Chapter 1

Introduction

TABLE OF CONTENTS

Tables

Figures

1. INTRODUCTION

1.1 Purpose of the Environmental Impact Statement

This Environmental Impact Statement (EIS) has been prepared on behalf of Byerwen Coal Pty Ltd (Byerwen Coal) to address the requirements of the *State Development and Public Works Organisation Act 1971* (Qld) (SDPWO Act) and the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) for the Byerwen Coal project (the project); a 15 million tonnes per annum (Mtpa) Run of Mine (ROM) open cut coal mine project in the Bowen Basin with a mine life of up to 50 years.

The preparation and publication of the EIS addresses the legislative requirements and procedures set out in the SDPWO Act and EPBC Act. The EIS more specifically addressed the requirements of the Byerwen Coal Project: Terms of Reference (ToR) for an EIS; Queensland Government (July 2011).

The ToR for the project, provided in **Appendix 1**, details matters to be addressed in the EIS. The ToR were developed under a consultative process pursuant to the SDPWO Act that allows the public and government agencies to identify the matters to be addressed in the EIS. **Appendix 2** includes a check-list cross-referencing where each element of the ToR is addressed in the EIS.

The publication of the EIS and invitation to the wider community to make submissions regarding the project and the EIS represents a key stage in the development and refinement of the project and a key milestone in the approvals process for the project.

1.2 Project Proponent

The proponent of the project is Byerwen Coal, a joint venture between QCoal Pty Ltd (controlling interest 80%) and JFE Steel (controlling interest 20%).

QCoal is a privately owned Queensland company based in Brisbane. QCoal has been active in the Queensland coal exploration and mining industry for over 17 years. QCoal discovered and developed the Sonoma Mine and remains a major Joint Venture partner in the mine.

JFE Steel is a subsidiary of the JFE Group of Japan. The JFE Group is Queensland's largest export customer and JFE Steel is one of the largest customers of Queensland sourced coking coal. JFE Steel and associated companies already have direct equity investments in a number of Queensland coal mines.

As an explorer and developer of coal resources, QCoal undertakes significant coal exploration within Queensland with the view to expanding the knowledge of coal located within its exploration tenements. Where coal resources are defined that are suitable for open-cut or underground mining techniques, QCoal plans to pursue development of such tenements for future commercial exploitation.

QCoal's Corporate Environmental Policy information is provided in **Appendix 7**.

1.3 Project Location and Project Area

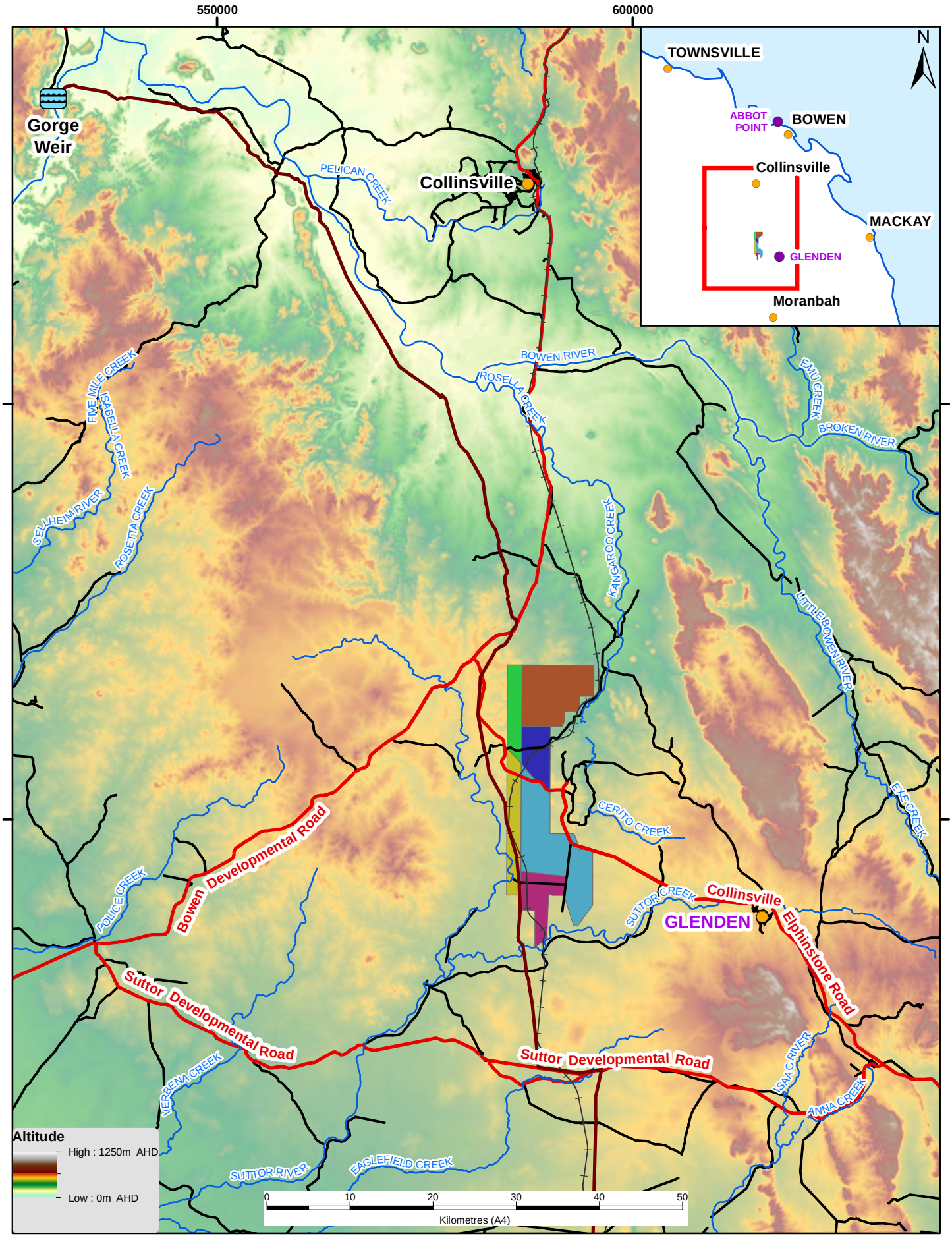
The project area comprises the project's six mining lease application (MLA) areas (also referred to as the project tenement areas). Hence, the project area is defined as the area of land contained within MLA 10355, MLA 10356, MLA 10357, MLA 70434, MLA 70435 and MLA 70436. Collectively, the six MLAs cover an area of approximately 22,697 hectares.

The project area is located in the Whitsunday Regional Council and Isaac Regional Council government areas. It is located approximately 20 km west of the mining township of Glenden and lies approximately 140 km west of the regional centre of Mackay.

The project is situated immediately to the west of the Xstrata Coal's Newlands Mine and to the north of the Xstrata Coal's Wollombi and Suttor Creek mines.

The project tenements are traversed by the Collinsville-Elphinstone Road and the Goonyella to Abbot Point (GAP) rail line. Access to the project area will be via the existing Collinsville-Elphinstone Road which connects to the Bowen Developmental Road and Suttor Developmental Road. These are highways from either Bowen via Collinsville or from Mackay via Glenden and Nebo.

The project's location and regional context is shown in **Figure 1-1**. Local government boundaries in relation to the mining leases are shown in **Figure 1-2.**



Legend

- Main Towns
- Burdekin to Moranbah Pipeline
- GAP Rail line
- Highway
- Main Road
- Local Roads (formed & unformed)
- MLA 10355
- MLA 10356
- MLA 10357
- MLA 70434
- MLA 70435
- MLA 70436

Project Location Regional Context		QCOAL GROUP
Figure 1-1	**Byerwen Coal Project**	elp environmental and licensing professionals pty ltd
Date: *25/01/2013*	**Author:** samuel.ferguson	
	Map Scale: 1:600,000	
Revision: R1	**Coordinate System:** GDA 1994 MGA Zone 55	
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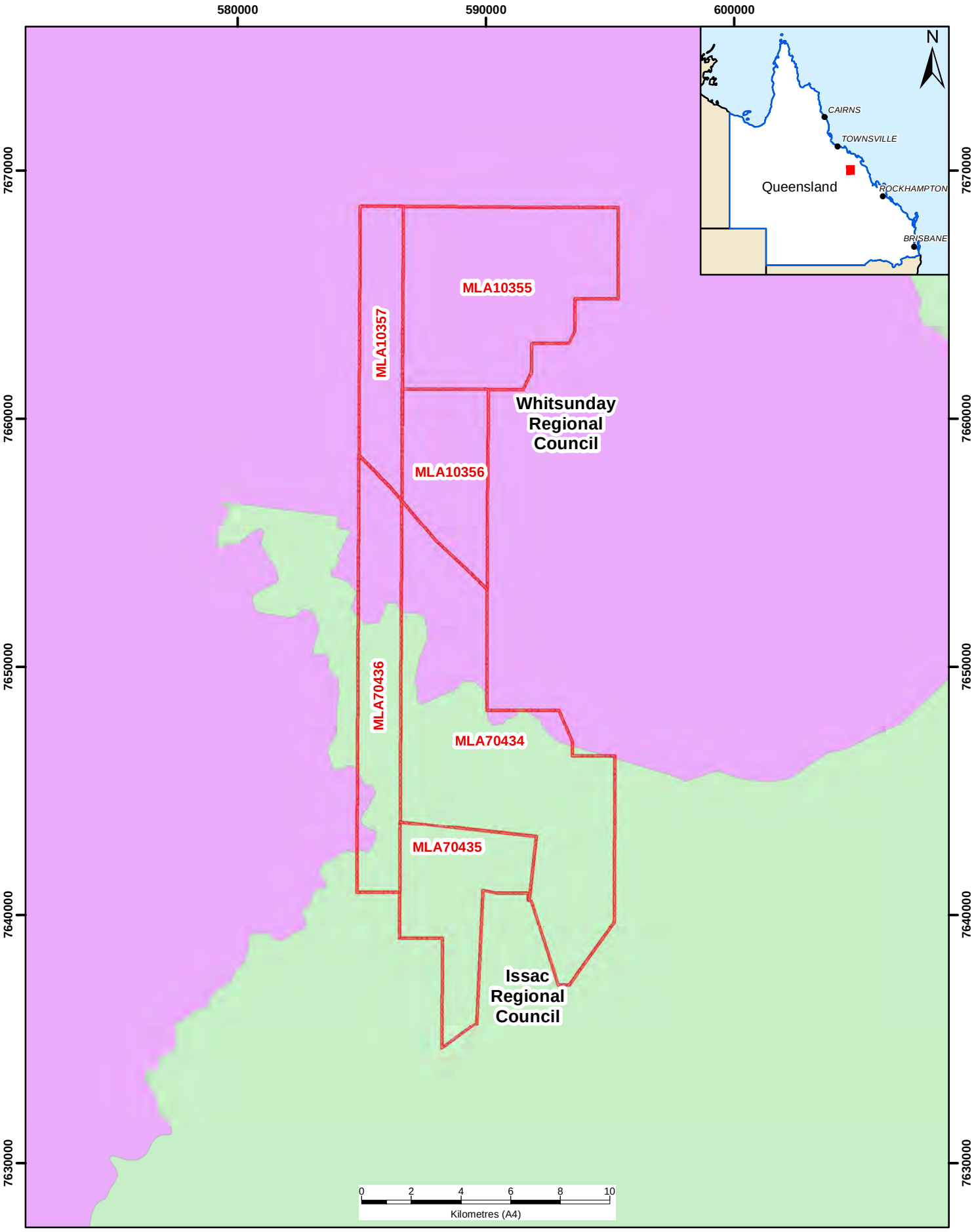

Legend

- Mining Lease Boundaries
- Isaac Regional Council
- Whitsunday Regional Council

Project Mining Leases and Local Government Boundaries		QCOAL GROUP
Figure 1-2	**Byerwen Coal Project**	elp environmental and licensing professionals pty ltd
Date: *25/01/2013*	**Author:** samuel.ferguson	
	Map Scale: 1:200,000	
Revision: R1	**Coordinate System:** GDA 1994 MGA Zone 55	
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1.4 Project Overview

The proponent proposes to develop open cut coal mines with a Run of Mine (ROM) rate of 15 Mtpa. Production from the project will primarily be high quality coking coal with some thermal coal.

Four mining zones have been identified for the project (north, south, east and west), comprising eight open pits. The south phase comprises mining zones in the south, east and west. The north phase comprises mining zones in the north. Mining will be via open cut using a combination of dragline, large excavator, truck and dozer equipment.

The mine will produce approximately 10 Mtpa of product coal for the export market over the 50 year project life (two years for construction, 46 years of mining operation and 2 years for decommissioning and rehabilitation).

Construction in the southern tenement area for the south phase will occur prior to any operations and include construction of the southern coal handling and preparation plant (CHPP), mine infrastructure area (MIA) water management infrastructure, and southern train loading facility (TLF). In approximately Year 15 of mining operations, construction in the northern tenement area for the north phase will commence to coincide with the planned commencement of operations of the open pit in the north in Year 17. Construction in the northern tenement area will include the northern CHPP, MIA, water management infrastructure and northern TLF.

When fully developed to the planned production rate of approximately 10 Mtpa it is expected that the project will require approximately 5,500 ML of water a year. Water is required for the CHPP, dust suppression on haul roads and potable water. The proponent has commenced discussions with a third party water supplier (SunWater) for the sourcing and delivery of water for the project. SunWater's existing Burdekin to Moranbah water pipeline connects the Burdekin water supply scheme at Gorge Weir to Moranbah and intersects the project area. SunWater are planning to duplicate this water pipeline by constructing a water pipeline parallel to the existing pipeline which will also intersect the project's tenements. The project will source raw water from the existing pipeline in the initial years of construction and operation and from the duplicate pipeline once it is constructed and operational.

Each CHPP will comprise a two stage dense medium cyclone and spiral/reflux classifier and froth flotation operation with a co-disposal system for rejects management. It is likely the southern CHPP will be developed in modules of either two 1,100 tph process train, or three 700 tph process train configurations while the northern CHPP will be a single 700 tph process train.

Product coal will be loaded onto trains via two TLFs, wholly within the project tenement area, located adjacent to the two CHPP areas. Each TLF will comprise rail loop, train loading bin and rail spur. The TLF rail spur will be connected to the GAP rail line. The southern CHPP rail spur and rail loop will be approximately 7 km in length and the northern CHPP rail spur and rail loop will be approximately 3.5 km in length. Product coal will be railed to the Port of Abbot Point coal terminal for distribution to international markets.

It is anticipated that a construction workforce of approximately 350 and 265 personnel will be required to construct the south phase and the north phase of the project respectively. The construction workforces will ramp up over a three year time frame. The operational workforce will progressively ramp up to a peak workforce in excess of 545 permanent employees once both the south phase and the north phase are operational. Depending upon the operational model chosen some employees may be employed by contractors rather than directly by the proponent.

The proponent's preference is for accommodation to be provided in Glenden, however should this option be rejected by the local authorities, the proponent will seek the necessary approvals to accommodate all workers in a camp on the project mining leases.

An overview of the project layout is shown in **Figure 1-3**. The key elements of the project are outlined below.

- Open cut coal mines will be developed in the project area. Mining will occur 7 days per week and excavate to depths of up to 350m (South Pit 1). The project will generate up to 15 Mtpa of ROM coal to produce approximately 10 Mtpa of product coal for the export market.
- Out of pit waste rock dumps will be created adjacent to the coal mining areas within the project area. Once there is sufficient space for in-pit dumping, pits will be progressively backfilled with waste rock. Out of pit and in pit final landform will be to a maximum height of 60 m above the natural ground level.
- A water management system will be constructed that diverts clean water, captures and manages mine area runoff and pit water for reuse or release subject to release criteria. This will include water storage infrastructure for mine affected water and sediment control ponds for sediment laden runoff.
- ROM coal haul roads will connect open cut pits to the northern and southern CHPP's and associated loading facilities for ROM coal.
- Conveyors will be constructed to connect product coal pads adjacent to the northern and southern CHPPs to the respective TLFs.
- Southern and northern TLFs will comprise train loading bin, rail loop and rail spur.
- Heavy vehicle and light vehicle crossings will be required for the GAP rail line.
- Light vehicle access roads will be constructed in and around the two CHPP plants and the MIAs and wherever possible it will be intended to separate the light vehicle traffic from any heavy mining or earthmoving equipment roads.
- Southern CHPP and MIA and northern CHPP and MIA will be constructed, with the MIAs including office and administration facilities, worker amenities, workshops and fuel and oil storage.
- Process water comprising both coal rejects and dewatered fines from the CHPPs will be pumped to co-disposal dams, which will be situated adjacent to each CHPP for placement and water reuse.
- Power to infrastructure in the southern and northern tenement areas will be supplied by a connection to an existing 66 kV power line that originates from the Newlands substation and which intersects the tenements adjacent to the Collinsville-Elphinstone Road. All additional power lines will be located within the mining lease boundaries. Power line corridors will be approximately 20 m wide for construction and operational purposes. It is anticipated that power lines will be installed above ground on steel or concrete poles.
- Water pipelines will be constructed to connect the SunWater pipeline system to raw water storage facilities adjacent to the northern and southern CHPPs. These will be wholly within the project area.
- The project (construction and operation) will be accessed via the Collinsville Elphinstone Road, at two points, one for the northern MIA and CHPP, and one for the southern MIA and CHPP.
- A sewage treatment plant (STP) with bunded storage will be situated on site. Treated effluent will be reused (for irrigation), with sludge material to be disposed of by a certified third party contractor at an appropriately licensed regional waste disposal facility.
- Provision will be made for diesel storage, portable back-up power generators and storage for tyres and other materials.

1.5 Scope of Activities Included in the Project

Accommodation in Glenden is off tenement and will require development approval under the *Sustainable Planning Act 2009* (*SP Act*). The proponent has an arrangement with a third party who will develop the accommodation facilities in Glenden and seek all relevant approvals for the construction and operation of the facilities. The CG's Evaluation Report may set conditions for a development approval decision by the relevant regional council for an application for accommodation facilities made under the SP Act.

This EIS assesses the social and community impacts of an accommodation village in Glenden and the traffic and transport impacts of workers commuting between Glenden and the mine site. This EIS does not assess the localised impacts from accommodation facilities in Glenden, such as impacts to the ecology within the accommodation facility footprint or noise impacts on nearby sensitive receptors, as the location of the accommodation facilities cannot be confirmed at the time of this EIS and these impacts will be assessed during the application for development approval.

The project is interrelated with a number of other projects across the region and the state. Although project timing and success may be dependent on these other projects, approvals for these projects are not being sought by the proponent and do not form part of this EIS. These interrelated projects are the:

- Goonyella to Abbot Point rail line
- Abbot Point Coal Terminal, including any planned expansions
- Supply of water via SunWater's Burdekin to Moranbah water pipeline system
- Electricity supply from the national electricity grid.

1.6 Key Environmental Design Features of the Project

A summary of the key environmental design features of the project is provided below and detailed in the relevant specialist chapters of the EIS.

1.6.1 Water Management

A water management system will be established to manage site stormwater flows, control run-off, prevent erosion, divert clean water and capture and manage mine area runoff and pit water. This is further described in Chapter 8.

Water within the project area will be segregated based on quality to maximise opportunities for water reuse, minimise the mine water inventory and minimise changes to the hydrological regime (e.g. by allowing clean water to pass around the disturbed areas). It will also provide an opportunity to undertake controlled blending of different water types.

1.6.1.1 Process Water

Process water will be imported to site from an external supply source (i.e. SunWater's Burdekin to Moranbah pipeline system) and reused. The process water circuit, of which the CHPPs are part, is a closed system fed by the external source. Water associated with the CHPP rejects would be managed at co-disposal facilities. Supernatant or decant water from the co-disposal facilities will be recycled to the process plants for coal washing. There will be no controlled releases from the process water system.

1.6.1.2 Mine Affected Water

Mine affected water may not be suitable for direct release, likely due to elevated salinity and alkalinity. This water may be generated from:

- groundwater ingress to open cut pits

- pit wall runoff
- runoff from fresh waste rock dump faces, prior to rehabilitation.

Water that accumulates in pits as a result of groundwater inflow and surface water runoff will be collected in sumps and pumped to mine affected water dams at the surface. Construction of levees and drainage diversions will also be required to ensure pit workings and mine infrastructure are protected from surface runoff. Mine affected water will be contained in dams for periods of time until there is sufficient dilution to allow release to the environment and still achieve water quality objectives. This may be achieved either through dilution in the receiving environment, blending water within the mining area or a combination of these strategies.

Mine affected water will be available for general site uses such as in dust suppression or coal washing (CHPP) if quality is deemed adequate at the time.

1.6.1.3 Sediment Affected Water

Areas that drain disturbed areas such as the MIA, coal stockpiles, recently rehabilitated waste rock dumps, access roads and laydown areas have the potential to generate sediment laden runoff. Sediment affected water would pass through sedimentation dams prior to release to the environment, once the applicable sediment concentrations have been satisfied. If these sources also contain elevated salinity, then they would be reclassified as mine affected water and included in that water circuit. Releases would be made in accordance with a water management plan that specifies the sediment load suitable for release.

1.6.1.4 Clean Water

In most cases runoff from undisturbed catchments upstream of the mining area would be diverted around the disturbed area and released directly to the environment. Where this is not the case a clean water dam is proposed either to facilitate the diversion, or to provide a source of clean water that can be used to blend with mine affected water (if required) to facilitate release.

1.6.1.5 Drainage Diversions

The project will involve five drainage diversions where existing watercourses or drainage lines are located within the footprint of open pits and / or waste rock dumps.

1.6.2 Rejects Management

Co-disposal dams will be constructed at each of the CHPPs. The southern co-disposal dam will hold approximately 10,000 ML and be 2,000 m by 500 m by 10 m deep. The northern co-disposal dam will hold approximately 900 ML and be 300 m by 300 m by 10 m deep.

It is expected that the co-disposal dams will be regulated dams and will be designed in accordance with the Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (the Manual) and any other relevant codes and guidelines. This will include determining the design storage allowance (DSA) of the dams.

Co-disposal dam design will be based on a turkey's nest configuration with no external catchment reporting to the cells within the dams. Co-disposal dams will be used during the initial years of operation of each CHPP. In subsequent years rejects will be disposed of in pit.

1.6.3 Sewage Treatment Plant

A modular Sewage Treatment Plant (STP) will be constructed near the MIAs. Sewage will be treated to allow safe and efficient reuse of water. Treated effluent will be irrigated via an effluent disposal system.

1.6.4 Fuel, Lubricant and Oil Storage

The fuel facility will comprise a number of interconnected self bunded bulk diesel storage tanks. It is anticipated that approximately 800kL of fuel storage will be stored on site. The fuel facility will be located at a safe operating distance from other MIA and surrounding facilities in accordance with *Australian Standard AS1940 - The storage and handling of flammable and combustible liquids.*

The primary lubricant and oil facility will be at the southern MIA with a satellite facility at the northern MIA. The lubricant and oil facility will generally include self bunded lube and oil storage tanks for a number of different types of oil and lubricant.

Hydrocarbon and other contaminated waste will be collected, transported by a licensed waste transporter and disposed of an appropriately licensed waste disposal facility.

1.6.5 Washdown Facilities

Heavy vehicle and light vehicle washdown facilities will be provided on the MIAs. Access to the washdown facility will be via the MIA hardstand. Prewashing by water cannons will remove excessive amounts of large material, before heavy vehicles enter the washpad for washing with hand-held high pressure water cannons.

All water and drainage from washdown facilities will discharge into a grit trap then an oil/water separator, with water recycled back into the washdown process where possible, oils removed by a licensed contractor, and remaining washdown water discharged to an adjacent environmental control pond.

1.6.6 Rehabilitation

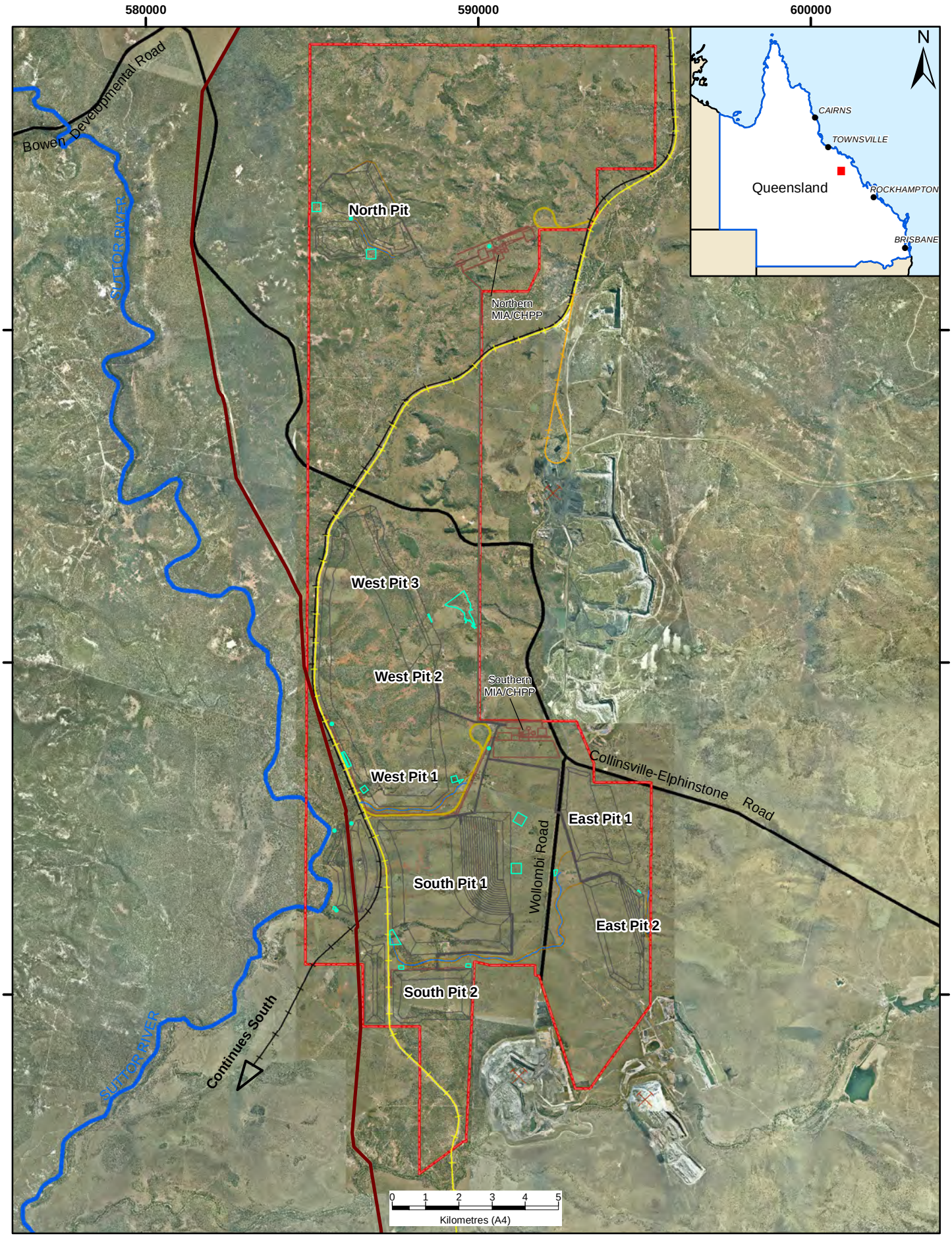
Rehabilitation of the mine will be progressive throughout the construction, operation and decommissioning of the mine. The objectives for rehabilitation throughout all phases of the project are to:

- return the land, other than final voids, to a post-mine land use that will be stable, self-sustaining and require no long term maintenance
- create landforms with rates of soil erosion not exceeding the pre-mine conditions
- maintain downstream water quality.

The main features of the progressive rehabilitation process are:

- constructing a stable land form consisting of out of pit and in pit waste rock dumps
- progressively constructing waste rock dumps to final landform design, to minimise reshaping at the end of mining
- respreading of suitable soils across available reshaped areas
- contour ripping immediately after soil placement to control erosion
- seeding with an appropriate seed mix prior to the wet season to maximise the benefits of subsequent rainfall
- managing direct rainfall and runoff from the rehabilitated landform in sediment dams.

Site rehabilitation and decommissioning is detailed in **Chapter 10**.



Legend

- Project Area
- Waste Rock Dumps and Pits
- Existing Mine Site
- Burdekin to Moranbah Pipeline
- GAP Rail line
- Newlands Mine Rail Loop
- Alpha Coal Project Rail Line
- Train Loading Facilities
- Central Infrastructure Corridor
- Mine Infrastructure
- Suttor River
- Formed Road
- Drainage Bund
- Drainage Diversion
- Dam (mine affected, sediment affected, clean water)

Project Layout

Figure 1-3 — **Byerwen Coal Project**

Date: *28/02/2013*

Author: samuel.ferguson

Map Scale: 1:150,000

Revision: R1

Coordinate System: GDA 1994 MGA Zone 55

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1.7 Project Footprint

Table 1-1 shows the approximate total area of:

- in pit and out of pit waste rock dumps that will be rehabilitated over the life of the project
- the final voids for each open pit
- disturbance associated with each open pit, in pit and out of pit waste rock dump

A breakdown of the mine footprint at various sequences in the mine life, including waste rock dumps, open pit working areas, rehabilitated areas, MIAs, haul roads and rail is included in **Chapter 7** Operations.

Table 1-1 Pit Areas and Final Landform

Pit / Waste Rock Area	Final Rehabilitated Areas (ha)	Final Void (ha)	Total Disturbance (Open Pit and Waste Rock Dumps)
South Pit 1	1,197	543	1,740
South Pit 2	500	0	500
East Pit 1	409	0	409
East Pit 2	352	88	440
West Pit 1	1,918	548	2,466
West Pit 2			
West Pit 3			
North Pit 1	373	163	536
Total	**4,749**	**1,342**	**6,091**

The total life of mine footprint of the infrastructure areas is provided in **Table 1-2**.

Table 1-2 Infrastructure Areas

Infrastructure Area	Area (ha)
Southern MIA and CHPP	114
Southern Co-disposal Dam	95
Northern MIA and CHPP	140
Northern Co-disposal Dam	9
Haul Roads	73
Northern TLF	34
Southern TLF	38
Water Supply Pipeline - South	12
Central Infrastructure Corridor	83
Powerline Diversions	23
Drainage Diversions - South	178
Drainage Diversions - North	31
Water Management Dams	77
Total	**907**

1.8 Objectives of the Environmental Impact Statement

The objectives of the EIS, as stated in the ToR, are as follows:

> …to ensure that all potential environmental, social and economic impacts of the project are identified and assessed and that adverse impacts are avoided or mitigated. Direct, indirect and cumulative impacts must be fully examined and addressed. The project should be based on sound environmental protection and management criteria.
>
> This EIS document should provide information for the following persons and groups, as the project stakeholders:
>
> - for interested bodies and persons—a basis for understanding the project, prudent and feasible alternatives, affected environmental values, impacts that may occur and the measures to be taken to mitigate all adverse impacts
> - for affected persons—that is, groups or persons with rights or interests in land, as defined under section 38 of the *Environmental Protection Act 1994 (Qld)* (EP Act), or water as defined under the *Water Act 2000 (Qld)*—an outline of the effects of the proposed project
> - for government agencies and referral bodies—a framework for decision-makers to assess the environmental aspects of the proposed project with respect to legislative and policy provisions, and based on that information, to make an informed decision on whether the project should proceed or not and if so, subject to what conditions, if any
> - for the proponent—a mechanism by which the potential environmental impacts of the project are identified and understood, including information to support the development of management measures, such as an environmental management plan (EMP), to mitigate the effects of adverse environmental impacts of the development.

This EIS meets these objectives by:

- describing the project in terms of its local, regional and state context and describing the environmental, economic and social impacts in those contexts
- describing the project in sufficient detail to identify and understand the potential project impacts
- identifying the environmental, social and economic values impacted by the project
- providing information for assessing the potential adverse and beneficial direct, indirect and cumulative impacts of the project to the:
  - Coordinator-General (part of the Department of State Development, Infrastructure and Planning DSDIP))
  - Commonwealth Department of Sustainability, Environment, Water, Population and Communities (SEWPAC)
  - other relevant State government agencies, including the Department of Environment and Heritage Protection (EHP)
  - regional councils
  - affected landholders
  - potentially affected and interested persons and organisations

- describing management, monitoring, mitigation measures, planning and strategies to avoid and minimise adverse impacts and manage beneficial impacts through production of a draft environmental management plan (EM Plan)
- providing interested bodies and people with a basis for understanding the project, alternatives, proposed solutions, the existing environment to be impacted, the potential impacts, and measures to be undertaken to avoid and mitigate adverse impacts, and implement beneficial impacts of the project
- allowing the public the opportunity to comment on the ToR for the EIS and the draft EIS and for the proponent to respond to public submissions
- providing a statement of strategies, commitments, measures and actions to be undertaken by the proponent to avoid and mitigate any adverse impacts and implement beneficial impacts during and following the construction, operation and decommissioning of the project
- providing information to meet assessment requirements associated with controlled actions under the EPBC Act and bilateral agreement between the Queensland and Commonwealth Governments
- providing information for the CG and other government agencies to assist with decision making and approvals
- providing information to assist EHP decide an environmental authority application.

The ToR for the project provides a guide to the scope of each element to be addressed in the EIS. The proponent recognises that the TOR is not an exhaustive or limiting scope of works. Where the ToR is silent on particular matters that the proponent considers relevant to assessing the potential impacts of the project, those matters are incorporated into the EIS.

1.9 Structure of the EIS

The structure of the EIS is provided in **Table 1-3** and **Table 1-4** below. The EIS comprises:

- chapters describing the EIS process, the project and, for each identified environmental, social or economic aspect, the environmental values, potential impacts and mitigation measures
- appendices supporting the chapters, including the ToR, management plans and specialist technical reports on identified environmental, social and economic aspects.

Table 1-3 EIS Chapters Structure

Chapter	Chapter Title
	Executive Summary
1	Introduction
2	Project Rationale and Alternatives
3	Project Approvals
4	Public Consultation Process
5	Project Location
6	Construction
7	Operation
8	Water Management
9	Waste Rock and Rejects
10	Rehabilitation and Decommissioning
11	Final Voids
12	Climate and Climate Change

Chapter	Chapter Title
13	Geology, Topography and Soils
14	Land Use, Tenure and Contamination
15	Surface Water Quality
16	Hydrology and Hydraulics
17	Groundwater
18	Terrestrial Ecology
19	Aquatic Ecology
20	Stygofauna
21	Environmental Offsets
22	Air Quality
23	Greenhouse Gas
24	Noise and Vibration
25	Landscape and Visual Amenity
26	Waste Management
27	Traffic and Transport
28	Indigenous Cultural Heritage
29	Historical Cultural Heritage
30	Economic Impacts
31	Social Impacts
32	Hazard and Risk
33	Health and Safety
34	Cumulative Impacts
35	Matters of National Environmental Significance
36	References

Table 1-4 EIS Appendices Structure

Appendix	Appendix Title
1	Final Terms of Reference
2	Terms of Reference Cross Reference
3	Project Approvals
4	Study Team
5	Glossary
6	Acronyms and Abbreviations
7	Corporate Environmental Policy
8	Commitments
9	Environmental Management Plan
10	Social Impact Management Plan
11	Mine Water Management Strategy
12	Geochemical Assessment of Spoil and Potential Coal Reject Materials
13	Final Void Assessment
14	Land Technical Report
15	Preliminary Site Investigation
16	Assessment of Surface Water Environmental Values
17	Hydrology & Flooding Assessment Report
18	Environmental Impact Assessment Groundwater Aspects
19	Terrestrial Ecology Impact Assessment
20	Aquatic Ecology Impact Assessment
21	Stygofauna Impact Assessment
22	Assessment of Impacts on Matters of National Environmental Significance

Appendix	Appendix Title
23	Air Quality Assessment
24	Noise and Vibration Assessment
25	Visual Impact Assessment
26	Traffic Impact Assessment Report
27	Non-Indigenous Historical Technical Report
28	Indigenous Cultural Heritage, Birriah Native Title Area
29	Indigenous Cultural Heritage, Jangga Native Title Area
30	Economic Impact Assessment
31	Social Impact Assessment
32	Hazard and Risk Assessment Report
33	Emergency Management Plan

1.10 Methodology of the Environmental Impact Statement

The ToR forms the basis for determining the information that must be supplied in the EIS. The methods used to obtain and present the required information are:

- desktop review of regulatory requirements
- desktop review of available data from local, state and federal government data sets
- baseline environmental and social studies
- identification and assessment of potential impacts requiring assessment through specialist studies including baseline studies
- community consultation
- compilation of relevant information in the EIS documents
- preparation of an EM Plan.

The impact assessment examines the existing environmental values of the project area for each element of assessment and then determines the potential impacts associated with the project's construction, operation, decommissioning and rehabilitation phases. Where required, baseline studies were undertaken to establish environmental values. Baseline studies, surveys and / or collection of relevant data were undertaken for land use, geology, topography, soils, surface water, hydrology, groundwater, traffic and transport infrastructure, air quality, noise levels, terrestrial ecology, aquatic ecology, matters of national environmental significance, stygofauna, waste rock, visual amenity, cultural heritage and hazards and risks. These baseline studies informed the relevant impact assessments as well as social, economic, waste management, health and safety and cumulative impact assessments.

The preparation of the EIS was an iterative process, linking the indicative mine scheduling, design development processes and input from the community and other stakeholders. Based on feedback from impact assessment studies and the community, the project was modified and refined to mitigate potential impacts.

The EIS has been prepared at a stage in the project where there are options for various activities, infrastructure requirements, design and configuration. These options are described in **Chapter 2** – Project Rational and Alternatives, **Chapter 6** – Construction and **Chapter 7** – Operations and this EIS has assessed the worst case scenario impacts on each environmental value from these options.

1.11 Assessing Significance of Impacts

In assessing the significance of potential issues or effects, the probability, duration, magnitude and intensity of the impacts were considered in relation to the existing environmental conditions and sensitivity of the value, receptor or resource. Detailed methodologies used for the assessment of each environmental element are included in the relevant technical reports and chapters.

The sensitivity of the receptor, resource or value is determined by scientific knowledge and understanding of the receptor, resource or value based on data reported in published literature and the professional understanding of technical specialists. The sensitivity of the receptor, resource or value also takes into account its ability to change, adapt to or recover from the effects of the impact.

The magnitude of the impact is used to encompass all the dimensions of the predicted impact including:

- the nature of the impact (positive or negative).
- the type of impact (direct or indirect).
- the duration of the impact (short-term, long-term, permanent).
- the geographical extent of the impact relative to the extent of the value being impacted (local, regional, state, national).
- the likelihood of the impact occurring considering the management measures to be implemented to mitigate that impact.

Based on these dimensions for predicting impact, the magnitude of the impact is defined as negligible, small, medium or large. Predictions of the magnitude of impact were made using methods ranging from qualitative assessment and expert judgement to quantitative modelling and analysis. The magnitude of the impact is compared to the sensitivity of the receptor, resource or value to derive the impact significance ranking as determined by the proponent. **Table 1-5** provides the matrix used to classify the significance of an impact.

Table 1-5 Classification System Used For Evaluating Impact Significance

Magnitude of impact	Sensitivity of receptor, resource or value		
	Low	**Medium**	**High**
Negligible	Negligible	Negligible	Minor
Small	Negligible	Minor	Moderate
Medium	Minor	Moderate	Moderate to major
Large	Moderate	Moderate to major	Major to critical

Table 1-6 provides a definition of the impact significance classifications of negligible, minor, moderate, major or critical. There is no statutory definition of significance. Impact significance was assessed through the studies for this EIS, with input from the proponent. It is important to acknowledge that the scales of magnitude, sensitivity/value and significance are all in practice continuous, and the evaluation of significance along the spectrum requires the exercise of careful professional judgement and experience. Each impact has been evaluated on a case-by-case basis.

Table 1-6 Definitions of Impact Significance

Significance	Definition
Negligible	Magnitude of change comparable to natural variation. The magnitude of the change does not exceed that which would occur naturally without influence from the project.

Significance	Definition
Minor	Detectable but not significant. Impact warrants being brought to the attention of the decision-maker but does not require special conditions to be attached to the approval. Negative impacts can be controlled by adoption of normal good practice. Monitoring is required to ensure the measures used to mitigate negative impacts are working properly, that benefits are realised and that the impact is not worse than predicted.
Moderate	Significant. Positive and negative impacts warrant being brought to the attention of decision-makers and deserve careful attention. Negative impacts are amenable to mitigation but likely to require conditions to ensure mitigation is undertaken. The proponent should demonstrate that the effect has been reduced as far as technically and financially feasible. Monitoring is required to ensure mitigation of negative impacts works properly, that benefits are realised and that the impact is not worse than predicted.
Major	Significant. Impact mitigation measures must be found to reduce impacts. Positive and negative impacts warrant considerable weight in the decision. For negative impacts conditions should be attached to the approval. Monitoring is required to ensure mitigation of negative impacts works properly, that benefits are realised and that the impact is not worse than predicted.
Critical	Applies to negative impacts only. Intolerable, not amenable to mitigation. Alternatives must be found.

In certain instances, impact assessments for specific environmental or social aspects, use slightly different methodology and terminology to the above. This is due to a difference in the preferred methodology or terminology of a particular specialist discipline or different (but generally accepted) methodology and terminology for assessing risk. In these instances, the methodology and terminology for assessing the significance of impacts is presented in the relevant chapter. These methodologies and terminologies are similar to the above and the following comparisons with **Table 1-6** can be made in assessing the level of impact significance:

- insignificant is comparable to negligible
- low is comparable to minor
- medium is comparable to moderate
- high is comparable to major
- very high or major is comparable to critical.

1.12 The EIS Process

The project was declared to be a 'significant project for which an EIS is required' under section 26(1)(a) of the *SDPWO Act* by the Coordinator-General (CG) on 1 March 2011. This declaration initiates the statutory environmental impact assessment procedure of Part 4 of the SDPWO Act, requiring the proponent to prepare an EIS for the project.

The Australian Government determined that the project constitutes a controlled action pursuant to the *EPBC Act* on 13 January 2011, due to the likely significant impacts on matters of national environmental significance (MNES).

On 4 March 2011, the Australian Government Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) decided that the proposed controlled action is to be via the bilateral agreement between the Australian and Queensland governments enabling this EIS to meet the impact assessment requirements under both Commonwealth and Queensland legislation.

At the commencement of conceptual design for the project an underground mine in the northern tenement area was under consideration. Accordingly the possibility of an underground mine was included in the initial advice statement (IAS) for the project and was subsequently included in the project's ToR and referral under the *EPBC Act*. Following further subsequent mine planning, the proponent has decided that underground mining will not form part of the project.

The CG provided advice to the proponent on 15 March 2013, accepting the project no longer included an underground component and stating that no change to the project assessment process would be required, subject to acceptance by DEWPAC. Subsequently DSWEPaC provided advice to the proponent of their acceptance to the variation of the project proposal, in removing the underground component. Accordingly the EIS and the individual impact assessments therein, do not consider underground mining.

Under the *SDPWO Act*, the EIS approvals process progresses through a number of steps. The first step in the process involved the development of the ToR for the project's EIS. In finalising the ToR, the CG considered all properly made submissions received in respect of the draft ToR and presented copies of the submissions to the proponent. In accordance with section 32(1) of the *SDPWO Act*, the proponent must provide an EIS that addresses the ToR to the satisfaction of the CG.

Under section 33(1) of the *SDPWO Act*, after the proponent has prepared an EIS to the satisfaction of the Coordinator-General, they must publicly notify on:

- where a copy of the EIS is available for inspection
- where a copy of the EIS may be obtained at a stated reasonable cost
- that submissions may be made to the Coordinator-General about the EIS
- the period (the submission period), set by the Coordinator-General, during which a submission may be made.

Submissions made by the public will be considered by the CG and provided to the proponent (under section 35 of the *SDPWO Act*). Based on the submissions, the CG may ask the proponent for supplementary information or comment about the EIS and the project. This may be provided by the proponent as "The EIS Supplementary Report" which will then be considered by the CG as part of the assessment process.

Written submissions on the EIS are invited from any person during the submission period specified by the CG.

Submissions should be emailed to: mailto:byerwen@coordinatorgeneral.qld.gov.au or mailed to:

Office of the Coordinator-General
Attention: The EIS Coordinator (Byerwen Project)
PO Box 15517,
City East,
Queensland 4002

A properly made submission is one that:

- is written
- is signed by or for each person ("signatory") who made the submission
- states the name and address of each signatory
- is made to the Coordinator-General
- is received on or before the last day of the submission period.

Please note that it is a statutory requirement that all submissions will be forwarded to the proponent so that they may consider them and provide a response to the Coordinator-General.

For further information regarding the EIS process for this proposal, contact the EIS Coordinator on 13QGOV (13 74 68) or email info@dsdip.qld.gov.au

At the completion of the EIS phase, the CG will prepare a report (CG's report under Section 35(3)) evaluating the EIS and other relevant material. The CG's report will include an assessment and conclusion about the environmental and social effects of the project. Material that will be assessed includes:

- the EIS
- properly made submission material
- other submissions accepted by the CG
- any other material the CG considers relevant to the project (e.g. supplementary information, comments and advice from advisory agencies or other entities, as well as technical reports).

The CG's report will be publicly notified by placing it on the Department of State Development, Infrastructure and Planning's (DSDIP) website. The report will also be presented to the proponent, the assessment manager, the relevant state government advisory agencies and the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities who will use this report as the basis for an approval of the controlled action under Part 9 of the EPBC Act.

The EIS will also inform the content of the EM Plan required under section 201(1) of the EP Act. Pursuant to section 203, the EM Plan must describe:

- the relevant mining activities
- the environmental values in the project area
- potential impacts to environmental values
- management and mitigation measures to minimise impacts
- environmental protection commitments
- performance criteria and indicators to measure success of management and mitigation measures
- monitoring, auditing, reporting and corrective actions.

The EM Plan will support the proponent's application for an Environmental Authority (EA). The conditions in the CG's Report will form the basis of the EA conditions. The grant of the EA is a prerequisite to the grant of the relevant mining lease(s) under the *Mineral Resources Act 1989* (Qld).

Table 1-7 shows approvals process for the EIS, EA and mining leases and the actual or anticipated timing of each step in the process.

Table 1-7 EIS Approvals Process

Approvals Step	Description	Actual or Anticipated Timing
Application for a Significant Project Declaration	Application made to CG.	November 2010
Initial Advice Statement	Initial Advice Statement, providing an overview of the project, provided to the CG to support the application for a Significant Project Declaration and accompany the submission of the draft TOR.	February 2011
EIS decision	CG declared the project to be a significant project for which an EIS is required.	March 2011

Approvals Step	Description	Actual or Anticipated Timing
Terms of Reference (TOR)	CG publically notified EIS and draft ToR.	April 2011
	Public submission period on the draft ToR for 30 business days after ToR Notice.	April 2011 – May 2011
	Proponent response to submissions regarding the draft ToR.	May – June 2011
	Final ToR issued by CG.	July 2011
EIS	EIS submitted to CG.	March 2013*
	Decision by CG on whether to allow the EIS to proceed to public notification.	May 2013*
	EIS notice issued.	June 2013*
	EIS publically notified by the proponent.	June 2013*
	Public submission period on EIS as set by CG.	June 2013 to July 2013*
Supplementary EIS	Proponent response to submissions and preparation of supplementary EIS.	August to September 2013*
	CG decision on requirement to release supplementary EIS.	September 2013*
	Supplementary EIS publically notified (if required).	October 2013*
	Proponent responds to Supplementary EIS submissions.	November 2013*
	CG produces EIS Evaluation Report	November/December 2013*
Controlled action approval	EIS Assessment Report provided to the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities for approval or not of the controlled action (with or without additional conditions).	January 2014*
Environmental Authority (EA) and Mining Lease Applications (MLAs)[1,2,3]	Application for EA to Department of Environment and Heritage Protection (DEHP) and MLAs to the Mining Registrar (Department of Natural Resources and Mines (DNRM)), supported by the EM Plan. DEHP may (see comment) provide an EM Plan Assessment Report.	
	Draft EA supplied by DEHP.	
	Applicant publically notifies EA application material, draft EA and MLAs.	
	Application objection period with objections potentially being heard in the Land Court.	
	Resolution of objections. Mining leases and final EA granted and issued.	

* scheduled date only

Note 1: The enactment of the *Environmental Protection (Greentape Reduction) and Other Legislation Amendment Act 2012*, assented to on 14 August 2012, will alter the EA application process in the EP Act from 31 March 2013.

Note 2: Reference is made to the *Mines Legislation (Streamlining) Amendment Act 2012* which makes minor changes to the MLA process.

Note 3: Under s205, an EM Plan assessment report is not required if the CG's assessment report specifies that the EM Plan's content requirements in s203 have been complied with.

1.13 Public Consultation

A public consultation programme to inform studies and facilitate community involvement in relation to the project's potential effects has been implemented. **Chapter 4** of the EIS identifies the public consultation approach, statutory requirements, activities and findings – and details how those activities have informed the project design. The specific outcomes of these discussions are detailed in the **Chapter 31** – Social Impacts and **Appendix 10** – Social Impact Management Plan.