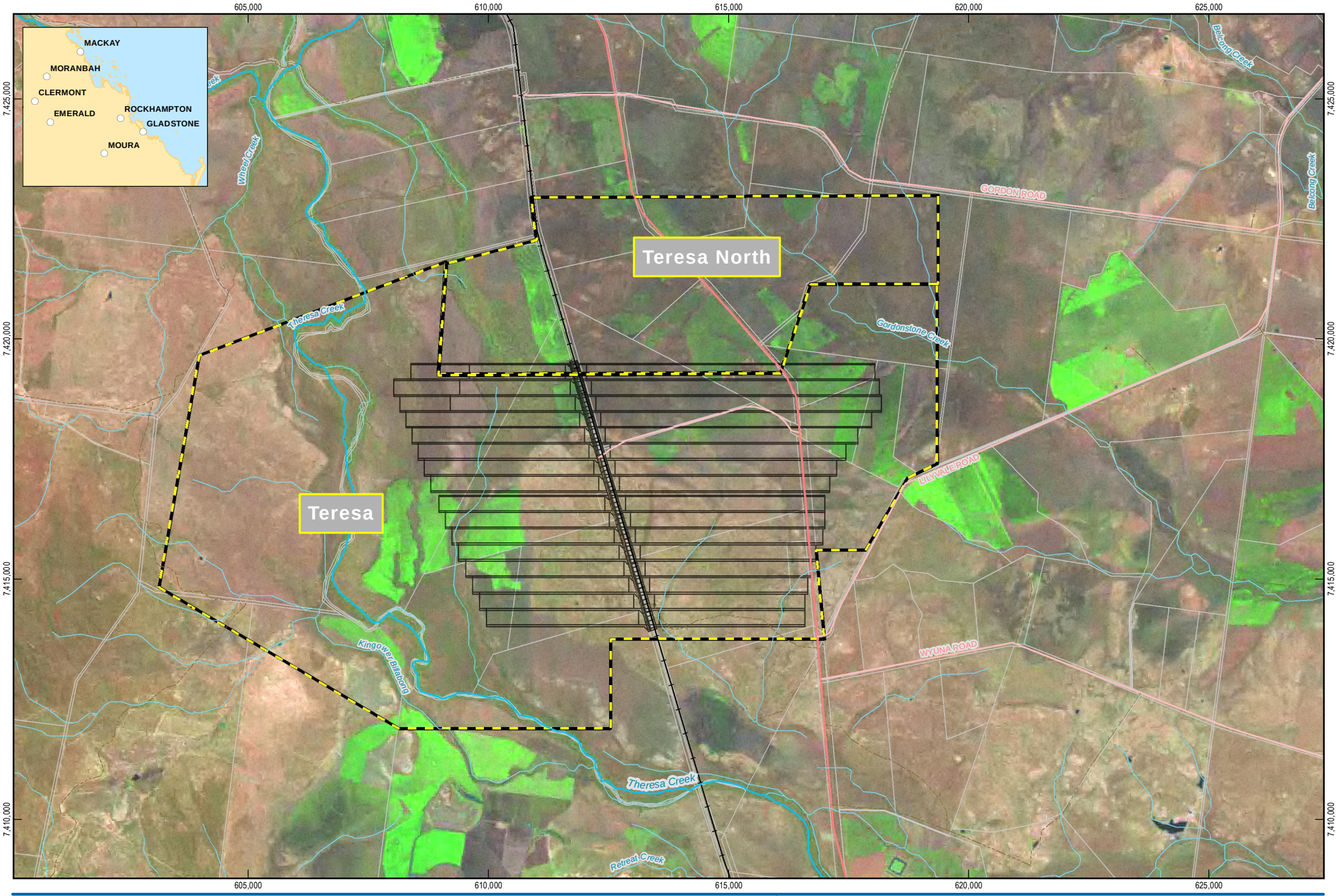
Date Printed: 11 October 2011

Teresa Coal Project

Representative Stratigraphic Column

Date Drawn: October 2011 Filename: K1122-004B.dwg Rev: A

Figure 4-1



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Metres

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

N

Teresa
Proposed Layout
Property Boundary
Principal Road
Secondary Road
Minor Road
Track
Railway
Major Watercourse
Watercourse

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Teresa Coal Mine Project

Job Number 41-23969
Revision B
Date 29 Sep 2011

Proposed Mine Layout

Figure 4-2

Path: G:\41\23969\GIS\Maps\MXD\AS_Report\41_23969_007_A4_rev_b_figure_4_2.mxd

Data Source: Linc Energy: Teresa Coal Mine Site (2011); DME: Mining Lease (12-04-2011); ©Commonwealth of Australia (Geoscience Australia): Localities, Roads, Railway (2007); DERM: Cadastre (2011); Created by: KJ

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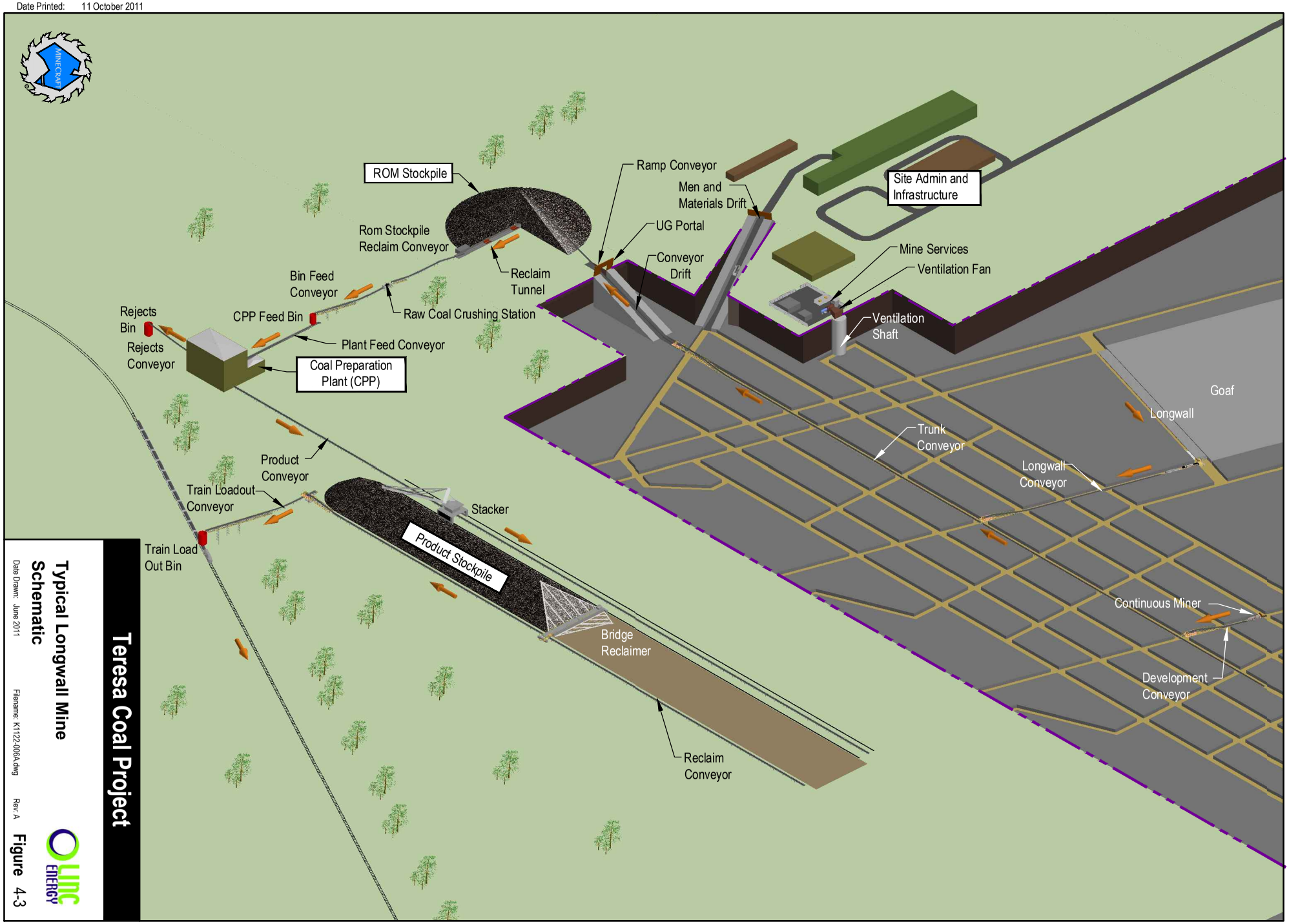
Date Printed: 11 October 2011



Teresa Coal Project

Typical Longwall Mine Schematic

Date Drawn: June 2011

Filename: K1122-006A.dwg

Rev: A

Figure 4-3

4.3.2 Mining Method

Mining will be by retreat longwall extraction as depicted in Figure 4-4. In this form of mining, a dual set of roadways are driven out from the main entries down each side of the longwall panel to block out a portion of reserve. Mechanical longwall equipment is then retreated from the end of the panel back towards the main entries to extract the entire panel of coal.

The roads used for travelling and coal clearance during panel extraction are termed the main gate entries whilst the tailgate entries are generally used for return air. Where possible a set of parallel adjacent panels are retreated sequentially to allow reuse of one gate road (as either tail or main gate).

4.3.3 Coal Handling

The ROM coal handling system is typical of the current systems in use at other Central Queensland coal mines. A system of underground panel belts (3,500 tph) will load to a central underground trunk belt (5,000 tph) and then load to the drift conveyor which discharges onto a conical ROM stockpile on the surface. The ROM stockpile will be around 35 metres in height with a dozed capacity of around 400,000 tonnes.

Coal valves located beneath the stockpile will reclaim the coal and feed to a coal sizing station and ROM hopper. Primary sized coal (250 mm) will be conveyed from the ROM hopper to a secondary sizing station via transfer conveyors. The secondary sizing station will crush coal from 250 mm to 120 mm. Secondary sized coal will then be conveyed to a transfer bin located at the CHPP.

Belt feeders at the base of the transfer bin will discharge the coal to a CHPP feed bin. The discharge of the CHPP feed bin will be via a vibrating feeder to tertiary sizers. Tertiary sizing will reduce the coal size from 120 mm to 50 mm.

4.3.4 Coal Preparation

A coal preparation plant will be constructed on-site and will comprise crushing and screening facilities, cyclones, teetered bed separators, spirals or reflux classifiers, flotation cells and dewatering facilities.

Product coal will be discharged by travelling stacker to a stockpile area for temporary storage.

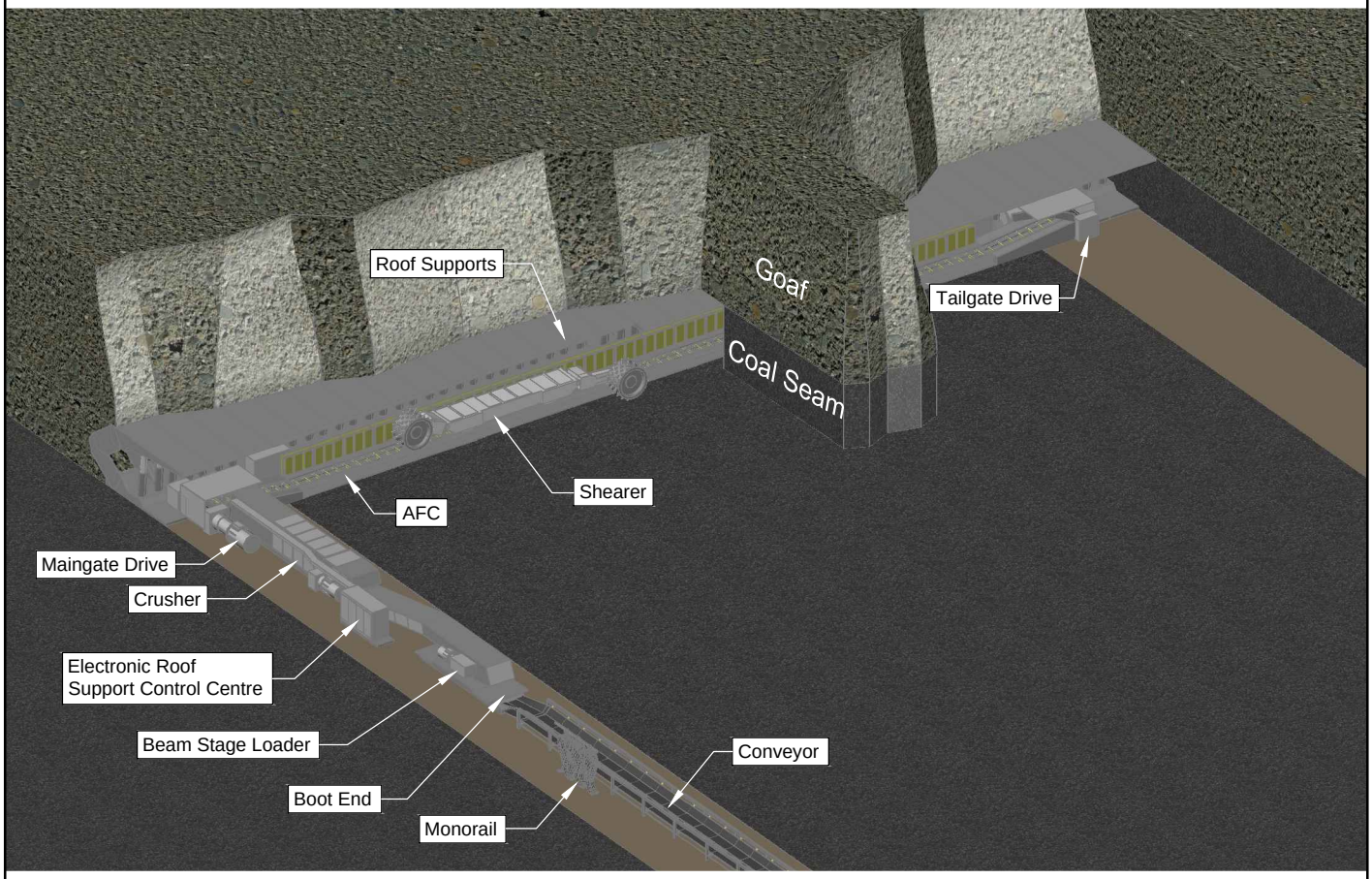
Coarse and fine rejects will discharge to loading facilities or disposal areas depending on the rejects disposal method selected.

The preparation plant will handle around 1000 tph of coal and recent studies have indicated that the coal could be washed to create Pulverised Coal Injection (PCI) product with a yield of approximately 80%.

The preparation plant and rejects disposal process design will be refined through further studies.

4.3.5 Coal Loadout

Reclaimed coal will be transferred to a loadout bin located over the mine rail balloon loop. Approximately 15 train loads of coal will be shipped per week. Based on the assumed yields and productivities, the Project will sell up to 6.4 Mtpa of product coal.



CONCEPTUAL WORKING DRAWING ONLY

Teresa Coal Project

Schematic View of Longwall Extraction

Date Drawn: June 2011 Filename: K1122-007A.dwg Rev: A

Figure 4-4

Date Printed: 11 October 2011

4.3.6 Rail to Port

The Proponent is investigating options to transport coal from the Teresa mine site to existing rail infrastructure. The transport corridor will exit the MLA and link to a current rail system. The final corridor alignment will be located based on engineering and environmental constraints.

4.4 Mine Safety

An appraisal of potential mining hazards indicates that the Corvus II seam is fairly benign. No seam gas has been detected during exploration which suggests a low gas environment with minimal requirement for gas drainage. In general the German Creek coal measures exhibit a low to moderate possibility for spontaneous combustion with no nearby mines suffering any particular underground heating issues. The potential for wind blasts is considered minimal due to the lack of sandstone in the overburden and also based on experience from nearby mines. There are no overlying stored water bodies or old mine openings to create inrush potential.

Theresa Creek is expected to flood at times with flood waters likely to extend over the western part of the leases. Surface infrastructure will be located away from flood prone areas. Surface water modelling will be undertaken as part of the EIS to determine the constraints to existing and proposed infrastructure and to outline necessary environmental mitigation.

4.5 Other Surface Infrastructure and Mine Services

Surface infrastructure requirements include:

- a site access road;
- administration, bathhouse; operations building with shower and change rooms for miners;
- workshop;
- warehouse facilities;
- mine control room;
- car parking areas;
- water treatment plant;
- sewage treatment plant;
- electrical substation;
- dirty water dams;
- clean water dams;
- diesel fuel dispensers;
- air compressor station; and
- fuel storage areas.

Mine services will include:

- the main ventilation fan;
- compressed air supply system;
- raw water supply system;
- long-wall emulsion supply system; and
- provision for temporary installation of refrigeration units during summer months.

Details of surface infrastructure and mine services will be provided in the EIS.

4.6 Utilities

4.6.1 Power

The current 66 kV Lilyvale-Emerald multi-user line intersects the MLA. There is enough capacity on this line to construct the mine. The Proponent will design and construct a connection, substation and distribution network within the MLA and this work will be covered in the EIS.

Ergon Energy has an upgrade to the Lilyvale network planned for 2015 from which the Proponent will obtain the remainder of the site's power requirement for full production. Ergon Energy will deal with all approvals required for the upgrade of their network in 2015.

4.6.2 Water

Daily raw water requirements for the Project are expected to be around 8 ML to 10 ML (or approximately 3,000 MLpa) with the major users being the CHPP and underground equipment. The management of wastewater is likely to require approximately 3 ML per day. Future studies will include a detailed water balance study and it is possible that between groundwater inflow during longwall extraction and development of water recycling strategies, reliance on external water sources will reduce during the mines working life.

However, provision for the full capacity of water must be secured for the initial stages of the Project prior to the formation of sufficiently large goaf cavities that produce groundwater inflow. Water is supplied locally from Fairbairn Dam to several of the local mines. A water supply pipeline and pumping station for the project from downstream of Fairbairn Dam will be the subject of a separate approval.

4.7 Waste Management

4.7.1 Waste Management

Waste rock will be produced during excavation of the drifts and ventilation shaft. Where possible this will be used around the site for the construction of building pads, in drainage protection works, road sheeting and dam construction. Unsuitable materials will be stored in a waste rock dump.

The processing plant is expected to produce coarse and fine rejects which will require disposal on-site. There are several options for rejects disposal to be assessed and the location of the disposal sites will be determined following further investigations into coal quality, processing, surface water, land use, ecology and mining generated subsidence.

4.7.2 Mine Wastewater and Effluent

A mine dewatering system will be required to dispose of excess water originating from natural seam emissions, gas drainage activities, goaf formation, equipment, cooling water discharge, dust suppression sprays and drill hole flushing. Accumulated water will be pumped to the surface for disposal in the mine dewatering dam. Further assessment will determine the viability of using this water for processing requirements.

A primary sewage treatment plant will be situated on-site. Sludge and effluent from the plant will be appropriately disposed of by a licensed contractor to a licensed contaminated waste disposal facility.

4.7.3 Stormwater and Drainage

Stormwater management will aim to divert clean stormwater from surface runoff around disturbed areas and into existing creeks and drainage lines. Scour protection works will be provided at discharge points and these will be further defined as the design progresses.

Stormwater from all disturbed areas, including stockpiles, will be collected in sediment control ponds which may be established across the site. The final capacity and the location of these ponds will be determined in the detailed design phase. Where possible, water collected in these ponds will be reused for dust suppression or process water. Water quality criteria will be developed for water release from sediment control ponds to existing drainage systems.

4.7.4 Workforce and Accommodation

The construction workforce will comprise approximately 500 personnel. This work force will be accommodated in either temporary accommodation on-site or in established accommodation in Emerald. Details will be confirmed in the EIS.

The operations work force will comprise approximately 380 personnel. Studies into accommodation requirements are ongoing and will be included in the EIS. Staff may also work on a commuter basis and this will be documented in the EIS.

4.7.5 Mine Traffic and Equipment

Equipment can be separated into the following categories:

- mining equipment – roof supports, shearers, armoured face conveyor, crusher, monorail, pump station, electrical systems;
- development system – continuous miner, coal haulage units, feeder breaker;
- ancillary equipment – auxiliary fans, pneumatic diaphragm pumps; and
- coal clearance equipment – drift conveyor, trunk conveyor, gate conveyor.

Materials transporters and special purpose vehicles include:

- load haul dump vehicles (LHD's);
- multi purposes vehicles;
- heavy duty LHD's;
- roadway grader;
- roadway roller;
- chock trailers;
- shearer transporter;
- mine dozer; and
- heavy lift machines for moving longwall equipment.

Construction and mining equipment for both underground and above ground activities will be documented in the EIS.

4.8 Rehabilitation

It is intended to return most of the Project area to its pre-mining land use. This will be achieved through:

- effective mine closure planning;
- establishing key performance indicators;
- stabilising landforms; and
- revegetation with suitable species.

On completion of mining, the mine will be sealed, equipment associated with the ventilation shafts removed and the shafts sealed.

Dumps and ponds will be shaped, capped with topsoil and revegetated.

The CHPP and mining infrastructure will be dismantled and removed. The plant footprint will be removed and the area ripped, reshaped and topsoiled before revegetation.

The EIS will document rehabilitation requirements and methodologies.

4.9 Project schedule

An indicative project development schedule is presented in Table 4-1.

Table 4-1 Indicative Project Schedule

Activity	Date
EIS submitted to DERM	Q4 2012
EIS approval received	Q3 2013
Construction approvals and Environmental Authority received	Q4 2013
Mining Lease granted and construction commences	Q4 2013

5. Legislation and Approvals

Table 5-1 identifies the Commonwealth, State and Local legislation, guidelines and policies relevant to the Project.

Table 5-1 Legislation and Approvals Relevant to the Project

Legislation	Relevance to the Project
Commonwealth Legislation	
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	An approval from the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPAC) must be sought prior to undertaking an action which has, would have, or is likely to have, a significant impact (defined in the Act) on a Matter of National Environmental Significance (MNES). The Project was referred to DSEWPAC to determine whether it constitutes a "controlled action" under the EPBC Act. DSEWPAC determined that the Project was a controlled action with the controlling provisions being 18 and 18A (listed threatened species and communities) and 20 and 20A (listed migratory species).
Native Title Act 1993 (NT Act)	The NT Act recognises the rights and interests over land and water possessed by Indigenous people in Australia under their traditional laws and customs. The objects of the Act are to: ◗ provide for the recognition and protection of native title; ◗ establish ways in which future dealings affecting native title may proceed and to set standards for these dealings; ◗ establish a mechanism for determining claims to native title; and ◗ provide for, or permit, the validation of past acts and intermediate acts, invalidated because of the existence of native title. Under the NT Act the Teresa Coal Project will be required to ensure that any claims of traditional land tenure are recognised and appropriately managed over the Teresa site. Currently a native title extinguishment legal assessment is being undertaken for the site to establish the current position with respect to previous grants of pastoral tenure over the mining lease areas.
State Legislation	
Environmental Protection Act 1994 (EP Act)	In relation to mining projects, the EP Act regulates: ◗ the granting of Environmental Authorities for mining activities; ◗ the regulation of dams containing high hazard wastes; ◗ the preparation of Environmental Impact Statements for large scale mining activities (if not prepared under the SDPWO Act); and ◗ the setting of environmental quality and protection standards through regulations and the making of environmental protection policies; and

Legislation	Relevance to the Project
	◗ enforcement of compliance with conditions of approvals and general requirements of the Act and regulations. The EP Act is administered by the Department of Environment and Resource Management (DERM). The EP Act provides three levels of environmental impact assessment (EIA) for mining projects: ◗ Standard (Code Compliant) applications - for projects that have a low risk of serious environmental harm determined by their ability to meet a set of trigger criteria and comply with standard environmental conditions in a code of environmental compliance (or achieve acceptably low risk of serious environmental harm as a result of the imposition of one or more additional conditions); ◗ Non-Standard (Non-Code Compliant) applications - for projects that do not meet the trigger criteria and/or have a medium to high risk of serious environmental harm; and ◗ Non-Standard (Non-Code Compliant) applications with an EIS requirement - for projects that have a high risk of environmental harm, considerable uncertainty regarding the potential environmental impacts, a high level of public interest, or State or national significance. DERMs role in the EIA process includes: ◗ review the draft ToR prepared by the proponent; ◗ places advertisements inviting comments on the draft ToR; ◗ receives comments on draft ToR and provides copies to the proponent; ◗ decides and publishes final ToR for the EIS; ◗ determines if the submitted EIS meets requirements of the ToR; ◗ accepts all submissions on the EIS and provides copies to the proponent; ◗ prepares an EIS assessment report; ◗ reviews the environmental management document prepared by the proponent; and ◗ coordinates input from other government agencies for an EIS process under the EP Act. DERM has confirmed that the Project will be assessed as a Non-Code Compliant Level 1 Mining Project under section 162 of the EP Act and that an EIS will be required.

Sustainable Planning Act 2009 (SP Act)	The SP Act is Queensland's integral planning legislation for managing 'development'. Under the MR Act, activities within a ML or MLA are exempt from any approvals required under the SP Act, including planning scheme assessment. SP Act approvals would apply to any activities outside the mining lease.
Mineral Resources Act 1989 (MR Act)	The MR Act provided the legislative framework for exploration and mining development and mining tenure in Queensland, including Mining Leases (MLs). The Act is administered by Mines and Energy (which is part of the Department of Employment, Economic Development and Innovation (DEEDI). Authority for the management of environmental matters associated with mining activities is held by the Department of Environment and Resource Management (DERM). When an application for exploration or mining tenure is lodged to DEEDI, a copy is referred to DERM for assessment under the EP Act.
Nature Conservation Act 1992 (NC Act)	The purpose of the NC Act is to provide a comprehensive strategy for the conservation and management of Queensland's native animals and plants. The NC Act seeks to achieve ecological sustainability by declaration and management of protected areas and the protection of wildlife and wildlife habitats. The Act prohibits the taking or destruction, without authorisation, of certain listed flora and fauna species, or protected areas.
Water Act 2000	The *Water Act 2000* plans for the allocation and sustainable management of water resources in Queensland. This is done by the preparation of a Water Resources Plan, which: ◗ defines the availability of water for any purpose; ◗ provides a framework for sustainably managing water and the taking of water; ◗ identifies priorities and mechanisms for dealing with future water requirements; ◗ provides a framework for establishing water allocations; and ◗ provides a framework for reversing degradation that has occurred in the natural ecosystem.
Water Supply Safety and Reliability Act 2008 (WSSR Act)	The purpose of this Act is to provide for the safety and reliability of water supply. The purpose is achieved primarily by providing a regulatory framework for the regulation of referable dams. A dam is referrable and triggers a failure impact assessment if the dam will be greater than 8 metres in height, has a storage capacity of greater than 250 ML and a catchment area that is more than three times its maximum surface water at full supply level. It is unlikely that dams onsite would exceed these criteria. Further assessment will be undertaken during the EIS.

Aboriginal Cultural Heritage Act 2003 (ACH Act)	The ACH Act established a 'cultural heritage duty of care', which requires that a person who carries out an activity must take all reasonable and practicable measures to ensure the activity does not harm Aboriginal cultural heritage. The Act establishes a framework for the conduct of assessment of cultural heritage impact and processes to be undertaken in preparing Cultural Heritage Management Plans (CHMP). It is expected that a CHMP will be required for the Project.
Queensland Heritage Act 1992 (QH Act)	The QH Act provides for the conservation and protection of places and items of historical and/or non-indigenous cultural heritage, i.e. the post settlement history of Queensland. Under the QH Act, places and items must be entered into a Queensland Heritage Register in order to be protected. The EIS will determine whether the Project will impact on places or items recorded under the QH Act.
Coal Mining Safety and Health Act 1999	This Act was established to protect the safety and health of persons at coal mines or affected by mining operations. The Act requires that risk of injury or illness to persons resulting from coal mining operations be at an acceptable level by: ◗ imposing safety and health obligations on operators of coal mines; ◗ providing for Safety and Health Management Systems; ◗ making regulations and recognised standards; and ◗ risk management. The Project will be operated in accordance with this Act.
Queensland Land Protection (Pest and Stock Route Management) Act 2002	The purpose of this Act is to provide for pest management and for land and stock route network management. A stock route is defined as a road reserve or road corridor, generally in the width of 60-1600 m that is used for the purposes of walking and agisting or stock grazing. Stock routes do not have a separate title or tenure as does a road reserve. Once a stock route's declaration is removed it remains a road but is no longer named a stock route. Stock routes are managed by the relevant Local Government. The Project will assess any impacts on stock routes.
Queensland Dangerous Goods Safety Management Act 2001(DGSM Act)	The purpose of the DGSM Act is to protect people, property and the environment from harm caused by hazardous materials, in particular dangerous goods. Hazardous and dangerous good are defined as: ◗ a hazardous material is a material which, in sufficient quantities, has the potential to cause harm to people, property or the environment because of its chemical, physical or biological properties; and ◗ dangerous goods are chemicals which have the potential to present an immediate threat to people, property or the environment if not properly controlled. To achieve this, the Act creates broad safety obligations for all people involved with the storage, handling and manufacture of hazardous materials, together with specific obligations for:

	◗ occupiers and employees at locations where hazardous materials are stored or handled; ◗ manufacturers, importers or suppliers of dangerous goods; and ◗ designers, manufacturers, importers, suppliers or installers of storage or handling systems for Major Hazard Facilities or Dangerous Goods Locations and Large Dangerous Goods Locations. The Proponent will determine whether dangerous goods storage facilities at the Project site trigger the requirements of this Act.
Transport Infrastructure Act 1994 (TIA)	The TIA provides for the management of the national and State road network. A permit under the TIA is required to work in, or interfere with, a State controlled road. The Gregory Highway is a State controlled road and a permit to access this road will be required.
Vegetation Management Act 1999 (VM Act)	The VM Act, in conjunction with the SP Act, regulates the clearing of native vegetation. As mining activities are exempt from the SP Act there are no triggers for regulation of clearing activities within the ML area.
Vegetation Management (Regrowth Clearing Moratorium) Act 2009	Under the Act, clearing certain regrowth vegetation affected by the moratorium (which includes endangered regrowth in rural areas on freehold and agricultural and grazing State leasehold land) requires approval from DERM. Some exemptions apply.
Local Legislation	
Central Highlands Council	Local Development Control Plans and any relevant environmental guidelines and policies linked to Council's Local Environmental Plan will be reviewed during the preparation of the EIS.
Policies and Regulations	
Coal Infrastructure Strategic Plan	The Queensland Government is developing a long-term strategic infrastructure plan to identify coal infrastructure and related social infrastructure needed to support increased coal exploration, mining and export. The plan is called the Queensland Coal Infrastructure Strategic Plan (QCISP), and will provide a medium to long-term plan for the provision of infrastructure required to meet the needs of the Queensland coal industry over the next 20 years. The plan examines: ◗ coal demand and production forecasts; ◗ individual and regional coal infrastructure requirements; ◗ development triggers for future infrastructure; and ◗ staging of infrastructure provision across regions. Implementation of the plan is supported by a Coal Infrastructure Taskforce which provides for whole-of-government planning to ensure coal-related infrastructure meets the demands of Queensland's growing coal industry. Coal produced from Project operations will be hauled largely via existing rail lines and exported from an existing port, hence the proposed Project is consistent with existing coal infrastructure development.

The Queensland Government Environmental Offsets Policy (QGEOP)	Queensland has been using offsets for a number of years, and has several specific-issue offsets policies that indicate where particular environmental offsets are needed, and what form they should take. This policy guides the appropriate use of environmental offsets across terrestrial and aquatic ecosystems, based on the principles of Ecologically Sustainable Development (ESD). These principles allow for development that improves the total quality of life in a way that supports environmental protection. The Queensland Government's Environmental Protection Agency (EPA) developed this policy after extensive research and consultation on the use of environmental offsets. It is based on the premise that offsets should only be considered after all environmental impacts have been avoided and minimised. The QGEOP came into effect on 1 July 2008 and will be reviewed in 2013. The specific-issue offsets policies, and their regulating agencies are: ◗ Vegetation Management — Policy for Vegetation Management Offsets, September 2007, Department of Natural Resources and Water; ◗ Marine Fish Habitat — Mitigation and Compensation for Works or Activities Causing Marine Fish Habitat Loss, 2002, Department of Primary Industries and Fisheries; and ◗ Koala Habitat — Offsets for Net Benefit to Koalas and Koala Habitat, 2006, Environmental Protection Agency.
Protecting Queensland's strategic cropping land (SCL) Draft State Planning Policy (draft SPP)	The Queensland Government recognises that the state's best cropping land is an important resource for growing food and fibre, and supports economic growth for regional communities. The state's best cropping land is currently subject to a range of competing land uses and it is important to find a balance between agricultural, resource and development industries to minimise land use conflicts by assessing potential impacts of development on SCL. The draft SPP for protecting and managing SCL under the SP Act was released for public comment on 5 August 2011. The objective of the draft SPP is to ensure that development assessable under the SP Act, local government planning schemes and regional plans include appropriate consideration of SCL. The impacts of resource exploration and development activities are not addressed in this draft SPP. These activities are regulated under resources legislation such as the MR Act. Arrangements for resource exploration and development activities will be established under the SCL legislation and through relevant amendments to existing resources legislation. This is to ensure that a consistent process for assessing development proposals on SCL is achieved under all relevant legislation for the SCL policy. As of 31 May 2011, resource development projects, such as mining, that are not well advanced in the approvals process will be subject to the full effect of the legislation to be introduced in late October 2011. SCL may occur on the MLA's and will be addressed as part of the EIS process.

Environmental Protection Regulation 2008	One of the main functions of the EP Regulations is to list all the ERAs, their aggregate score and the applicable fee. The EP Regulations also support the EIS process outlined in the EP Act and outline matters relating to environmental management and environmental offences.
Environmental Protection (Air) Policy 2008 (EPP Air)	The aim of this policy is to identify environmental values to be protected or enhanced, specify air quality indicators and provide a framework for decision-making.
Environmental Protection (Noise) Policy 2008 (EPP Noise)	The environmental values to be enhanced or protected under the EPP Noise are the qualities of the environment that are conducive to: ◗ protecting the health and biodiversity of ecosystems; ◗ human health and wellbeing, including by ensuring a suitable acoustic environment for individuals to sleep, study or learn and be involved in recreation, including relaxation and conversation; and ◗ protecting the amenity of the community.
Environmental Protection (Waste Management) Policy 2000 (EPP Waste)	The EPP Waste provides a strategic framework for managing waste in Queensland. This is achieved by establishing a preferred waste management hierarchy and principles for achieving good waste management which should be applied by both government and industry (sections 8-13, Schedule 1).
Environmental Protection (Water) Policy 1997 (EPP Water)	The policy provides a framework for making decisions on Queensland waters that promote efficient use of resources and best practice environmental management and involving the community.
Permits	
Riverine Protection Permit	Under the *Water Act 2000* a riverine protection permit may be required which authorises the holder to carry out one or more of the following activities within a watercourse, lake or spring: ◗ industrial use; ◗ the storage of water behind a weir; ◗ the storage of water in excavations that are within or connected to a watercourse; ◗ clear vegetation; ◗ excavate; and ◗ place fill.

6. Existing Environment and Potential Impacts

6.1 Overview of Impacts

Potential environmental impacts associated with the Project may arise during the following phases:

Resource Appraisal

This phase of the Project consists of:

- surveys and field studies; and
- drilling test boreholes and bulk sampling to determine the location and quality of the coal deposit.

Potential impacts during the exploration stage of the Project include:

- vegetation clearing to provide vehicle access; and
- disturbance to sites of heritage significance.

Construction

This phase of the Project consists of the construction of:

- roads to provide access to the mine site;
- utility lines for the supply of power and water;
- transport infrastructure;
- plant and facilities such as the CHPP, workshops and administration buildings;
- waste disposal facilities and water storage dams; and
- drifts to provide access to the initial workings and the ventilation shaft.

Potential impacts during the construction stage of the Project include:

- disturbance to vegetation and habitat loss;
- disturbance to sites of heritage significance;
- modification to surface water features;
- noise and dust emissions;
- construction traffic; and
- waste rock disposal from the drifts and ventilation shaft.

Mining

This phase of the Project consists of:

- dewatering of the mine;
- mining of coal via retreat longwall extraction;
- conveyor transport of coal to the surface ROM stockpile;
- processing of coal in the CHPP and storage in a product stockpile;
- disposal of coarse rejects and tailings from the CHPP; and
- coal loadout and transport to port.

Potential impacts during the mining stage of the Project include:

- mine dewater disposal;
- noise and dust associated with the use of surface plant and equipment;
- noise and dust from the CHPP;
- dust from stockpiles and the waste rock dump;
- seepage of water and contaminants from the tailings disposal facility;
- noise and dust from materials handling and train loadout;
- noise from trains and operations traffic; and
- visual impact from changes in landscape.

Rehabilitation and Closure

Following the conclusion of mining the site will be rehabilitated and closed.

This phase of the Project consists of:

- sealing of the mine;
- removal of mining infrastructure;
- bulk earthworks to shape and cap dumps and ponds;
- remediation of contaminated land; and
- revegetation of disturbed surfaces.

Potential impacts during the closure stage of the Project include:

- dust and noise from mobile equipment;
- dust from earthworks and topsoil;
- traffic movements; and
- successful attainment of rehabilitation objectives.

6.2 Climate

The region enjoys typical tropical weather, with temperatures ranging from 20^{o}C to 40^{o}C, and may receive heavy rains in the wet season (November through to April). It has a semi-arid to arid climate with hot summers and dry, warm winters.

6.3 Land Use

Existing Environment

The land surface is gently undulating with a total change in elevation of less than 25 m. The Gregory Highway, the main arterial road to Emerald, the Emerald – Clermont rail line and a 66 kV power line traverse the leases.

Potential Impacts

The construction of surface plant and infrastructure is necessary to support mine operations. Surface infrastructure essential to the Project includes:

- site access and transport infrastructure;
- administration buildings including offices and bathhouse;
- warehouse and workshop facilities;
- car parking areas;
- sewage treatment plant;
- clean water dams and tailings dams;
- water treatment plant;
- electrical substation;
- stockpile areas;
- materials handling infrastructure and CHPP; and
- Clearing through the establishment of the aforementioned infrastructure will impact on existing land use.

Proposed EIS Impact Methodology

The EIS will confirm the location of plant and infrastructure, and calculate the area of land to be disturbed. The significance and consequence of the impact will be discussed and management measures outlined to reduce impacts where necessary.

6.4 Water Resources

6.4.1 Surface Water

Existing Environment

Emerald lies on the Nogoa River which is a major tributary of the Fitzroy River. The ephemeral Theresa Creek traverses MLA 70405 to the west of the Project site and joins Retreat Creek before it flows into the Nogoa River approximately 2 km downstream. The Fitzroy River flows east for some 300 km where it meets the coast at Rockhampton. No site specific water quality data is available.

Potential Impacts

The main potential impacts on local and regional surface waters that may arise during construction and operation include:

- changes to the catchment area of local drainage lines including the on-site Theresa Creek and Retreat Creek;
- direct impacts due to disturbance of on-site drainage lines and drainage lines associated with the transport corridor;
- contamination of local waterways from acid mine drainage or contaminant leaching; and
- clearing of vegetation and exposure of soils and sub soils to erosive forces.

The main potential sources of sediment release from the Project to Theresa Creek and Retreat Creek are from cleared areas of the site and from waste rock dumps.

The mine may also generate waste rock with Acid Mine Drainage (AMD) potential which will need to be correctly managed in the waste rock dump.

The primary objectives of the water management strategy for the Project will be the maintenance of existing drainage lines and their capacity where possible, the diversion of clean water around the mine site and the capture and reuse or, following clean up, release of dirty water streams.

Proposed EIS Impact Methodology

The surface water assessment will:

- describe the existing baseline environment associated with local and regional surface water resources;
- describe the existing hydrologic environments for the site and transport corridor, which will also involve a review of Water Resource and Catchment Management Plans provided by DERM and regional catchment management agencies;
- describe existing beneficial uses and licensed users of surface water resources in the study area;
- identify and quantify impacts to surface water resources in the area from construction and operation of the Project;
- identify water quality, hydrologic and hydraulic impact mitigation measures adopted in the Project design;
- develop a preliminary water balance for the Project; and
- develop a site specific Surface Water Quality Management Plan / Mine Site Water Management Plan.

6.4.2 Groundwater

Existing Environment

A search of registered bores through DERM's bore database has identified that 160 bores are located within an approximate 10 km radius of the Project site. Bores appear to be used for a variety of purposes, although water supply is listed as one of the dominant uses. Existing data which is based upon measurements of salinity, suitability of water for domestic use and stock watering or irrigation, showed water quality was variable across the site.

Details including existing aquifer depth and groundwater flow directions have not yet been developed. This information and other relevant baseline groundwater information will be investigated during the preparation of the EIS and used to assess the level and significance of potential impacts on local and regional groundwater resources.

Potential Impacts

The main potential groundwater impacts arising from the construction and operation of the mine are associated with tailing impoundments, leaching, acid mine drainage and mine dewatering. Dewatering can also lead to significant groundwater drawdown which can deplete surface water flows and impact phreatophytic vegetation.

Tailing impoundments and waste rock dumps can lead to impacts such as contaminated groundwater beneath these areas if the proper controls are not put in place, particularly if the base of these facilities is not fitted with an impermeable liner.

As well as posing operational and safety issues, groundwater inflow into underground mines can pose significant environmental impacts where either the volumes and/or the quality of the groundwater may make it difficult to manage and dispose of the water. If geological layers intersected by the mine are potentially acid forming, this can lead to short and long term issues such as acidification of groundwater.

Dewatering can lead to significant drawdown of the groundwater table which may take many years to return to pre-mining levels.

Proposed EIS Impact Methodology

The EIS will include a description of the aquifers in the vicinity of the site. To make informed decisions on the level and significance of impact to local aquifers, the following tasks will be completed:

- map local aquifer/s;
- describe local geology/stratigraphy, such as alluvial, volcanic and metamorphic rock;
- describe the aquifer type (confined or unconfined);
- determine the depth to the aquifer, and the thickness and hydrology of the aquifers;
- determine the depth to water level and seasonal changes in levels;
- determine groundwater flow directions;
- identify linkages with surface water;
- identify possible sources of recharge; and
- determine the vulnerability to pollution and existing pathways.

In order to generate this information, the following scope of work is proposed:

- desktop data collation and review;
- borehole census;
- groundwater monitoring network design and installation;
- baseline groundwater sampling and monitoring;
- Acid Mine Drainage potential assessment;
- quantitative and qualitative assessment of groundwater impacts; and
- preparation of appropriate mitigation and management measures.

6.5 Ecology

Existing Environment

Searches have been undertaken of the following databases:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters database (Appendix A);
- HERBEC database for flora;
- Regional Ecosystem Description Database (REDD); and
- Wildlife Online Database (DERM).

Three EPBC listed 'Endangered' Threatened Ecological Communities were identified as having the potential to occur within the area:

- Brigalow (*Acacia harpophylla*) dominant and co-dominant;
- Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin; and
- Weeping Myall Woodland.

Fifteen EPBC listed threatened species were identified as having the potential to occur at the study area:

- Red Goshawk;
- Squatter Pigeon;
- Star Finch;
- Australian Painted Snipe;
- Northern Quoll;
- Greater Long eared bat;
- King Blue-grass;
- Finger Panic Grass;
- Ornamental Snake;
- Yakka Skink;
- Collared Delma;
- Allan's Lerista;
- Dunmall's Snake;
- Brigalow Scaly-foot; and
- Fitzroy River Turtle.

The EPBC search also identified three birds listed as Marine Migratory Birds, four listed as Migratory Terrestrial and five listed as Migratory Wetland Species as having the potential to occur in the study area.

A search of DERM's Wildlife online database indicated that a total of 316 species (16 amphibians, 135 birds, 15 fish, 29 mammals, 39 reptiles and 82 plants) have been historically recorded in proximity to the Project site. Of these, eight are listed under the NC Act as Vulnerable or Near Threatened with five of these also listed under the EPBC Act as Vulnerable (Squatter Pigeon, Ornamental Snake, Brigalow Scaly-foot and two species of plant).

Regional ecosystem mapping indicates the presence of ten 'Of Concern' and 'Endangered' regional ecosystems within the Project area. Six are 'Endangered' and four are 'Of Concern' under the VM Act (Table 6-1). Ground truthing will be necessary to confirm the existence of the ecosystems.

Table 6-1 Endangered and Of Concern RE's Occurring in the Area

RE Number	Brief Description	VMA Status
11.3.1	Open-forest dominated by *Acacia harpophylla* and/or *Casuarina cristata* (particularly in southern parts), with or without scattered emergent *Eucalyptus* spp. such as *E. coolabah, E. largiflorens, E. populnea, E. orgadophila,* and *E. woollsiana* (Brigalow TEC).	E
11.3.2	*Eucalyptus populnea* woodland to open-woodland (Weeping Myall Woodland TEC).	OC
11.3.3	*Eucalyptus coolabah* woodland to open-woodland with a grassy understorey.	OC
11.3.3a	Riverine wetland or fringing riverine wetland. *Melaleuca bracteata* woodland. On alluvial plains.	OC
11.4.7	Open-forest to woodland dominated by *Eucalyptus populnea* and *Acacia harpophylla* and/or *Casuarina cristata* in a lower tree layer (Brigalow TEC).	E
11.4.8	Woodland to open-forest dominated by *Eucalyptus cambageana* and *Acacia harpophylla* or, sometimes in the north, *A. argyrodendron* (Brigalow TEC).	E
11.4.9	Open-forest, occasionally woodland, dominated by *Acacia harpophylla* usually with a low tree mid-storey of *Terminalia oblongata* and *Eremophila mitchellii* (Brigalow TEC).	E
11.8.11	Grassland dominated by *Dichanthium sericeum*, *Aristida spp., Astrebla* spp. and *Panicum decompositum* with or without trees such as *Eucalyptus orgadophila*, E. melanophloia, *Corymbia erythrophloia* and *Acacia salicina*, (height 11 +/- 3 m) (Natural Grasslands TEC).	OC
11.9.1	Open-forest to woodland of *Eucalyptus cambageana* or *E. thozetiana* and *Acacia harpophylla* (Brigalow TEC).	E
11.9.5	Open-forest dominated by *Acacia harpophylla* and/or *Casuarina cristata* (10-20 m) or *Acacia harpophylla* with a semi-evergreen vine thicket understorey (Brigalow TEC).	E

Potential Impacts

The Project will require the clearing of vegetation which may include Of Concern and Endangered Regional Ecosystems and impact threatened fauna and flora, together with impacts on EPBC listed TEC's and species. The area that will be directly impacted still needs to be determined.

Proposed EIS Impact Methodology

The EIS will use a systematic approach to identify and manage likely impacts to flora and fauna species and populations. This will be achieved by:

- desktop review of existing literature and publicly available maps;
- field assessment including targeted surveys; and
- impact assessment and the development of mitigation measures.

Field assessment will target important ecological communities and listed threatened species identified in the desktop assessments and will include:

- flora and vegetation habitat condition assessments including structure, assemblage, diversity and abundance within the vegetation communities and presence of weed species;
- ground-truthing of mapped Regional Ecosystems and threatened ecological communities within the Project area;
- targeted searches for listed flora species identified as potentially occurring in the area;
- fauna survey conducted using a combination of systematic and non-systematic sampling techniques. Systematic sampling will involve a four-night trapping program at sites identified during the desktop review process and reconnaissance survey, utilising a variety of techniques that target species listed under state and federal legislation. Non-systematic sampling will include targeted searches for threatened species, avifauna surveys, bat detection using Anabat units, incidental and opportunistic fauna observations and spotlighting; and
- habitat assessments to determine fauna habitat preferences related to breeding, recruitment, feeding and movement requirements (including identification of corridors).

Aquatic ecology assessments at significant waterways or suitable water bodies within the Project area will include:

- aquatic habitat assessments to describe habitat diversity, extent, suitability for aquatic fauna groups, sensitivity to change and existing disturbances; and
- where suitable habitat is available, the diversity of species represented in the Project area will be quantified through macro-invertebrate and fish sampling.

Studies will quantify potential impacts on flora and fauna in a local, regional, State and national biodiversity context. Mitigation measures will be developed where necessary.

6.6 Soils and Geology

Existing Environment

Soil survey results for the Nogoa-Belyando area (CSIRO, 2010 website reference http://www.asris.csiro.au) indicate that soils in the region are predominantly clays and fine clay loams with large areas exhibiting fine alluvium sediments. There is an extremely low probability of occurrence for actual and potential acid sulphate soils.

The coal seams are contained within the German Creek Formation of the Blackwater Group (Figure 4-1). The German Creek Formation consists predominantly of sandstone with interbedded siltstone and mudstone. The major seams within the Formation include the:

- Pleiades Seam;
- Aquila Seam;
- Tieri Seam;
- German Creek Seam; and
- Corvus I and II Seams.

The German Creek Seam is generally spilt into an upper and lower formation. The upper formation is approximately 1.2 m deep while the lower formation is approximately 0.9 m deep.

The Pleiades and Corvus I seams are generally thin, commonly ranging from 0.5 m to 0.7 m. Tertiary sediments are thought to be approximately 100 m deep and are part of the Fairhill formation, which covers approximately 50% of the Project area.

Potential Impacts

Topsoil will be cleared from areas where surface infrastructure is to be constructed. This soil will be stockpiled and protected for reuse during rehabilitation.

The main geological impact from mining is subsidence related impacts on landforms and land use from troughs and tensile cracking.

Proposed EIS Impact Methodology

The EIS will assess baseline soil conditions in areas to be disturbed during construction and operations. The baseline assessment will include:

- a review of desktop information relevant to the site including existing reports, literature and mapping of topography, geology, sols, waterways, rainfall, land use, agricultural land and contaminated land;
- assessment and identification of soil properties that could contribute to significant erosion risk and potentially compromise rehabilitation; and
- assessment of short and long term impacts associated with Project activities and identification of mitigation measures.

A subsidence assessment will also be completed for the Project.

6.7 Noise and Vibration

Existing Environment

The nearest urban area to the Project is the town of Emerald, around 17 km to the south. Noise levels in the area of the mine site are mainly influenced by pastoral activities, the Blair Athol Branch Railway and the Gregory Highway. The locations of nearby receptors will be determined during the preparation of the specialist noise and vibration report.

Potential Impacts

Noise from the Project is expected to be generated from a number of construction and operational activities including materials handling, operation of the CHPP and transportation.

It is not anticipated that blasting will be required and consequently vibration should not be an issue.

Proposed EIS Impact Methodology

A noise impact assessment will be undertaken that will include:

- a desk-top review to identify key environmental noise catchment areas and noise sensitive receivers;
- unattended noise monitoring for a period of one week at three noise sensitive receiver locations indicative of the local ambient noise environment;
- attended noise measurements on-site and at the unattended noise logging locations to supplement the unattended measurements;
- establishment of project specific noise goals for the construction and operation of the Project with consideration of the relevant Queensland noise policies and guidelines and Australian Standards;
- identification of the likely principal noise sources during construction and operation;
- undertaking noise modelling under different meteorological conditions (neutral and noise enhancing weather conditions) using CadnaA noise modelling software to predict construction and operational sound pressure levels emanating from the proposed mine; and
- assessing predicted noise levels against the project specific noise goals.

An assessment of potential vibration impacts will be undertaken as follows:

- identifying and discussing potential vibration issues at the most sensitive receivers; and
- commenting on predicted vibration levels and provide recommendations for mitigation measures, if required.

6.8 Air Quality

Existing Environment

Air quality values in the area of the mine site are consistent with pastoral activities. The closest sensitive receptors will be determined during the preparation of the specialist air quality report.

Potential Impacts

Impacts on air quality will arise during construction and operational activities. Potential emission sources associated with the Project include:

- dust from construction activity;
- gas exhaust from on-site plant and equipment;
- dust from on-site vehicle movements;
- dust from materials handling and coal processing; and
- dust from stockpiles and exposed surfaces.

Proposed EIS Impact Methodology

An air quality assessment will be undertaken to assess impacts from mobile, stationary and fugitive sources that will include:

- review meteorological information and summarise climatic conditions for the Project area including temperature, humidity, rainfall, wind and atmospheric stability using data from Bureau of Meteorology climatic observing site(s);
- review previous reports and secondary information to determine background levels of air quality with data from DERM and publicly-available data from existing mines in the region;
- identify sensitive receptors that could potentially be impacted by emissions;
- establish air quality goals for both the construction and operation phases using the Queensland *Environmental Protection (Air) Policy 2008*;
- identify all potential sources of air emissions for the construction and operation phases of the Project;
- quantify air emission rates from relevant pollutant inventory emission estimations, such as the National Pollutant Inventory (NPI) and the USEPA AP-42;
- air dispersion modelling for the construction and operational phases using the regulatory model Ausplume (V6.0), which will enable predictions of the potential off-site dust impact from the construction and operational phases; and
- recommendation of standard mitigation measures in the event that predicted dust impact levels exceed relevant air quality goals.

6.9 Mining Waste

Potential Impacts

Waste rock will be produced during excavation of the drifts and ventilation shaft. Where possible this will be used around the site for the construction of building pads, in drainage protection works, road sheeting and dam construction. Unsuitable materials will be stored in a waste rock dump.

The processing plant is expected to produce coarse and fine rejects which will require disposal on-site. There are several options for rejects disposal to be assessed and the location of the disposal sites will be determined following further investigations into coal quality, processing, surface water, land use, ecology and mining generated subsidence.

Proposed EIS Impact Methodology

The assessment of waste for the Project will include the following tasks:

- identify and characterise likely waste streams (solid, liquid and hazardous);
- evaluate waste management options for each waste stream against the waste management hierarchy;
- discuss potential impacts of waste generation, on-site storage, management and disposal;
- prepare an outline waste management plan for inclusion in the Environmental Management Framework;
- identify potential issues arising from waste management and storage; and
- discuss mine planning and closure requirements to minimise long term environmental impacts in relation to mine waste management.

6.10 Greenhouse Gas

Existing Environment

Greenhouse gas (GHG) emissions from the site reflect the generally rural nature of the area.

Potential Impacts

The Project has the potential to contribute to GHG emissions through:

- lost CO_2 uptake due to vegetation clearing;
- GHG's emitted by on-site plant and machinery;
- GHG's emitted due to coal extraction;
- GHG's emitted due to coal processing;
- GHG's emitted through the transport of coal;
- GHG's generated through the purchase of power generated off-site; and
- GHG's emitted through third party use of the coal.

Proposed EIS Impact Methodology

The methodology for developing a GHG inventory of projected annual emissions for each relevant greenhouse gas with total emissions expressed in 'CO_2 equivalent' terms is based on emissions in the following categories:

- Scope 1 – emissions which are direct emissions of GHG's from sources within the boundary of the facility and as a result of the facility's activities;
- Scope 2 – emissions of GHG's from the production of electricity, heat or steam that the facility will consume, but that are physically produced by another facility; and
- Scope 3 – emissions that are generated in the wider economy as a consequence of a person or business's activities. These are indirect emissions as they arise from sources that are not owned or controlled by that person or business but they exclude Scope 2.

The Greenhouse gas emission assessment will consist of the following tasks:

- identification of the relevant policies and strategies developed at a federal and state level and a baseline of the current levels of GHG emissions in Queensland with the sectors relevant to the Project;
- the development of a GHG inventory based on the processes and activities related to the Project including Scope 1, Scope 2 and Scope 3 emissions;
- using the supplied data, agreed calculation methodologies and factors, develop an inventory of the GHG emissions for the construction and operation phases. Emissions will be calculated using the factors and methodologies outlined in the latest "National Greenhouse Accounts (NGA) Factors", published by the Australian Government's Department of Climate Change and Energy Efficiency; and
- identify potential GHG abatement and mitigation measures. These may include opportunities for offsetting greenhouse gas emissions through indirect means including sequestration and carbon trading.

6.11 Indigenous and Non-indigenous Cultural Heritage

Existing Environment

It is anticipated that a search of DERM's Aboriginal Cultural Heritage Parties register will confirm that the Western Kangoulu People are the Aboriginal Cultural Heritage party for the mining lease areas, under the *Aboriginal Cultural Heritage Act 2003*.

The Proponent has an existing Cultural Heritage Clearance Agreement with the Western Kangoulu People to facilitate ongoing exploration programs in the mining lease areas.

A native title extinguishment legal assessment is expected to confirm that native title has been extinguished by the previous grants of pastoral tenures over the mining lease areas.

There is also potential for non-indigenous cultural heritage values to be associated with the Project and whilst these are not presently evident their potential will be investigated.

Potential Impacts

Mining projects can affect Aboriginal cultural heritage values, non-indigenous cultural heritage values and natural landscapes. The potential impacts that may arise as a result of construction and operation of the mine and transporting the coal include:

- degradation of the values/resource through surface ground disturbance and excavation;
- degradation of historical, non-indigenous cultural heritage values due to topographical, soil or hydrological changes; and
- visual impacts due to clearing of vegetation or the long term presence of large-scale equipment and vehicles.

Proposed EIS Impact Methodology

Aboriginal Cultural Heritage Management Strategies will include:

- engagement of the relevant Aboriginal Party to undertake a Cultural Heritage Survey of the Project area;
- identify Aboriginal Cultural Heritage recorded on DERM's sites register, detail the location of any Aboriginal Cultural Heritage found in the Project area and describe its significance, describe the potential impact of the Project on the identified Aboriginal Cultural Heritage, and make recommendations for the management of the Aboriginal Cultural Heritage identified;
- development of a Cultural Heritage Management Plan (CHMP) prior to mining activities commencing. The CHMP will contain agreed processes for mitigation, management and protection of identified Cultural Heritage sites and objects in the Project area, including associated infrastructure developments, both during the construction and operational phases of the Project; and
- agreed management, Cultural Heritage monitoring and reporting practices will be employed in consultation with the relevant Aboriginal Party.

Non-indigenous Cultural Heritage Management Strategies may include the following, as required by the Draft Terms of Reference:

- a search of the Queensland Heritage Register (DERM) and the Department of Sustainability, Environment, Water, Population and Communities' register of the National Estate, Commonwealth Heritage list and National Heritage list;
- an assessment of the proposed Project area to locate and record non-indigenous Cultural Heritage material or places, an assessment of the significance of this material or place identified and the impact of the proposed development on non-indigenous Cultural Heritage values; and
- liaison with relevant community groups/organisations (e.g. local historical societies) and local Government registers, concerning places of non-indigenous Cultural Heritage significance and opinions regarding the significance of any Cultural Heritage material or places identified.

Investigations and consultation will be undertaken in such manner and detail as to satisfy statutory responsibilities and duties of care, including those under the *Queensland Heritage Act 1992*, the ACHA and the *Australian Aboriginal and Torres Strait Islander Heritage Protection Act 1984*.

6.12 Social and Socio-economic Impacts

Existing Environment

The town of Emerald is the regional centre for the Central Highlands with facilities typical of a large rural town. The Shire population in 2010 was estimated at 31,000 with the statistical local area of Emerald having a population of approximately 18,000 (Office of Economic and Statistical Research, 2011).

Potential Impacts

Social and socio-economic impacts potentially associated with construction and operation of the Project include:

- increased employment opportunities for skilled and unskilled workers, particularly in engineering and technical trade areas. This will include workers already resident in the area;
- an increase in local population where workers and families may relocate to Emerald;
- an increase in the temporary population of Emerald where workers choose to work on a commuter basis;
- relocation of workers and families from outside the region to centres such as Emerald;
- increased demand for local community services and facilities. This impact can be positive where the increased demand stimulates provision of new services and facilities, or negative where it leads to increased demand for existing services and facilities;
- flow on effects in relation to accommodation in Emerald;
- increased business opportunities for local and regional suppliers; and
- increased revenue to the government sector from taxes and royalties.

Proposed EIS Impact Methodology

The Social Impact Assessment (SIA) will be undertaken in accordance with the International Association for Impact Assessment SIA International Principles (2003) and the *Queensland Sustainable Resource Communities Policy*. The SIA will broadly follow the following methodology:

- Scoping – define the study area for the SIA based on the social and cultural area of influence for the Project (local and regional study areas); undertake initial consultation with key stakeholders such as the Regional Council and undertake a literature review of other relevant projects and reports;
- Baseline – develop a baseline description (social profile) of the local and regional study area based on the key socio-economic variables;
- Identify potential social impacts and opportunities – identify the potential social impacts and opportunities associated with the mine and assess their significance during construction and operation;
- Identify management strategies – identify management strategies in consultation with key stakeholders to manage potential impacts and opportunities; and
- Develop a draft social impact management plan for the life of the Project in accordance with the Queensland Government Guideline to *Preparing a Social Impact Management Plan.*

6.13 Traffic

The Gregory Highway which is a State Controlled Road (SCR) passes through the east of the site and carries local and regional traffic in a north – south direction. It is expected that site access will be established via a constructed access road from a yet to be determined point along the Gregory Highway.

The township of Emerald has an established road, rail and air transport network which facilitates the movement of goods in and out of the Shire.

Regular coach services operate to and from Rockhampton, Longreach and Mackay (via Capella, Clermont and Moranbah). Regular flights operate between Brisbane and the Emerald local airport.

Potential Impacts

Some of the key traffic issues that may arise during the construction and operation of the Project include:

- temporary traffic controls or diversions;
- the safe and efficient transportation of hazardous materials;
- the increased likelihood of accidents on local roads, particularly at intersections;
- the impact on network operations due to increased traffic movements on local and regional roads, particularly during the peak periods;
- the impact of increased axle loads on roads causing damage to pavement surfaces;
- changes that affect other road users including pedestrians and cyclists; and
- impact of the coal transport corridor alignment on the local road network.

Proposed EIS Impact Methodology

A road and traffic impact assessment will be undertaken which follows the methodology specified in the "Guidelines for Assessments of Road Impacts of Development (GARID), TMR, 2006". Tasks involved in the study will include:

- identify intersections and roads that would be impacted by traffic generated by the Project;
- consult with TMR/Council regarding the appropriate study intersections, network performance criteria, traffic data and growth rates to be used on background traffic volumes;
- determine the existing (2011) peak and daily traffic volumes and composition (from traffic data provided by TMR);
- consider the existing traffic situation on roads/intersections that facilitate access to/from the site. The assessment will be limited to the agreed study intersections identified through discussion with TMR/Council. Analyse the existing peak hour performance of the study intersections using SIDRA 5.1 intersection modelling software, if required;
- determine the design peak hours of traffic during the construction and operation stages;
- determine traffic generated by the Project during the construction and operation stages;
- estimate future traffic volumes in the opening year and 10-year design horizon;
- analyse the performance of the study intersections during the peak construction and operation stages, with and without traffic generated from the Project;
- assess the traffic impact and identify improvement treatments to facilitate access and to improve traffic operations;
- determine the potential impact on existing public and active transport infrastructure;
- consider site access safety from a traffic planning perspective; and

- calculate the expected percentage change in Equivalent Standard Axle Loads (ESALs) and Average Annual Daily Traffic Volumes (AADTs) on the roads/study intersections adjacent the Project site during the construction and operation stages. Identify road sections that exceed the thresholds recommended by GARID and the requirement for a Pavement Impact Assessment.

6.14 Landscape

Existing Environment

The landscape in the vicinity of the proposed Project is flat to slightly undulating. The landscape has been partially modified by vegetation clearing for agricultural and grazing purposes and also by other open cut and underground mining activity in the area.

Desktop investigations to date indicate that there are a limited number of visual receptors that may be sensitive to long term changes in the landscape.

Potential Impacts

The Project will result in vegetation clearing, the erection of mining and transport infrastructure. A waste rock dump and tailings storage facility will also be constructed. Following completion of mining, infrastructure will be removed from site and disturbed areas will be rehabilitated. There will be a permanent change in landform due to retention of the rehabilitated waste rock dump and tailings storage facility which will permanently alter the landscape character and visual amenity of the area.

Proposed EIS Impact Methodology

The existing visual amenity of the proposed area will be described in terms of view sheds for local residents traffic on the Gregory Highway and other local roads in the area. Impacts of proposed mine infrastructure and facilities on these view sheds and the overall changes to baseline amenity during operations and following closure will be discussed.

The locations of sensitive visual receptors will be confirmed and mapped. In addition, photographs taken from each site will be used to infer the significance of potential impacts.

Mitigation measures will be prepared where impacts are identified.

7. Consultation

The overall purpose of the community and stakeholder consultation process will be to:

- provide opportunities for the community and other stakeholders;
- identify issues and impacts (potential or perceived) associated with the Project;
- provide input into the mitigation measures designed for the Project; and
- document community input which will be considered as part of the environmental assessment.

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

A Community and Stakeholder Consultation Plan has been prepared to:

- guide the consultation activities during the environmental assessment process; and
- demonstrate how the consultation will inform the development of the environmental assessment.

The objectives of the consultation process are to:

- 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.

A Community and Stakeholder Consultation Report will be prepared for inclusion in the EIS.

Community input is essential at each stage of the Project to understand the social, economic or environmental impacts and to identify appropriate ways of dealing with them. As part of the EIS, questions and feedback are invited. Interested parties will be able to provide input by:

- visiting the webpage www.lincenergy.com/eis_teresa_coal_project.php to read about the Project, download the Initial Advice Statement (IAS), Terms of Reference (ToR) and email the Project Team;
- calling the Project's telephone information line - 1800 802 848; and
- attending a community information session to meet the Project Team and ask questions.

The consultation process will be integrated with the Social Impact Assessment element of the EIS, to increase efficiency of consultation events and mitigate consultation fatigue in communities.

7.1 Affected and Interested Persons

Table 7-1 includes a list of interested and affected external stakeholders for the project, with proposed consultation actions for each group, as required under section 41 of the *Environmental Protection Act 1994* (EP Act). The EP Act requires all 'affected' persons in the 'operational' land and joining land to be listed in the IAS. The operational land would include the MLAs and the transport corridor. Considering

that the transport route has not been confirmed, the affected persons have not been listed here. However the Proponent will ensure that these affected persons will receive a copy of the Terms of Reference Public Notice. 'Interested persons' have been identified as Federal and State Government departments, local community groups and service providers that may have an interest in providing input to the ToR and EIS processes.

Table 7-1 External Stakeholders

Individual / Organisation / Title	Level of interest
LANDHOLDERS	
Frederick Daniels PO Box 212, Emerald, QLD 4720	Affected
Scott Dunbar PO Box 508, Emerald, QLD 4720	
Adrian and Tammy Esmond PO Box 103, Emerald, QLD 4720	
Alan Esmond PO Box 1586, Emerald, QLD 4720	
Ethel Esmond PO Box 1586, Emerald, QLD 4720	
Keith, Adrian, Alan and Patrick Esmond PO Box 103, Emerald, QLD 4720	
Alan and Patrick Esmond PO Box 1586, Emerald, QLD 4720	
Patrick and Sonya Esmond PO Box 1586, Emerald, QLD 4720	
Trevor and Allison Hamblin PO Box 2042, Emerald, QLD 4720	
Mark Hemmings PO Box 534, Emerald, QLD 4720	
Philip and Sandra Hemmings PO Box 534, Emerald, QLD 4720	
Roger, Carolyn, and Andrew Lee PO Box 349, Emerald, QLD 4720	

Christopher and Karen Mihill PO Box 875, Emerald, QLD 4720
Anthony O'Brien PO Box 521, Emerald, QLD 4720
Peter Thomas PO Box 206, Emerald, QLD 4720
Mark and Sophie Basford Donald and Iola Sampson PO Box 532, Emerald, QLD 4720
James and Cornelia Brennan PO Box 1231, Emerald, QLD 4720
Graham and Julie Campbell 60 Long Street, Emerald, QLD 4720
Dawn and Douglas Slack PO Box 191, Emerald, QLD 4720
Dallas and Gavin Daniels 11 Beechwood Rd, Balmoral Ridge, QLD 4552
Joshua Walsh PO Box 866, Emerald, QLD 4720
HSE Contractors Pty Ltd PO Box 6504, Belmont, WA 4552
Janelle and William Ramsey PO Box 2254, Emerald, QLD 4720
Donald and Kay Gordon Sedgeford Station, Alpha, QLD 4724
Queensland Department of Transport PO Box 1787, Emerald, QLD 4720
Queensland Rail c/- QLD RAIL GPO Box 1429 ,Brisbane, QLD 4001
Central Highlands Regional Council PO Box 21, Emerald, QLD 4720
Western Kangoulu People Address to be confirmed

MINING AND PETROLEUM TENURE HOLDERS	
Auriga Coal Pty Ltd PO Box 10630, Adelaide Street, Brisbane QLD 4001	Affected
SK Networks Resources Australia Pty Ltd Level 24 BT Tower 1 Market Street, Sydney, NSW 2000	
Dysart Coal Pty Ltd c\- Grant William Quinn 50 Flame Tree Crescent, Carindale, QLD 4152	
Matilda Coal c\- Austwide Mining Title Management Pty Ltd PO Box 1434, Wangara, WA 6947	
BNG (SURAT) Pty Ltd GPO Box 3107, Brisbane, QLD 4001	
Queensland Coal Pty Ltd GPO Box 391, Brisbane, QLD 4001	
FEDERAL GOVERNMENT DEPARTMENTS	
Department of Sustainability, Environment, Water, Population and Communities GPO Box 787, Canberra, ACT 2601	Interested
STATE GOVERNMENT DEPARTMENTS	
Department of Environment and Resource Management GPO Box 2454, Brisbane, QLD 4001	Interested
Department of Transport and Main Roads GPO Box 2644, Brisbane, QLD 4001	
Department of Employment, Economic Development and Innovation PO Box 15031, Brisbane, QLD 4002	
Department of Local Government and Planning PO Box 15009, Brisbane, QLD 4002	
LOCAL GOVERNMENT	
Central Highlands Regional Council PO Box 21, Emerald, QLD 4720	Interested and Affected

HEALTH AND EDUCATION INSTITUTIONS	
Emerald Hospital 69 Hospital Rd, Emerald, QLD 4720	
Emerald Christian College 2 Gregory Highway, Emerald, QLD 4720	
Marist College Jeppesen Drive, Emerald, QLD 4720	
St Patrick's School Yamala Street, Emerald, QLD 4720	Interested
Emerald North State School Campbell Street, Emerald, QLD 4720	
Emerald State High School Old Airport Drive, Emerald, QLD 4720	
Emerald State School Anakie Street, Emerald, QLD 4720	
Denison State School 16 Gray Street, Emerald, QLD 4720	
EMERGENCY SERVICES	
Queensland Ambulance Service Warren Kellett PO Box 34, Emerald, QLD 4720	
Queensland Police Service Egerton Street, Emerald, QLD 4720	Interested
Queensland Fire and Rescue Service (Central Region) PO Box 1365, Emerald, QLD 4720	
ENVIRONMENT, COMMUNITY AND RECREATIONAL INSTITUTIONS	
Central Highlands Regional Resources Use Planning Cooperative PO Box 19, Emerald, QLD 4720	Interested
Fitzroy Basin Association PO Box 139, Rockhampton, QLD 4700	

BUSINESSES	
Sandra Hobbs Central Highlands Development Corporation PO Box 1425, Emerald, QLD 4720	
Emerald Chamber of Commerce, Victor Cominos 19 Opal Street, Emerald, QLD 4720	Interested
AgForce Queensland PO Box 1324, Rockhampton, QLD 4700	

8. Environmental Management

8.1 Environmental Management Plan

The EIS will identify measures that will prevent or mitigate potential adverse environmental impacts resulting from the Project on each environmental aspect. This includes land resources, water resources (surface and groundwater), air quality and greenhouse gasses, noise, flora and fauna, cultural and non-indigenous heritage and social and community impacts.

An Environmental Management Plan (EM Plan) is required under Section 201 of the *Environmental Protection Act 1994* (EP Act) for any non-standard environmental authority for a mining lease. The EM Plan for the Project will be developed in accordance with the Terms of Reference for the Project and the Guideline *Preparing an Environmental Management Overview Strategy for Non-Standard Mining Projects* (Department of Environment and Resource Management 2003).

Section 202 of the EP Act identifies that the purpose of an EM Plan is to propose environmental protection commitments to protect the environmental values affected by the Project, and to assist the administering authority (DERM) to prepare the Environmental Authority (EA) for the application. An EA is an authority issued by DERM under the EP Act that allows the holder to undertake and conduct mining activities that, without such authority, would be deemed illegal.

An EM Plan for the Project will be developed and will include the following:

- description of mining tenure(s);
- description of Project related mining activities which may include:
  - the type and scale of operation including proposed hours of operation, mining methodology, annual mining rate and annual processing rate;
  - the planned mine life identifying construction, operation and rehabilitation phases;
  - recovery of material from the ore body;
  - activities associated with processing which may cause environmental harm, for example removal of vegetation and preparation of land for roads, storage facilities, loading facilities and other infrastructure; and
  - rehabilitation and remediation of environmental harm caused by mining activities.
- description of environmental values and potential impacts to the values from the Project. Assessment of the beneficial or adverse effects may include an assessment of the following aspects:
  - magnitude or relative size of impact in relation to the environmental value being affected;
  - severity of any adverse effect or scale of beneficial outcome;
  - duration of the effect, for example the impact may range from a seasonal change, or it may end with the mining activity or extend beyond mine closure; and
  - an indication of the level of uncertainty and any assumptions used to address the uncertainty in any of the data or proposed commitments to protect the environmental values.
- environmental objectives, targets and indicators will be developed to reflect acceptable standards of management for environmental values potentially impacted by the proposed mine;

- environmental controls and management measures proposed for the Project, based on recommendations made in the EIS and accepted standards of environmental management for mining projects in Queensland and Australia and proposed conditions for the Environmental Authority. Environmental controls and proposed conditions will cover:
  - air emissions;
  - noise and vibration;
  - surface water and groundwater;
  - waste management;
  - land management and rehabilitation;
  - ecosystems; and
  - community amenity.
- monitoring indicators and methods will be developed to monitor compliance and achievement of environmental objectives and targets.

8.2 Closure and Decommissioning

A Mine Closure Plan will be developed for the Project. The Mine Closure Plan will identify procedures, actions and monitoring to be implemented to achieve the desired landscape performance goals. Implementation of the Mine Closure Plan will ensure that the post-mining landscape is safe, stable and suitable for the designated future use.

Appendix A

Protected Matters Search Results

Australian Government
Department of Sustainability, Environment, Water, Population and Communities

EPBC Act Protected Matters Report: Coordinates

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information about the EPBC Act including significance guidelines, forms and application process details can be found at http://www.environment.gov.au/epbc/assessmentsapprovals/index.html

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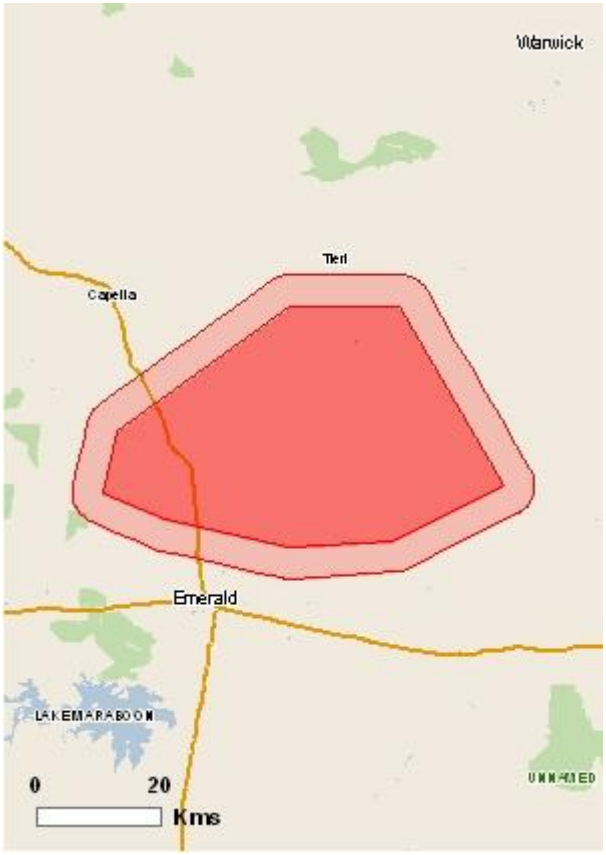

This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordinates
Buffer: 5.0Km

Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance - see http://www.environment.gov.au/epbc/assessmentsapprovals/guidelines/index.html.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Significance (Ramsar Wetlands):	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Threatened Ecological Communitites:	3
Threatened Species:	15
Migratory Species:	12

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place and the heritage values of a place on the Register of the National Estate. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage/index.html

Please note that the current dataset on Commonwealth land is not complete. Further information on Commonwealth land would need to be obtained from relevant sources including Commonwealth agencies, local agencies, and land tenure maps.

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species. Information on EPBC Act permit requirements and application forms can be found at http://www.environment.gov.au/epbc/permits/index.html.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	11
Whales and Other Cetaceans:	None

Critical Habitats:	None
Commonwealth Reserves:	None

Report Summary for Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

Place on the RNE:	None
State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	12
Nationally Important Wetlands:	None

Details

Matters of National Environmental Significance

Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of 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

Threatened Species [Resource Information]

Name	Status	Type of Presence
BIRDS		
Erythrotriorchis radiatus		
Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
Geophaps scripta scripta		
Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat likely to occur within area
Neochmia ruficauda ruficauda		
Star Finch (eastern), Star Finch (southern) [26027]	Endangered	Species or species habitat likely to occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Vulnerable	Species or species habitat may occur within area
MAMMALS		
Dasyurus hallucatus		
Northern Quoll [331]	Endangered	Species or species habitat may occur within area
Nyctophilus timoriensis (South-eastern form)		

Greater Long-eared Bat, South-eastern Long-eared Bat [66888]	Vulnerable	Species or species habitat may occur within area
PLANTS		
Dichanthium queenslandicum		
King Blue-grass [5481]	Vulnerable	Species or species habitat likely to occur within area
Digitaria porrecta		
Finger Panic Grass [12768]	Endangered	Species or species habitat likely to occur within area
REPTILES		
Delma torquata		
Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area
Denisonia maculata		
Ornamental Snake [1193]	Vulnerable	Species or species habitat known to occur within area
Egernia rugosa		
Yakka Skink [1420]	Vulnerable	Species or species habitat likely to occur within area
Furina dunmalli		
Dunmall's Snake [59254]	Vulnerable	Species or species habitat may occur within area
Lerista allanae		
Allan's Lerista, Retro Slider [1378]	Endangered	Species or species habitat may occur within area
Paradelma orientalis		
Brigalow Scaly-foot [59134]	Vulnerable	Species or species habitat may occur within area
Rheodytes leukops		
Fitzroy River Turtle, Fitzroy Tortoise, Fitzroy Turtle [1761]	Vulnerable	Species or species habitat may occur within area

Migratory Species

[Resource Information]

Name	Status	Type of Presence
Migratory Marine Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat may occur within area
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Migratory Terrestrial Species		
Haliaeetus leucogaster		
White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundapus caudacutus		
White-throated Needletail [682]		Species or species habitat may occur within area
Merops ornatus		
Rainbow Bee-eater [670]		Species or species habitat may occur within area
Myiagra cyanoleuca		
Satin Flycatcher [612]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Ardea alba		

Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Nettapus coromandelianus albipennis		
Australian Cotton Pygmy-goose [25979]		Species or species habitat may occur within area
Rostratula benghalensis s. lat.		
Painted Snipe [889]	Vulnerable*	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species **[Resource Information]**

Name	Status	Type of Presence
Birds		
Anseranas semipalmata		
Magpie Goose [978]		Species or species habitat may occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat may occur within area
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster		
White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundapus caudacutus		
White-throated Needletail [682]		Species or species habitat may occur within area
Merops ornatus		
Rainbow Bee-eater [670]		Species or species habitat may occur within area
Myiagra cyanoleuca		
Satin Flycatcher [612]		Species or species habitat likely to occur within area
Nettapus coromandelianus albipennis		
Australian Cotton Pygmy-goose [25979]		Species or species habitat may occur within area
Rostratula benghalensis s. lat.		
Painted Snipe [889]	Vulnerable*	Species or species habitat may occur within area

Extra Information

State and Territory Reserves **[Resource Information]**

Caroa Island Paddock, QLD

Invasive Species **[Resource Information]**

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to

biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Frogs		
Bufo marinus		
Cane Toad [1772]		Species or species habitat likely to occur within area
Mammals		
Felis catus		
Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Oryctolagus cuniculus		
Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Sus scrofa		
Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes		
Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Acacia nilotica subsp. indica		
Prickly Acacia [6196]		Species or species habitat may occur within area
Cryptostegia grandiflora		
Rubber Vine, Rubbervine, India Rubber Vine, India Rubbervine, Palay Rubbervine, Purple Allamanda [18913]		Species or species habitat likely to occur within area
Hymenachne amplexicaulis		
Hymenachne, Olive Hymenachne, Water Stargrass, West Indian Grass, West Indian Marsh Grass [31754]		Species or species habitat likely to occur within area
Lantana camara		
Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Parkinsonia aculeata		
Parkinsonia, Jerusalem Thorn, Jelly Bean Tree, Horse Bean [12301]		Species or species habitat likely to occur within area
Parthenium hysterophorus		
Parthenium Weed, Bitter Weed, Carrot Grass, False Ragweed [19566]		Species or species habitat likely to occur within area
Tamarix aphylla		
Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the following provisions of the EPBC Act have been mapped:
- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:
- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:
- non-threatened seabirds which have only been mapped for recorded breeding sites;
- seals which have only been mapped for breeding sites near the Australian continent.

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-23.37 148.01,-23.28 148.03,-23.1 148.28,-23.1 148.44,-23.36 148.59,-23.44 148.43,-23.45 148.28,-23.41 148.1,-23.37 148.01

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Department of Environment, Climate Change and Water, New South Wales

-Department of Sustainability and Environment, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment and Natural Resources, South Australia
-Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts
-Environmental and Resource Management, Queensland
-Department of Environment and Conservation, Western Australia
-Department of the Environment, Climate Change, Energy and Water
-Birds Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-SA Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Atherton and Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
-State Forests of NSW
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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