New Acland Coal Mine Stage 3

Terms of reference for an environmental impact statement

March 2013

Contents

Tables

Preamble

About the project

New Acland Coal Pty Ltd, a subsidiary of New Hope Corporation Limited, proposes to develop the New Acland Coal Mine Stage 3 Project (the project), north-west of Toowoomba. The project was declared a 'significant project'[1], by the Coordinator-General under Part 4 of the *State Development and Public Works Organisation Act 1971* (Qld) (SDPWO Act), on 18 May 2007.

New Acland Coal Pty Ltd currently operates the existing New Acland coal mine, an open-cut, thermal coal operation able to produce up to 4.8 million tonnes per annum (Mtpa) of product. The mine is located near the town of Acland, which is approximately 14 kilometres north-west of Oakey and 35 kilometres north-west of Toowoomba. The New Acland Coal Mine Stage 3 project proposes the expansion of New Acland Coal's existing operation.

The project has been determined a controlled action by the Commonwealth Environment Minister. It will therefore be assessed under the *Agreement between the Commonwealth and the State of Queensland under Section 45 of the EPBC Act relating to Environmental Assessment* (the bilateral agreement) (Commonwealth of Australia 2012), which sets out the Commonwealth and State requirements for the purposes of the Australian Government's assessment under Part 8 of the *Environment Protection and Biodiversity Conservation Act 1999*. The agreement aims to minimise duplication of environmental assessment processes, allowing the Commonwealth Environment Minister to rely on the Queensland process to reach a conclusion about an action under the EPBC Act.

The EIS must address potential impacts on the controlling provisions identified when the project was determined to be a controlled action.

On 9 November 2012, SEWPaC confirmed it had accepted a variation to the project proposal to take into account the project scope amendments. The controlling provisions remain the same. Project documentation can be found on the SEWPaC website at: **www.environment.gov.au/cgi-bin/epbc/epbc_ap.pl?name=current_referral_detail&proposal_id=3423**

The project initially involved the development of new resource areas to increase coal production to up to 10 Mtpa to extend the life of the mine until around 2042. The TOR for the environmental impact statement (EIS) for the project was finalised on 24 October 2007, and the project's EIS was advertised for public comment in late 2009. In response to issues raised in submissions received on the EIS by members of the public and advisory agencies, the Coordinator-General directed the proponent to prepare a supplementary report to the EIS (SEIS).

Prior to the proponent finalising the SEIS, in response to concerns raised in March 2012 by the incoming state government about the significance of the project's impacts on potential strategic cropping land and its proximity to local communities, the proponent revised the project's scope and requested the EIS process for the amended project

[1] The project is now referred to as a 'coordinated project' as a result of legislative changes applied to the *State Development and Public Works Organisation Act 1971* in December 2012.

recommence. On 9 November 2012, the project was varied under the EPBC Act to reflect the revised project scope.

On 30 October 2012, the Coordinator-General directed that a new TOR was required to address the changes to the project's scope, with input from the public and advisory agencies required on what a new EIS for the varied project should address.

The description of the project considered by submitters on the TOR was contained in the proponent's Revised Project Overview (Nov 2012) document, which supersedes the Initial Advice Statement (IAS) (2007). The Revised Project Overview document is available online at **www.dsdip.qld.gov.au/newacland**

The revised project proposes the incremental expansion in production of the existing New Acland Mine up to a capacity of 7.5 Mtpa of product coal (equating to approximately 14 Mtpa ROM coal) through the development of two new resource areas within mining lease area (MLA) 50232, being the Manning Vale and Willeroo resource areas, extending the mine's operation until 2029.

The mine's expansion proposes an increase from the existing mine's 4.8 Mtpa up to 7.5 Mtpa, rather than the original project proposal's 10 Mtpa. A smaller project would also mean a reduction of the proposed mine life from 2042 to 2029.

The project would require 400 full-time equivalent workers to support operation of the mine and a further 170 full time equivalent contract positions. It is estimated around 2850 indirect jobs would be generated by the project. Approximately 220 construction jobs will be required during the peak of construction. Subject to obtaining approvals, the proponent advises construction could commence in 2015–17.

The proponent estimates the project would result in an economic contribution of $8 billion for the life of the mine. Construction costs are estimated at $700 million.

Comments received in the 67 submissions received on the December 2012 draft TOR have been considered by the Coordinator-General in finalising this TOR.

This new TOR supersedes the TOR finalised in October 2007 and will apply to a new EIS for the project; therefore the content of the previous EIS (released in November 2009) will not be evaluated by the Coordinator-General in his future assessment of the project.

As stated in the draft TOR document, due to the changes in the project, comments made on the previous draft TOR (2007) have not been directly applied to this TOR.

People who made a submission on the previous draft TOR, and EIS, were invited to comment on the draft TOR that was released for comment in December 2012.

Purpose of this document

The TOR must be read in conjunction with *Preparing an environmental impact statement: Guideline for proponents*, which explains the following:

- the target audience for the EIS
- stakeholder consultation requirements
- document format
- copy requirements.

The guideline is available from **www.dsdip.qld.gov.au** or from the EIS project manager (refer to page 3 for contact details).

Coordinator-General's report

At the conclusion of the EIS process, the Coordinator-General will prepare a report evaluating the EIS (Coordinator-General's report). If the report states conditions under the following Queensland Acts, the Coordinator-General is required to provide the responsible minister(s) with a copy of the report:

- *Mineral Resources Act 1989*
- *Environmental Protection Act 1994* (EP Act)
- *Petroleum and Gas (Production and Safety) Act 2004*
- *Greenhouse Gas Storage Act 2009*.

As the project is a 'controlled action' under the EPBC Act, the Coordinator-General will provide a copy of the report to the Commonwealth Environment Minister. Refer to page 72 for more information on Australian Government requirements.

Contact information: State Government

For information about the EIS process for the project, contact:

EIS Project Manager—Ms Sonya Booth
Coordinated Project Delivery
Office of the Coordinator-General
PO Box 15517
City East Qld 4002

Tel +61 7 3238 3131
Fax +61 7 3225 8282
Email newaclandproject@coordinatorgeneral.qld.gov.au
Web www.dsdip.qld.gov.au/newacland

Contact information: Project proponent

Contact details for the project proponent are:

Project Manager—New Acland Project
New Acland Coal Pty Ltd
PO Box 47
Ipswich Qld 4305

Tel +61 7 3418 0500
Fax +61 7 3418 0355
Email aclandinfo@newhopecoal.com.au
Web www.aclandproject.com.au

Content of the EIS for state matters

This part details the matters to be assessed by the Coordinator-General on behalf of the State of Queensland.

The EIS should follow the format and content outlined in this TOR. Discuss any proposed change to the overall structure of the EIS documents with the EIS project manager (refer to page 3 for contact details).

For details of the Australian Government matters to be assessed, refer to page 72 of this TOR.

1. Executive summary

The executive summary should convey the most important and preferred aspects and options relating to the project in a concise and readable form. It should use plain English, avoid jargon, be written as a stand-alone document and be structured to follow the EIS. It should be easy to reproduce and distribute on request to those who may not wish to read or purchase the whole EIS.

The executive summary should include:

- project title
- proponent's name and contact details
- a discussion of the EIS process for the project undertaken to date, that acknowledges changes made to the project's scope resulted in the Coordinator-General's decision to require new TOR, and a new EIS for the project.
- This should acknowledge that the new EIS supersedes the EIS for the former scope of the project which was produced in 2009.
- a discussion of any relevant projects previously undertaken by the proponent, if applicable, and the proponent's commitment to effective environmental management
- a concise statement of the aims and objectives of the project
- the legal framework for the project, decision-making authorities and advisory agencies
- an outline of the background and need for the project, including the consequences of not proceeding with the project
- an outline of the alternative options considered and reasons for selecting the proposed development option
- a brief description of the project (pre-construction, construction, operational activities and decommissioning) and the existing environment, using visual aids where appropriate
- an outline of the principal environmental impacts predicted and the proposed environmental management strategies, commitments and rehabilitation strategies to minimise the significance of these impacts
- a discussion of the cumulative impacts in relation to social, economic and environmental factors of associated infrastructure projects proposed within the region

- detailed maps of the proposed project location and any other critical figures. The maps should detail which components of the project (including rail crossings and road closures) are proposed outside of the MLA.

2. Glossary of terms

Provide a glossary of technical terms, acronyms, abbreviations and references.

3. Introduction

Clearly explain the function of the EIS, why it has been prepared and what it sets out to achieve. Include an overview of the structure of the document.

3.1 Project proponent

Describe the proponent's experience, including:

- the nature and extent of business activities
- experience and qualifications
- environmental record, including a list of any breach of relevant environmental laws during the previous ten years
- the proponent's environmental, health, safety and community policies.

3.2 Project description

Briefly describe the key elements of the project with illustrations or maps. Summarise any major associated infrastructure requirements. Provide detailed project descriptions in Section 4 (page 9).

3.3 Project rationale

Describe the specific objectives and justification for the project, including its strategic, economic, environmental and social implications, technical feasibility and commercial drivers. Discuss the status of the project in a regional, state and national context. Explain the project's compatibility with relevant policy, planning and regulatory frameworks.

3.4 Relationship to other projects

Describe how the project relates to other major projects (of which the proponent should reasonably be aware) that have been, are being undertaken or that have been proposed or approved in the area potentially affected by the project.

As a result of this assessment, there may be opportunities to co-locate existing or proposed infrastructure, enabling efficiency gains and mitigating environmental and property impacts. Where co-location may be likely, outline opportunities to coordinate or enhance impact mitigation strategies. Discuss the opportunities in sufficient detail to enable the reader to understand the reasons for preferring certain options or courses of action and rejecting others.

3.5 Project alternatives

Describe feasible alternatives including conceptual, technological and locality alternatives to the proposed project and the consequences of not proceeding with the

project (including any impacts that would be avoided). Detail the criteria used to determine the alternatives and provide sufficient detail to convey why certain options or courses of action are preferred and why others are rejected (including the 'no action' option). Discuss the interdependencies of project components, particularly in regard to how any infrastructure requirements relate to the viability of the project.

This information is required to assess why the scope of the project is as it is and to ensure that the environmentally sustainable design principles and sustainable development aspects were considered and incorporated during the project's scoping phase.

Refer to page 72 for details of Australian Government requirements on project alternatives.

3.6 The environmental impact assessment process

3.6.1 Methodology of the EIS

Provide an outline of the environmental impact assessment process, including the role of the EIS in the Coordinator-General's decision making process. Include information on relevant stages of EIS development, statutory and public consultation requirements and any interdependencies that exist between approvals sought. The information in this section is required to ensure:

- relevant legislation is addressed
- readers are informed of the process to be followed
- stakeholders are aware of any opportunities for input and participation.

3.6.2 Objectives of the EIS

Provide a statement of the objectives of the environmental impact assessment process. The structure of the EIS can then be outlined and used to explain how the EIS will meet its objectives. The purpose of the EIS is to:

- provide public information on the need for the project, alternatives to it, assess options and make informed decisions for its implementation
- present the likely effects of the project on the natural, social and economic environment
- demonstrate how environmental impacts can be avoided, managed or mitigated and the offsets for any residual impacts
- provide information to formulate the project's environmental management plan (EMP).

3.6.3 Submissions

Inform the reader how and when properly made public submissions on the EIS will be addressed and taken into account in the decision-making process. Indicate points in subsequent approval processes for the project (e.g. 'material change of use' (MCU) applications under the *Sustainable Planning Act 2009* (SPA)) where submitters may have appeal rights. The EIS project manager can assist with preparing information on the submissions process.

3.7 Public consultation

3.7.1 Consultation plan

Develop and implement a comprehensive and inclusive consultation plan with the stakeholder groups identified in section 3.2 of *Preparing an EIS: Guideline for proponents*.

The consultation plan should identify broad issues of concern to local and regional community and interest groups and address issues from project planning through commencement, project operations and decommissioning. The consultation plan should identify:

- the stakeholders to be targeted
- the types of consultation and communication activities to be undertaken
- timing of activities
- how consultation activities will be integrated with other EIS activities and the project development process
- consultation responsibilities
- communication protocols
- reporting and feedback arrangements
- how results of consultation will be considered by the proponent and integrated into the EIS process.

3.7.2 Public consultation report

Include, as an appendix, a public consultation report detailing how the public consultation plan was implemented, and the results. It must include:

- a list of stakeholders identified, including the Australian and Queensland governments, local government agencies, and/or the affected parties (as defined by the EP Act)
- criteria for identifying stakeholders and methods used to communicate with them
- details of the activities conducted to date and the future consultation strategies and programs, including those during the operational phase of the project (also outlined and included in the EMP)
- a summary of the issues raised by stakeholders and the means by which the issues have been addressed
- details of how consultation involvement and outcomes were integrated into the EIS process
- details of how consultation outcomes will be integrated into future site activities (including opportunities for engagement and provision for feedback and action if necessary).

3.8 Project approvals

3.8.1 Relevant legislation and approvals

For each key project component, separately list and describe Commonwealth, state and local legislation and regulations relevant to the planning, approval, construction and operation and decommissioning of the project.

Include separate consideration of approvals, and list the administrative agencies, for works located on and off-site of the MLA.

Identify approvals, permits, licences and authorities that will need to be obtained for the proposed project and list the relevant legislation.

Outline the head of power, administrative agency and project triggers for the application of each of these and identify relevant approval requirements.

Authorised activities on the mining lease

The mining activity if approved would be authorised under the *Mineral Resources Act 1989*. Describe activities that form the mining activity (e.g. sewage treatment plants, quarry, power station and mineral processing).

Activities off the mining lease

Describe activities that require approval under the S*ustainable Planning Act 2009* . Consider separately approvals and permits required for the rail spur.

3.8.2 Relevant plans

Outline the project's consistency with the existing national, state, regional and local planning framework that applies to the project location. Refer to all relevant statutory and non-statutory plans, planning policies, guidelines, strategies and agreements. Include consideration of the draft Darling Downs Statutory Regional Plan.

Examples of other relevant policy and planning documents include the Condamine Catchment Natural Resource Management (NRM) Plan, Local Government community plans, pest management plans and the Toowoomba Regional Planning Scheme. The EIS should indicate the intention to integrate as closely as possible with pre-existing plans.

3.8.3 Environmentally relevant activities

Briefly describe each environmentally relevant activity (ERA) under the EP Act and associated activities that are to be carried out in connection with the project..

Present a detailed description of each ERA in Section 5, Environmental values and management of impacts. Provide details of the impact on land, water, air, noise and any other identified environmental values, as well as a detailed description of the waste generated from each ERA and its quantity, characteristics, handling, storage, management and intended treatment and disposal.

Should ERA 14—electricity generation, be undertaken on the mining tenure the proponent must identify if the plant will or intends to be connected to the state power network grid. Electricity generation undertaken on a mining tenure that is, or intends to be, connected to the state power network grid will require a separate development

permit. Electricity generation undertaken on a mining tenure and utilised solely for mining activities contained within the mining tenure can be permitted under a mining environmental authority.

Describe which ERAs are required for works located off the mining lease area.

4. Project description

Describe the project through its lifetime of pre-construction, construction, operation and decommissioning. Include any changes or amendments needed to existing mining operations as a result of the proposed expansion project. The project description also allows further assessment of which approvals may be required and how they may be managed through the life of the project.

4.1 Overview of the project

Provide an overview of the project to put it into context. Include:

- a rationale explaining the selection of the preferred operating scenario, including details such as cost, environmental impacts, and the operational efficiencies of each option
- a description of the key components of the project including the use of text and design plans where applicable
- a summary of any environmental design features of the project
- the expected cost, timing, and overall duration of the project, including details of and justification for, any staging of the development
- the details of entitlements, restriction and limitations imposed by the MR Act in regard to any restrictions and ‘surface rights’ exemptions.

4.2 Location

Describe, using maps at suitable scales, the regional and local context of the project and all associated infrastructure. Provide real property descriptions of the project. Maps should show the precise location of the project area, in particular the:

- location and boundaries of current or proposed land tenures that the project area is or will be subject to, and details of the ownership of that land
- MLA boundaries, distinguished from the transport corridor boundaries
- clear labelling of each of the resource areas
- location, boundaries, elevations, and area and size of the project footprint, including easement widths and access requirements
- location and size of any proposed buffers surrounding the project area (for construction and operation) and proximity to sensitive receptors
- location of primary residences within non-residential sized lots not owned by the proponent, within a two-kilometre radius of all project works
- proximity of the project works to the towns/locations of Acland, Muldu, Jondaryan and Oakey. Include a scale which clearly represents distances.
- location of infrastructure (existing or proposed) relevant to the project such as the state-controlled road network, telecommunications, power infrastructure, local roads and railways, train load-out facility, stock routes, construction activities,

accommodation villages, internal haul roads, crossings of rail lines and access locations (existing and proposed) to the state-controlled road network (if applicable)

- the Jondaryan rail loading facility and rehabilitation area
- location of natural features and areas of environmental concern such as waterways (e.g. rivers, streams, creeks, other water bodies and wetlands), and significant or assessable vegetation
- location of any proposed project infrastructure requirements (e.g. site offices, car parks and accommodation sites, alignment of water pipelines, power services, stockpiles, plant locations, fuel, and chemical storage facilities) with reference to size, type and use, during all project stages; and
- views to and from the site
- details of entitlements, restriction and limitations imposed by the MR Act in regard to any restrictions and 'surface right' exemptions
- location and details of the Lagoon Creek buffer zone including required or stipulated distances to be maintained between the authorised mining activities and Lagoon Creek
- location of any proposed accommodation villages, whether temporary or permanent, depicting the extent of flood hazard and any areas of bushfire or landslide hazard. For guidance, refer to:
  - Appendix 5A of State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide (Department of Local Government and Planning & Department of Emergency Services 2003a)
  - Solution 1.4 of *State Planning Policy Guideline: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide* (Department of Local Government and Planning & Department of Emergency Services 2003b).

The proponent should make available to advisory agencies appropriate GIS data (including but not limited to project: boundaries, elements and associated infrastructure) for use in further GIS analysis. GIS data provided to government agencies must be accompanied by: a description of the spatial data, metadata for spatial and attribute data, projection and datum information.

Electronic data files should include detail about the extent of disturbance and the location of infrastructure within the mining leases and off-site for related infrastructure. This data should be provided in a format compatible with ArcGIS such as ESRI shapefile.

4.3 Resource base and mine life

Summarise the results of studies and surveys undertaken to identify the mineral and natural resources required to implement the proposal. Describe the required location, volume, tonnage and quality of natural resources (such as land, water, timber and energy). Provide specific details of the following:

- the proposed mine life and an outline of the coal/mineral resource base, including the total thickness of seams or extent of the ore body
- the planned extraction of resources
- locations of any resources that would be sterilised by the planned activities

- the quantity of coal/mineral to be mined annually, including any proposed ramping of production or staging of development.

4.4 Construction phase

Provide a detailed staging plan and approximate timeframes for the project's construction activities.

Provide an estimate of the number and roles of persons to be employed during the construction phase of the project.

4.4.1 Pre-construction activities

Describe all pre-construction activities, including:

- approvals required for this stage, including any resource allocations (e.g. water supply, land access)
- land acquisitions and/or tenures required (on and off-mining lease)
- nature, scale and timing for vegetation clearing
- site access
- earthworks
- interference with watercourses and floodplain areas, including wetlands
- site establishment requirements for construction facilities, including access restriction measures and expected size, source and control of the construction workforce accommodation, services (water, sewage, communication, power, transport and traffic, waste management and recreation) safety and emergency requirements, e.g. a landing site for helicopter and/or fixed wing aircraft
- upgrade, relocation, realignment, deviation of or restricted access to roads, stock routes and other infrastructure.

4.4.2 Construction

Describe all the construction elements of the project, including:

- an indicative construction timetable, including expected commissioning and start-up dates and hours of operation
- major work programs for the construction phase, including an outline of construction methodologies
- construction equipment to be used
- construction inputs, handling and storage, including an outline of potential locations for source of construction materials
- major hazardous materials to be transported, stored and/or used on site, including environmental toxicity data and biodegradability
- clean-up and restoration of areas used during construction, including camp site(s) and storage areas
- interference with watercourses and floodplain areas, including wetlands and potential disruptions to groundwater flow and groundwater/surface water interaction during construction and aquifer dewatering
- traffic estimates expected over this period, including all worker and employee traffic.

4.4.3 Commissioning

Describe the commissioning process including the associated environmental impacts.

4.5 Operational phase

Provide full details of the operation for all elements of the project, including:

- a description of the project site, including concept and layout plans of buildings, structures, plant and equipment to be employed
- nature and description of all key operational activities
- hours of operation, including rail transportation
- the capacity of the project equipment and operations
- estimated numbers and roles of persons to be employed during the operational phase of the project
- traffic estimates expected over this period, including all worker and employee traffic.

4.5.1 Mine sequencing

Provide specific details of the following:

- the proposed mine life and an outline of the coal base
- the planned excavation of resources
- the quantity of coal to be mined annually, including any proposed ramping of production or staging of development
- the proposed sequence and timing of mining of each seam/ore body within the mining lease
- the physical extent of excavations, location of stockpiles of overburden and/or coal/mineral reject to be handled during the project's operation or left after mining ceases, including the rate of throughput of stockpiles of product, reject and overburden
- typical cross sections of the mine workings showing voids, surface profiles and geological strata
- the area disturbed at each major stage of the project
- the proposed progressive backfilling of excavations
- locations of any resources that would be sterilised by the planned activities.

4.5.2 Mining methods and equipment

Provide specific details of the following:

- the mining type and methods to be used, including the major equipment to be used in the various components of the operation
- the use of different techniques in areas of different topographic or geo-technical character
- chemicals to be used, including hydraulic fluids used and released in underground operations.

4.6 Associated infrastructure

Detail, with the aid of concept and layout plans, requirements for new infrastructure and upgrading/relocating existing infrastructure to service the project. Consider infrastructure such as transportation (road/rail/air/ship), water supply and storage, energy supply, telecommunications, stormwater, waste disposal and sewerage.

Describe:

- all infrastructure required to be constructed, upgraded, relocated, decommissioned or rehabilitated for the construction and/or operation of the project, such as resource extraction areas, access roads, rail lines and rail crossings, power supply, connection to sewerage or water supply
- the design and construction standards to be met (e.g. waterway crossings should be designed to meet the requirements of the Fisheries Act and self-assessable codes for minor or temporary water barrier works)
- alternative approaches or the opportunity to obtain materials from alternative sources
- decommissioning and rehabilitation commitments for the existing Jondaryan rail loading facility (including the proposed timing for shut down of activities and surrender of the Environmental Authority).

4.6.1 On-site water supply infrastructure

Provide information on water usage by the project, including the quality and quantity of all water supplied to and distributed within the site. In particular, the proposed and optional sources of water supply should be described (e.g. bores, surface storages, pit water, treated water from the Wetalla water treatment supply, municipal water supply pipelines, coal seam gas water). Provide estimated rates of supply from each source (average and maximum rates). Describe any proposed water conservation and management measures.

Determine potable water demand for the project, including the temporary demands during the construction period ensuring compliance with the *Australian Drinking Water Guidelines 6, 2011* (Commonwealth of Australia 2011). Provide details of any existing town water supply to meet such requirements and/or how portable water will be obtained for the project.

If water storage and treatment is proposed on site, for use by the site workforce and in accommodation camps, then this should be described, identifying how potable water will be supplied, treated, stored, protected and monitored.

4.6.2 Road transport

Provide information on road transportation requirements on public roads (state and local) for both construction and operations phases, including:

- any proposed new roads, road upgrades, and resulting road relocations to provide access to, or within, the mine and associated infrastructure
- existing traffic levels including vehicle types and numbers and trip lengths
- construction traffic (including vehicle types, number of vehicles trips including any workforce generated, service vehicle or over-dimensional trips

- operational traffic (including vehicle types, number of vehicles trips including any workforce generated service vehicle, maintenance vehicle or over-dimensional vehicle trips), across various stages of the project's development
- anticipated times at which movements may occur
- proposed transport routes (including any waterway crossings)
- need for increased road (and any waterway crossings) maintenance and upgrading
- need for increased road maintenance
- communication of these issues to the public.

More detailed information regarding road transport infrastructure will be required in accordance with Subsection 5.9 of this TOR (Transport). The EIS should be cross-referenced accordingly.

4.6.3 Rail transport

Provide details of the rail infrastructure component of the project, including its connection to the Queensland Rail line, showing:

- all rail infrastructure required to be constructed, upgraded, relocated, commissioned and/or decommissioned for the construction and operation of the project, including the design and construction standards to be met
- the location of the rail corridor, railway, and all associated rail infrastructure including level crossings, the maintenance track and access points for construction and operation
- the location of state and local roads, other infrastructure such as pipelines and services, road crossings, the existing Queensland Rail line, watercourses, bridges, and culverts
- for construction, indicate the location of hardstands, excavations, stockpiles and areas of fill
- the location and boundaries of land tenures, in place and proposed, to which the rail component is and will be subject
- an analysis and design plans for the interface with the Queensland Rail line
- the need for increased rail crossing maintenance and upgrading
- an analysis of the number, location, length and estimated cost of additional passing loops on the Toowoomba Range to underpin the New Acland Coal Stage 3 Project, including an estimate of the effective rail capacity increase (in million tonnes per annum) that such upgrades are expected to deliver.

More detailed information regarding rail transport infrastructure will be required in accordance with Subsection 5.9 of this TOR (Transport). The EIS should be cross-referenced accordingly.

4.6.4 Energy

Describe all energy requirements, including electricity, natural gas, and/or solid and liquid fuel requirements for the construction and operation of the project.

Outline the power infrastructure required to be constructed, relocated and upgraded, and the process to construct, relocate, and upgrade this infrastructure. Indicate the

timeframes for these works. Describe any requirement for relocation of domestic supply as a result of the project's power needs.

Discuss likely interruptions to service that may be experienced by the community due to power infrastructure construction works, and operation of the project.

Show the locations of any easements on the infrastructure plan.

Describe energy conservation in the context of any Commonwealth, Queensland and local government policies.

4.6.5 Telecommunications

Describe all telecommunications requirements for the construction and operation of the project.

Provide details and location of existing telecommunications infrastructure, such as optical cables and microwave towers, that might be impacted by the project and identify the owners of that infrastructure.

4.6.6 Stormwater drainage

Describe the proposed stormwater drainage system and the proposed disposal arrangements.

Provide supporting figures, with contours at suitable intervals generally at 2.5–5 m, (but on floodplains of <2 per cent slope at intervals of at least 0.5 m) showing drainage pathways and the locations and discharge points of sediment detention basins, and any other stormwater quality improvement devices. Cross-reference to relevant sections in the EIS.

4.7 Decommissioning and rehabilitation

This section should present best practice strategies and methods for decommissioning and rehabilitation of the project, including:

- developing a preferred rehabilitation strategy with a view to minimising the amount of land disturbed at any one time and minimise the residual loss of land with ecological or productive value
- illustrating the final topography of any excavations, waste areas and dam sites on maps at a suitable scale
- describing the means of decommissioning the project—in terms of removing equipment, structures and buildings—and the methods proposed for stabilising the affected areas
- discussing options and defining preferred methods for disposing of wastes generated by demolishing project infrastructure, including sufficient detail for their feasibility and suitability to be established
- discussing how rehabilitated SCL land is returned back to the best self-sustaining condition as quickly as practical post mine decommissioning
- discussing and defining preferred future land tenure arrangements post-decommissioning of the project.

Include the impacts of the preferred rehabilitation strategy in the appropriate subsections of Section 5 (Environmental values and management of impacts).

Refer also to infrastructure that is not intended to be decommissioned. In this situation, describe the entity to which the infrastructure is intended to be transferred, and the proposed environmental management regimes.

Describe in detail a conceptual closure plan to achieve best practice mine decommissioning. Outline what provisions will be made during operations to achieve the standards and completion criteria for mine decommissioning as consistent with the *Strategic Framework for Mine Closure* (Australian and New Zealand Minerals Energy Council & Minerals Council of Australia 2000).

Detail any changes to rehabilitation strategies (e.g. timing and final landform) for the existing mining operations at Acland as a result of the proposed expansion project and assess any impacts on environmental values and mitigation strategies in the appropriate section of the EIS.

The strategies and methods presented for progressive and final rehabilitation of disturbed areas should demonstrate compliance with the objectives of *A Policy Framework to Encourage Progressive Rehabilitation of Large Mines* (Department of Environment and Heritage Protection, 2004) or with updated versions of that policy available at the time of drafting the EIS.

Land suitability assessment should follow the technical guidelines for the *Environmental Management of Exploration and Mining in Queensland* (1995). In particular, the strategies and methods should have the following objectives:

- mining and rehabilitation should aim to create a landform with land use capability and/or suitability similar to that prior to disturbance unless other beneficial land uses are pre-determined and agreed
- mine wastes and disturbed land should be rehabilitated to a condition that is self-sustaining, or to a condition where the maintenance requirements are consistent with an agreed post-mining land use
- surface and ground waters that leave the lease should not be degraded. Current and future water quality should be maintained at levels that are acceptable for protection of the environment and to users downstream of the site.

Where dams are to be constructed, proposals for the management of these structures after the completion of the project should be given. Also, the final drainage and seepage control systems and long-term monitoring plans should be described.

A description of topsoil management should consider transport, storage and replacement of topsoil to disturbed areas. The minimisation of topsoil storage times (to reduce fertility degradation) should also be addressed.

Details are to be provided on rehabilitation strategies, the key performance indicators and how to measure success and how long before success will be demonstrated.

Environmental values and management of impacts should be addressed, particularly with regard to issues such as final landform stability, rehabilitation of flora, the long-term quality of water in any final voids and any potential depletion of alluvial aquifers or flow impacts on Lagoon Creek post mining (e.g. from drainage of surface flows to filled mine voids adjacent to Lagoon Creek).

Implications for the long-term use of the site should also be addressed, particularly with regard to the on-site disposal of waste and the site's inclusion on the environmental management register or contaminated land register.

5. Environmental values and management of impacts

Detail the environmental protection and mitigation measures incorporated in the planning, construction, rehabilitation, commissioning, operations and decommissioning of all facets of the project. Measures should prevent, or if not possible, minimise environmental harm and maximise environmental benefits of the project. Identify and describe preferred measures in more detail than other alternatives.

The EIS should demonstrate the protection and/or enhancement of human health (as a component of environmental values) during the construction and operation of the proposed development.

The objectives of the following subsections are to:

- describe the existing environmental values of the area that may be affected by the project, using background information and/or new studies to support statements (include reference to all definitions of environmental values set out in relevant legislation, policies and plans)
- describe the potential adverse and beneficial impacts of the project on the identified environmental values and the measures taken to avoid, minimise and/or mitigate those impacts
- describe any cumulative impacts on environmental values caused by the project, either in isolation or in combination with other known existing or planned projects present objectives, standards and measurable indicators that protect the identified environmental values
- examine viable alternative strategies for managing impacts (present and compare these alternatives in view of the stated objectives and standards to be achieved) discuss the available techniques to control and manage impacts in relation to the nominated objectives.

Where negative impacts of the project cannot be avoided or adequately minimised or mitigated, present proposals to offset impacts in accordance with the Queensland Government Environmental Offsets Policy (Environmental Protection Agency 2008b).

Define and describe practical measures for achieving the objectives for protecting and enhancing environmental values including:

- monitoring programs: describe the monitoring parameters, monitoring points, frequency, data interpretation and reporting methods
- auditing programs: describe how progress towards achieving the objectives will be measured
- management strategies: describe the strategies to be used to ensure the environmental protection objectives are achieved and control strategies implemented for each element of the environment.

The EIS should follow the format and content outlined in this TOR; however, changes to the structure can be discussed with the EIS project manager.

The mitigation measures, monitoring programs etc., identified in this section of the EIS should be used to develop the EMP for the project. For more information, refer to Section 11 (Environmental management plan).

5.1 Climate, natural hazards and climate change

Describe the climatic conditions that may affect management of the project. This includes a description of the vulnerability of the project area to seasonal conditions, extremes of climate and natural or induced hazards.

Address the most recent information on potential impacts of climatic factors in the appropriate sections of the EIS.

For example, the potential impact of climatic factors, particularly storm events and river flooding, on the capacity of waste containment systems (such as bunding, stormwater management and tailings dams) needs to be considered in terms of both the design of the waste containment systems and the potential impacts on waterways and groundwater.

Discuss extremes of climate (droughts, floods, cyclones etc.), with particular reference to water management at each component site of the project, and address the vulnerability of the area to natural or induced hazards, such as floods and bushfires. Consider the relative frequency and magnitude of these events together with the risk they pose to managing the project.

Provide a risk assessment (as part of the requirements of Subsection 8.1 of this TOR) and management plan detailing these potential climatic threats to the construction, and operation of the project. Include the following:

- a risk assessment of changing climate patterns that may affect the viability and environmental management of the project
- the preferred and alternative adaptation strategies to be implemented
- commitments to working cooperatively, where practicable, with government, other industry and other sectors to address adaptation to climate change.

5.1.1 Flood management

A comprehensive flood study should be included in the EIS that addresses:

- potential impacts of floods at a range of flood intervals, including the probable maximum flood event
- identification of likely increased flood levels, increased flow velocities or increased time of flood inundation as a result of the development.

The flood study should address:

- potential impacts of flooding on environmental values due to the identified likely increased flood levels, increased flow velocities or increased time of flood inundation as a result of the project
- quantification of flood impacts on properties surrounding and external to the project site from redirection or concentration of flows resulting from the project. Include consideration of impacts on nearby townships, including Acland, Oakey, and Jondaryan. For the downstream impacts and flood potential at Jondaryan, include consideration of the 2010–11 flood event.

The flood study should address any requirements of local or regional planning schemes for flood affected areas.

The study report should include details of all calculations along with descriptions of base data, any potential for loss of flood plain storage, and triangulated surface meshes produced in terrain modelling software. Reference must be made to any studies undertaken by the local council in relation to flooding.

Include how State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide (Department of Local Government and Planning & Department of Emergency Services 2003a) would be addressed in the context of managing flood impacts. Include discussion of the *Planning for stronger, more resilient floodplains* guide (Queensland Reconstruction Authority 2011).

Potential mitigation measures

The EIS should demonstrate how flood impacts associated with the project will be minimised, particularly in consideration of the following:

- property and infrastructure
- natural waterways
- the natural landscape of the floodplain area.

Describe the construction of any flood protection levees with regards to construction material, the design parameters and methods.

For the rail spur, indicate proposed engineering approaches to manage and minimise hydrological impacts, including indications of culvert lengths and spacings. Confirm flood immunity design specifications.

5.2 Land

Detail the existing land environment values for all areas associated with the project. Describe the potential for the construction and operation of the project to change existing and potential land uses of the project sites and adjacent areas. Define and describe objectives and measures for protecting and enhancing land-based values.

5.2.1 Land use and tenure

Description of environmental situation

Identify, with the aid of maps:

- land tenure, including reserves, tenure of special interest (such as protected areas and forest reserves), existing and proposed gas infrastructure, water pipelines, powerlines and transport corridors, including local roads, state-controlled roads and rail corridors
- the land use designation of the affected and surrounding land according to the relevant planning scheme, development scheme or other planning instrument
- areas covered by applications for native title claims or native title determinations, providing boundary descriptions of native title representative body(ies), and whether it is necessary to notify the representative body(ies) or if there is evidence that native title does not exist
- existing land uses and facilities surrounding the project components

- distance of the project from residential and recreational areas
- declared water storage catchments
- location of the project in relation to environmentally sensitive areas
- existing stock routes (if any) affected by the project components
- areas where mining activities would be permitted to occur under the MR Act and areas where mining would not be allowed without further statutory approval (i.e. no 'surface rights'). The map should show that despite the mining lease boundary remaining unchanged, mining activities ('surface rights') would be confined to some areas of the mining tenement and mining activities restricted in other areas
- describe and illustrate any existing mining tenements, petroleum (including coal seam gas), geothermal and greenhouse gas tenures and licences overlying and adjacent to the project site, and any proposed applications required for this project
- property and project plans approved under the provisions of the *Soil Conservation Act, 1986.*

Describe in detail any issues related to the overlap of tenements and tenures for different resources or purposes, including the sequential exploitation of the resources or uses to which the tenements and tenures may be put.

Potential impacts and mitigation measures

Detail the potential for the construction, operation and decommissioning of the project to change existing and potential land uses of the project site, adjacent areas and affected areas.

Describe the following:

- impacts on surrounding land uses and human activities and strategies for minimisation, such as:
  - good quality agricultural land (GQAL)—refer to State Planning Policy 1/92: Development and the Conservation of Agricultural Land (Department of Primary Industries & Department of Housing, Local Government and Planning 1992) and *Planning guidelines: The identification of good quality agricultural land* (Department of Primary Industries & Department of Housing, Local Government and Planning 1993)
  - State Planning Policy 1/12: Protection of Queensland's Strategic Cropping Land (Department of Environment and Resource Management 2012)
  - key resource areas—refer to State Planning Policy 2/07: Protection of Extractive Resources (Department of Mines and Energy 2007a) and its accompanying *State Planning Policy 2/07 Guideline: Protection of Extractive Resources* (Department of Mines and Energy 2007b)
  - residential, farming and industrial uses.
- where the project conflicts with the existing land uses of the affected and adjoining land parcels, and mitigation strategies to minimise the adverse impacts of this land use conflict
- where the project impacts on an unused stock route, consult with DNRM and the Local Government Stock Route officer to identify the wider effects a route closure may have on the possible future use of the network

- the existence of co-ordinated runoff control works and measures adopted across neighbouring properties to control erosion on cultivation lands
- potential impacts on approved Soil Conservation Plans within, and adjacent to, the ML, and determine the need for the amendment, or revocation, of the approval of the plans
- where the project conflicts with the land use designations of the relevant statutory planning instruments, including but not limited to, planning schemes, development schemes, state planning policies and regulatory provisions. Include particular consideration of the draft Darling Downs Statutory Regional Plan (Department of State Development, Infrastructure and Planning), which is due for public release in mid-2013
- where the project may conflict with other proposed development or non-statutory plans
- management of the immediate environs of the project including construction buffer zones
- the potential native title rights and interests likely to be impacted upon by the project and the potential for managing those impacts by an Indigenous land use agreement or other native title compliance outcomes
- proposed land use changes in any areas of high conservation value and information on how easement widths and vegetation clearance in sensitive environmental areas will be minimised
- potential issues involved in proximity and/or co-location of other current or proposed infrastructure services. Outline mitigation strategies to minimise adverse impacts of the construction and operation of the project on these services
- potential impacts on future road upgrades. Propose mitigation strategies to avoid or minimise adverse impacts of the project on proposed road upgrades. Discuss any road closures and re-alignments
- any land units requiring specific management measures.

Detail post-operations land use options, including suitability of the area to be used for agriculture (both cropping and grazing), industry, or nature conservation.

Detail the factors favouring or limiting the establishment of those options, in the context of land use suitability prior to the proposal and minimising potential liabilities for long-term management.

Describe the potential environmental harm caused by the project on the adjacent areas currently used for agriculture, urban development, recreation, tourism or other business; and the implications of the project for future developments in the impact area including constraints on surrounding land uses. Confirm mitigation strategies to manage any impacts.

If the development adjoins or potentially impacts on GQAL, then an assessment of the potential for land-use conflict is required. Investigations should follow the procedures set out in *Planning guidelines: The identification of good quality agricultural land* (Department of Primary Industries & Department of Housing, Local Government and Planning 1993), which supports State Planning Policy 1/92 (Department of Primary Industries & Department of Housing, Local Government and Planning 1992).

Outline incompatible land uses, whether existing or potential, affected by or adjacent to all aspects of the project, including essential and proposed ancillary developments or activities. Identify areas directly or indirectly affected by the construction and operation of these activities and define measures to avoid conflicts and unacceptable impacts and mitigation strategies to minimise adverse impacts of the project.

5.2.2 Topography, geology and soils

Description of environmental values

Provide maps locating the project in state, regional and local contexts. The topography should be detailed with contours at suitable increments, shown with respect to Australian Height Datum. Include significant features of the landscape and topography, and accompanying comments on the maps.

Provide a description, map and a series of cross-sections of the geology of the project area relevant to the project components. Describe the geological properties that may influence ground stability, occupational health and safety, or the quality of stormwater leaving any area disturbed by the project. In locations where the age and type of geology is such that significant fossil specimens may be uncovered during construction/operations, address the potential for significant finds.

Soil resources

A soil survey of the sites affected by the project must be conducted at a suitable scale, with particular reference to the physical and chemical properties of the materials that will influence erosion potential, stormwater run-off quality, rehabilitation and agricultural productivity of the land.

Describe, map and illustrate soil types and profiles according to the *Australian Soil and Land Survey Field Handbook* (National Committee on Soil and Terrain 2009), *Guidelines for Surveying Soil and Land Resources* (McKenzie et al. 2008) and *Australian Soil Classification* (Isbell & CSIRO 2002). Soils to be matched to the soils identified in the Land Management Manual: Harris, PS, Biggs AJW, Stone BJ (Eds) 1999. Central Darling Downs Land Management Manual, DNR, Qld. DNRQ990102.

Soil chemical and physical analysis should be conducted using the methods defined in the *Soil Chemical Methods – Australasia* (Rayment and Lyons, 2011) and the *Soil Physical Measurement and Interpretation for Land Evaluation* (McKenzie N, Coughlan K and Cresswell H, 2002)

Appraise the depth and quality of useable soil and present information according to the standards required in the *Planning guidelines: The identification of good quality agricultural land* (Department of Primary Industries & Department of Housing, Local Government and Planning 1993) and State Planning Policy 1/92: Development and the Conservation of Agricultural Land (Department of Primary Industries & Department of Housing, Local Government and Planning 1992) and assess each soil's agricultural land suitability in accordance with *Guidelines for agricultural land evaluation in Queensland* (Department of Primary Industries 1990).

Soil profiles should be mapped at a suitable scale and described according to the *Australian soil and land survey field handbook* (National Committee on Soil and Terrain 2009), grouped according to their parent material and position in the landscape, and

classified according to the *Australian soil classification* (Isbell & CSIRO 2002). Particular reference to the physical and chemical properties of the materials that will influence erosion potential, storm water run-off quality, rehabilitation and agricultural productivity of the land should be included.

Representative soils must be sampled down the profile for laboratory analysis as outlined in the *Land Suitability Assessment Techniques* in the *Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland* (Department of Minerals and Energy 1995b).

Undertake an assessment and document the depth and quality of usable topsoil and subsoil to be stripped and stockpiled for rehabilitation.

For all project facilities (including the rail spur), undertake the analysis and classification at least to the depth of excavation.

Provide geotechnical information on the soils' stability and suitability for construction of the facilities. Discuss each facility separately.

Assess the suitability of the soils mapped in the project area for rain-fed broadacre cropping and beef cattle grazing according to the limitations and land suitability classification appropriate to the local area, i.e. the Eastern Downs Suitability Framework.

Provide land suitability maps of the mapped soil units and an Agricultural Land Class map according to the *Planning Guideline: The identification of good quality agricultural land* (Department of Primary Industries & Department of Housing, Local Government and Planning 1993).

Discuss the GQAL status and comment on and justify any variation with the GQAL mapping shown in the Toowoomba Regional Council Planning Scheme.

Strategic cropping land

Identify any areas within the project footprint likely to temporarily or permanently impact SCL and potential SCL. Provide a map to indicate the SCL areas and the project components.

Acid sulfate soils

Assess the potential for acid sulfate soils in accordance with:

- Queensland Acid Sulfate Soil Technical Manual (see **www.derm.qld.gov.au/land/ass/products.html**)
- State Planning Policy 2/02: Planning and Managing Development Involving Acid Sulfate Soils (Department of Natural Resources and Mines & Department of Local Government and Planning 2002a)
- *State Planning Policy 2/02 Guideline: Acid Sulfate Soils* (Department of Natural Resources and Mines & Department of Local Government and Planning 2002b).

Potential impacts and mitigation measures

Provide details of any potential impacts to the topography or geomorphology associated with the project and proposed mitigation measures, including:

- a discussion of the project in the context of major topographic features and any measures taken to avoid or minimise impact to such, if required
- the objectives to be used for the project in any re-contouring or consolidation, rehabilitation, landscaping, and fencing.

Identify the possible soil erosion rate for all permanent and temporary landforms and describe the techniques used to manage the impact. Identify all soil types and outline the erosion potential (both wind and water). Include an assessment of likely erosion effects, especially those resulting from removing vegetation, and constructing retaining walls both on site and off site for all disturbed areas.

Identify erosion management techniques to be used. Provide details of an erosion monitoring program (including rehabilitation measures for erosion problems identified during construction), and detail acceptable mitigation strategies. Summarise methods proposed to prevent or control erosion with regard to:

- the *Guideline: EPA Best Practice Urban Stormwater Management—Erosion and Sediment Control* (Environmental Protection Agency 2008a)
- preventing soil loss in order to maintain land capability/suitability
- preventing degradation of local waterways.

Strategic cropping land

Where areas of identified SCL and potential SCL are likely to be permanently alienated by the project, address the requirements of the SCL Act as they apply to the components of the project, in consultation with the Department of Natural Resources and Mines (DNRM) to discuss undertaking SCL assessment requirements as defined by the SCL Act.

When conducting soil surveys consider the SCL criteria and *Guidelines for applying the proposed strategic cropping land criteria* (available from **www.derm.qld.gov.au/land/planning/pdf/strategic-cropping/scl-guidelines.pdf**)

Address the requirements of the *Strategic Cropping Land Act 2011*, as they apply to the components of the project. This assessment of the impacts of the development on all SCL, or potential SCL, should include, but not be limited to, the following:

- which areas of the development footprint will have permanent or temporary impacts on SCL and potential SCL
- details on how the project can proceed under the SCL Act in a ‘protection area’
- any constraints on the configuration or operation of the development, which impact the location of any project components
- how the development will avoid or minimise the impact on SCL or potential SCL
- any considerations that have been made to the development to avoid and minimise impacts on SCL or potential SCL—such as the size/location of the development footprint, mine design, management practices, and site boundaries or how the development will operate

- proposed mitigation measures for the areas of SCL/potential SCL, which are likely to be permanently impacted
- details of the scientifically-based methods proposed, including management practices (e.g. stripping, stockpiling, reinstallation and rehabilitation), timelines, monitoring requirements and performance indicators, to rehabilitate temporarily impacted SCL/potential SCL areas back to their pre-development condition within 50 years of those areas being disturbed—i.e. their current condition in respect to the SCL criteria, particularly soil water storage
- a calculation of the proposed financial assurance for any temporarily impacted SCL/potential SCL.

Acid sulfate soils

Should acid sulfate soils be identified, discuss the potential for acid generation from disturbance of acid sulfate soils during earthworks and construction, and propose measures to manage soils and mitigate impacts for all site earthworks and construction activities. Should action criteria be triggered by acid generating potential as a result of testing, provide a site-specific acid sulfate soils management plan prepared in accordance with:

- Queensland Acid Sulfate Soil Technical Manual (see **www.derm.qld.gov.au/land/ass/products.html**)
- State Planning Policy 2/02: Planning and Managing Development Involving Acid Sulfate Soils (Department of Natural Resources and Mines & Department of Local Government and Planning 2002a)
- *State Planning Policy 2/02 Guideline: Acid Sulfate Soils* (Department of Natural Resources and Mines & Department of Local Government and Planning 2002b).

Mineral resources

Summarise the results of studies and surveys undertaken to identify and delineate the mineral resources within the project area (including any areas underlying related infrastructure).

Describe in detail, as indicated in the dot points below, the location, tonnage and quality of the mineral resources within the project area.

Where possible, present this information on a ‘seam-by-seam’ basis and include the modifying factors and assumptions made in arriving at the estimates. The mineral resources should be estimated and reported, as appropriate, in accordance with:

- the *Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves* (the JORC Code) (Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists & Minerals Council of Australia 2004)
- the principles outlined in the *Australian Guidelines for the Estimating and Reporting of Inventory Coal, Coal Resources and Coal Reserves* (Coalfields Geology Council of New South Wales & Queensland Mining Council 2003).

In addition, provide maps (at appropriate scales) showing the general location of the project area, and in particular the:

- location and aerial extent of the mineral resources to be developed or mined

- location and boundaries of mining tenures, granted or proposed, to which the project area is, or will be subject
- location of the proposed mine excavations
- location and boundaries of any project sites
- location and boundaries of any other features that will result from the proposed mining including waste/spoil dumps, water storage facilities and other infrastructure
- location of any proposed buffers, surrounding the working areas
- any part of the resource not intended to be mined and any part of the resource that may be sterilised by the proposed mining operations, buffer zones or infrastructure.
- for the Lagoon Creek buffer zone, include required or stipulated distances to be maintained between the authorised mining activities and Lagoon Creek and the relevant head of power determining these (e.g. from the MR Act, the Mining Registrar or proposed as a condition on an Environmental Authority)

Resource utilisation

Analyse the effectiveness of the mining proposal in achieving the optimum utilisation of the coal/mineral resources within the project area and consider its impacts on other resources. Demonstrate that the mining proposal will 'best develop' the mineral resources within the project area, minimise resource wastage and avoid any unnecessary sterilisation of these or any other of the state's coal, mineral, and petroleum (including gas and coal seam methane) resources that may be impacted upon or sterilised by the mining activities or related infrastructure.

Land disturbance

Develop a strategy that will minimise the amount of land disturbed at any one time. Describe the strategic approach to progressive rehabilitation of landforms and final decommissioning. Describe the methods to be used for the proposal, including backfilling, covering, re-contouring, topsoil handling and revegetation.

Where waterways are proposed to be diverted, and for the rail spur, describe the impact on land use due to hydrology changes, both upstream and downstream. Also, detail the final drainage and seepage control systems and any long-term monitoring plans. For the rail spur, confirm proposed flood immunity design specifications.

Where dams, roads, levee banks and other infrastructure are to remain upon project decommissioning, provide proposals to manage and maintain these structures. Management and maintenance arrangements should be supported by appropriate erosion and stability monitoring to substantiate long-term rehabilitation sustainability.

Assess the mitigation measures for land disturbance to be used on decommissioning the site, providing sufficient detail to decide their feasibility. In particular, address the long-term stability of final voids, depressions and spoil dumps, safety of access to the site after surrender of the lease, and the residual risks that will be transferred to the subsequent landholder.

Assess the range of options available for profiling the spoil dumps and final voids to minimise impacts on SCL, runoff, water quality and suitability for future land use.

Describe the strategy that will be used to manage topsoil, considering transport, storage and replacement of topsoil to disturbed areas. Also outline how soil from good

quality agricultural land will be best used. Address the minimisation of topsoil storage times (to reduce fertility degradation). Describe erosion and sediment control measures, particularly in relation to managing sodic and saline overburden material.

If geological conditions are conducive, consider the possibility that significant fossil specimens (such as of dinosaurs or their tracks) may be uncovered during construction/operations and propose strategies for protecting the specimens and alerting the Queensland Museum to the find.

5.2.3 Land contamination

Description of environmental values

Include:

- mapping of any areas listed on the Environmental Management Register or Contaminated Land Register under the EP Act
- identification of any potentially contaminated sites not on the registers whether or not remediation is required
- areas of contamination on or adjacent to the project area
- a description of the nature and extent of contamination at each site.

Potential impacts and mitigation measures

Discuss the management of any contaminated land and potential for contamination from construction, commissioning, operation and decommissioning, in accordance with the *Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland* (Department of Environment 1998) and the National Environment Protection (Assessment of Site Contamination) Measure 1999 (Cwlth).

Describe the possible contamination of land from aspects of the project, including waste, reject coal, overburden, coal washing plant and spills at chemical and fuel storage and handling areas. Identify and quantify, where possible, hazards and risks, considering cumulative impacts, and explain how these hazards and risks will be managed.

Describe strategies and methods to be used to prevent and manage any land contamination resulting from the project, including the management of any acid generation or management of chemicals and fuels to prevent spills or leaks.

State any intentions concerning the classification of land contamination after project completion.

5.2.4 Scenic amenity and lighting

Description of environmental values

Describe, in general terms, the existing character of the landscape and the general impression that would be obtained while travelling through and around it. Outline existing landscape features, panoramas and views that have, or could be expected to have, value to the community.

At a level of detail appropriate to the scale of the project, describe the relevant geomorphology, supported by illustrative mapping highlighting any significant features and associated environmental values.

Include information such as maps and photographs, particularly where addressing the following issues:

- major views, view sheds, outlooks, and features contributing to the amenity of the area, including assessment from private residences
- focal points, landmarks, waterways and other features contributing to the visual quality of the area and the project sites
- character of the local and surrounding areas including vegetation and land use.

Potential impacts and mitigation measures

Describe the potential beneficial and adverse impacts of the project on landscape character and visual qualities of the site and the surrounding area. Explain what measures will be undertaken to mitigate or avoid the identified adverse impacts.

Address the local and broader visual impacts of the project buildings, works and other structures. This should include views from:

- places of residence, work, and recreation
- road, cycle and walkways
- the air
- other known vantage points day and night,

during all stages of the project as it relates to the surrounding landscape.

Use sketches, diagrams, computer imaging/simulation and photos where possible to portray the near views and far views of the completed structures and their surroundings from visually sensitive locations.

Detail the measures to be undertaken to mitigate or avoid identified adverse impacts.

Lighting

Provide an assessment of all potential impacts of the project's lighting, during all stages, with particular reference to objectives to be achieved and management methods to be implemented to mitigate or avoid, such as:

- the visual impact at night
- night operations/maintenance and effects of lighting on residents and the safe and unimpeded operations of the Oakey airbase and training centre
- the potential impact of increased vehicular traffic
- changed habitat conditions for nocturnal fauna and associated impacts.

Include in this section how consultation with sensitive receptors has been taken into account in developing mitigation measures.

5.3 Nature conservation

Detail the existing nature conservation values that may be affected by the proposal. Describe the environmental values in terms of:

- integrity of ecological processes, including habitat of endangered, vulnerable and near-threatened (EVNT) and special least-concern species
- conservation of resources
- biological diversity, including habitat of EVNT and special least-concern species
- integrity of landscapes and places including wilderness and similar natural places
- aquatic and terrestrial ecosystems.

Survey effort should be sufficient to identify, or adequately extrapolate, the floral and faunal values over the range of seasons, particularly during and following a wet season. The survey should account for the ephemeral nature of watercourses traversing the proposal area, and seasonal variation in fauna and flora populations.

Wherever possible, seek the involvement of the local Indigenous community in conducting field observations and survey activities, to identify the traditional and contemporary Indigenous uses of species.

Also outline the proposed strategies to avoid, or minimise and mitigate, impacts on the identified values within the project's footprint.

Identify key flora and fauna indicators for ongoing monitoring.

5.3.1 Sensitive environmental areas

Description of environmental values

On a map of suitable scale, identify areas that are environmentally sensitive within the study area in proximity to the project. This should include areas classified as having national, state, regional or local biodiversity significance, or flagged as important for their integrated biodiversity values. Refer to Queensland legislation and policies on threatened species and ecological communities.

Areas regarded as sensitive with respect to flora and fauna have one or more of the following features, and should be identified and mapped:

- important habitat of species listed under the NC Act
- regional ecosystems (REs) listed as 'endangered' or 'of concern' under state legislation
- good representative examples of remnant REs or REs that are described as having 'medium' or 'low' representation in the protected area estate as defined in the Regional Ecosystem Description Database (REDD) available at **www.ehp.qld.gov.au**
- sites containing near-threatened or bio-regionally significant species or essential, viable habitat for near-threatened or bio-regionally significant species
- areas or features identified as State significant biodiversity values, pursuant to the Queensland Biodiversity Offset Policy (version 1) (Department of Environment and Resource Management 2011c)
- sites containing common species that represent a distributional limit and are of scientific value or that contain feeding, breeding, resting areas for populations of echidna, koala, platypus and other species of special cultural significance
- sites of high biodiversity that are of a suitable size or with connectivity to corridors and protected areas to ensure survival in the longer term; such land may contain:

  - natural vegetation in good condition or other habitat in good condition (e.g. wetlands)
  - degraded vegetation or other habitat that still support high levels of biodiversity or act as an important corridor for maintaining high levels of biodiversity in the area
- a site containing other special ecological values (e.g. high habitat diversity and areas of high endemism)
- ecosystems that provide important ecological functions such as:
  - wetlands of national, state and regional significance
  - riparian vegetation
  - important buffer to a protected area or important habitat corridor between areas
- declared fish habitat areas under the Fisheries Act
- sites of palaeontologic significance such as fossil sites
- sites of geomorphological significance
- protected areas that have been proclaimed under the NC Act or are under consideration for proclamation
- declared areas of major interest or critical habitat declared under the NC Act
- declared areas of high nature conservation value or areas vulnerable to land degradation under the VM Act
- remnant vegetation listed under the VM Act as containing endangered and of-concern regional ecosystems where clearing is likely to result in land degradation and a loss of ecosystem function and biodiversity.

Areas of special sensitivity include wildlife breeding or roosting areas, any significant habitat or relevant bird flight paths for migratory species, bat roosting and breeding caves including existing structures such as adits and shafts, and habitat of threatened plants, animals and communities.

Potential impacts and mitigation measures

Discuss the impact of the project on species, communities and habitat of local, regional or state significance in sensitive environmental areas as identified above. Include human impacts and the control of any domestic animals introduced to the area.

Demonstrate how the project would comply with the following hierarchy:

- avoiding impact on areas of remnant vegetation and other areas of conservation value including the habitat of listed species
- mitigating impacts through rehabilitation and restoration including, where relevant, a discussion of any relevant previous experience or trials of the proposed rehabilitation
- replacing or offsetting the loss of conservation values, where impacts cannot be avoided or mitigated.

Explain why the measures above may not apply in areas where loss would occur.

Discuss the boundaries of the areas impacted by the project within or adjacent to an ecological community, including details of footprint width. If the project area will impact upon an endangered ecological community, include reasons for the preferred alignment and the viability of alternatives.

Describe any obligations imposed by state or Commonwealth legislation or policies, or international treaty obligations (that is, China–Australia Migratory Bird Agreement (CAMBA), Japan–Australia Migratory Bird Agreement (JAMBA), Republic of Korea–Australia Migratory Bird Agreement (ROKAMBA)).

Provide details about the approvals that will be required under the NC Act and the VM Act for development made assessable under SPA. The EMP for the project should address the performance requirements of the relevant policies and regional vegetation management codes (refer to **www.derm.qld.gov.au/vegetation/regional_codes.html**).

Where relevant, this section should discuss environmental offset requirements in accordance with the Queensland Government Environmental Offsets Policy (Environmental Protection Agency 2008b) and take into account the applicable specific-issue offset policies, as follows:

- State Policy for Vegetation Management (Department of Environment and Resource Management 2009c)
- Policy for Vegetation Management Offsets (Department of Environment and Resource Management 2011b)
- Queensland Biodiversity Offset Policy (Department of Environment and Resource Management 2011c)

Describe any departure from 'no net loss' of ecological values.

5.3.2 Terrestrial flora

Description of environmental values

Provide vegetation mapping for all relevant project sites, and for adjacent areas to illustrate interconnectivity. Mapping should also illustrate any larger scale interconnections between areas of remnant or regrowth vegetation where the project site includes a corridor connecting those other areas. Discuss any variances between site mapping and mapping produced by the Queensland Herbarium.

Describe the terrestrial vegetation communities within the affected areas at an appropriate scale (maximum 1:10 000), with mapping produced from aerial photographs and ground-truthing, showing the following:

- location and extent of vegetation types using the regional ecosystem type descriptions in accordance with the REDD
- location of vegetation types of conservation significance based on regional ecosystem types and occurrence of species listed as protected plants under the Nature Conservation (Wildlife) Regulation 1994 (Qld) and subsequent amendments, as well as areas subject to the VM Act
- the current extent (bioregional and catchment) of protected vegetation types of conservation significance within the protected area estate (national parks, conservation parks, resource reserves, nature refuges and conservation reserves under the NC Act)
- any plant communities of cultural, commercial or recreational significance
- the location of any horticultural, field and water cultured crops in the vicinity of the project area
- location and abundance of any known exotic or weed species.

Highlight sensitive or important vegetation types, including riparian vegetation, and their value as habitat for fauna and conservation of specific rare floral and faunal assemblages or community types. The description should contain a review of published information regarding the assessment of the significance of the vegetation to conservation, recreation, scientific, educational and historical interests.

Include the status of the regional ecosystem types under both the *Vegetation Management Act 1999* and the Biodiversity Planning Assessment.

For each significant natural vegetation community likely to be impacted by the project, vegetation surveys should be undertaken at an appropriate number of sites, allowing for seasonal factors, and satisfying the following:

- the relevant regional vegetation management codes
- site data should be recorded in a form compatible with the Queensland Herbarium CORVEG database and HERBRECS
- the minimum site size should be 10 × 50 metres
- a complete list of species present at each site should be recorded
- the surveys to include species structure, assemblage, diversity and abundance
- the relative abundance of plant species present to be recorded
- any plant species of conservation, cultural, commercial or recreational significance to be identified
- specimens of species listed as protected plants under the Nature Conservation (Wildlife) Regulation, other than common species, are to be submitted to the Queensland Herbarium for identification
- the methodology in *Biocondition: A Condition Assessment Framework for Terrestrial Biodiversity in Queensland: Assessment Manual* (version 2.1) (Eyre et al. 2011) and *Ecological Equivalence Methodology Guidelines* (version 1) (Department of Environment and Resource Management 2011a) for sites possibly requiring offset considerations under the Policy for Vegetation Management Offsets (version 3) (Department of Environment and Resource Management 2011b) or Queensland Biodiversity Offset Policy (version 1) (Department of Environment and Resource Management 2011c).

Existing information on plant species may be used instead of new survey work, provided that the data is derived from previous surveys at the site consistent with the above methodology.

The methodology used for flora surveys should be specified in the appendices to the report.

Potential impacts and mitigation measures

Describe the potential environmental impacts to the ecological values of the area arising from the construction, operation and decommissioning of the project including clearing, salvaging or removing vegetation. Discuss the indirect effects on remaining vegetation. Consider short- and long-term effects and comment on whether the impacts are reversible or irreversible.

Outline strategies to avoid, minimise, mitigate and offset potential impacts of the project on terrestrial flora values (on or off the project sites). This should include an

assessment of the needs for buffer zones and the retention, rehabilitation or planting movement corridors.

For all components of the project, discuss:

- the potential impacts that clearing vegetation will have on listed species and communities in the extent of the proposed vegetation clearing
- any management actions to minimise vegetation disturbance and clearance
- the ability of identified vegetation to withstand any increased pressure resulting from the project, and any measures proposed to mitigate potential impacts
- the methods to ensure rapid rehabilitation of disturbed areas following construction, including the species chosen for revegetation, which should be consistent with the surrounding associations
- any post-construction monitoring programs
- the potential environmental harm on flora due to any alterations to the local surface and groundwater environment, with specific reference to impacts on riparian vegetation or other sensitive vegetation communities.

Describe any construction and operation components of the project involving clearing or translocation of vegetation.

Discuss indirect impacts on vegetation not cleared (such as edge effects of infrastructure in close proximity to riparian vegetation and fauna movement corridors, impacts of linear infrastructure and fragmentation).

Assess impacts during construction and operation of the project. Identify the number of hectares of remnant vegetation proposed to be cleared (by conservation status and RE type). Discuss these figures in terms of the long-term sustainability of these ecosystems to remain in the landscape at a regional level. Short-term and long-term durations should be considered.

Outline how these measures will be implemented in the EMP for the project.

Weed management

Include a description of the potential for introducing and/or spreading weeds or plant disease, including:

- the origin of construction materials, machinery and equipment
- staff/operator education programs
- determining the potential for introducing or facilitating exotic, non-indigenous and noxious plants
- a weed management plan to address the management of weeds and other exotic species related to the project site.

Weed management strategies are required for containing existing weed species (e.g. parthenium and other declared plants) and ensuring no new declared plants are introduced to the area. Refer to the local government authority's pest management plan and any strategies and plans recommended for the project area by Biosecurity Queensland. Discuss the strategies in accordance with provisions of the Land Protection (Pest and Stock Route Management) Act in the main body of the EIS and in the pest management plan within the EMP for the project.

5.3.3 Terrestrial fauna

Description of environmental values

Describe the terrestrial and riparian fauna occurring in the areas affected by the proposal, noting the broad distribution patterns in relation to vegetation, topography and substrate. The description of the fauna present or likely to be present in the study area should include:

- species diversity (that is, a species list) and abundance of animals of recognised significance
- any species that are poorly known but suspected of being rare or threatened
- habitat requirements and sensitivity to changes, including movement corridors and barriers to movement
- the existence of feral or introduced animals of economic or conservation significance
- existence (actual or likely) of any species and communities of conservation significance in the study area, including discussion of range, habitat, breeding, recruitment feeding and movement requirements, and current level of protection (e.g. any requirements of protected area management plans or threatened species recovery plans)
- habitat requirements and sensitivity to changes, including movement corridors and barriers to movement
- an estimate of commonness or rarity for the listed or otherwise significant species
- use of the area by migratory fauna
- use of breeding places
- records in a form compatible with the Wildlife Online database.

Present fauna data in columns titled: Number, collector, Start date, End date, Location, Latitude, Longitude, Zone, Easting, Northing, Datum, Precision (m), Altitude (m), Vegetation code, Slope, Aspect, Scientific name, Common name, Count, count type, Age code, Sex code, Breeding code, Identification method, Collector code, Specimen registration, Specimen location, Collection notes, vetting code.

The Department of Environment and Heritage Protection (DEHP) has supporting documents available which explain the above fields and codes.

Identify any species listed by the NC Act occurring in the project area. Identify any species listed by the 'Back on Track' species prioritisation methodology (refer to: **www.ehp.qld.gov.au/wildlife/prioritisation-framework/index.html**).

Indicate how well any affected communities are represented and protected elsewhere in the bio-region where the project occurs. Specify the methodology used for fauna surveys. Provide relevant site data to DEHP in a format compatible with the Wildlife Online database for listed threatened species (refer to: **www.ehp.qld.gov.au/wildlife/wildlife-online/index.html**).

Potential impacts and mitigation measures

Outline strategies to avoid, minimise, mitigate and offset potential impacts of the project on terrestrial fauna values (on or off the project sites). This should include an assessment of the needs for buffer zones and the retention, rehabilitation or planting of movement corridors.

Consider potential impacts on terrestrial fauna, relevant wildlife habitat and other fauna conservation values, including:

- impacts due to loss of range/habitat, food supply, nest sites, breeding/recruiting potential or movement corridors or as a result of hydrological change
- impacts on native species, particularly species of conservation significance
- cumulative effects of direct and indirect impacts
- threatening processes leading to progressive loss
- a description of any foreseen impacts that increase the susceptibility of ecological communities and species to the impacts of climate change.

Address any actions of the project or likely impacts that require an authority under the NC Act. Provide the following information on mitigation strategies:

- measures to avoid and mitigate the identified impacts. Any provision for buffer zones and movement corridors, nature reserves or special provisions for migratory animals should be discussed and coordinated with the outputs of the flora assessment
- details of the methodologies that would be used to avoid injuring livestock and native fauna as a result of the project's construction and operational works, and if accidental injuries should occur, the methodologies to assess and handle injuries
- strategies for complying with the objectives and management practices of relevant recovery plans
- measures to rehabilitate disturbed areas, which incorporate provision of nest hollows and ground litter, where appropriate.

Outline how these measures will be implemented in the EMP for the project.

Feral animal and pest management

Address feral animal and non-flora pest management strategies and practices. The study should develop strategies to ensure that the project does not contribute to increased encroachment any feral animal species and to mitigate against the risk of introducing other pest animal species not yet present in the project area. Refer to the local government authority's pest management plan and any strategies and plans recommended for the project area by Biosecurity Queensland. Discuss the strategies in accordance with the provisions of the Land Protection (Pest and Stock Route Management) Act in the main body of the EIS and in the pest management plan within the EMP for the project.

5.3.4 Aquatic biology and ecology

Description of environmental values

Describe the aquatic flora and fauna present, or likely to be present, in the areas affected by the project. Include:

- fish species, mammals, reptiles, amphibians, crustaceans and aquatic invertebrates occurring in the waterways within the affected area and any associated wetlands (as defined under section 5 of the Fisheries Act)
- any rare or threatened aquatic species
- exotic and pest aquatic organisms

- a description of the habitat requirements and the sensitivity of aquatic species to changes in flow regime, water levels and water quality in the project areas
- aquatic plants, including native, exotic and weed species
- aquatic substrate
- habitat downstream of the project or potentially impacted due to currents in associated lacustrine (living in or growing in lakes) environments
- stream type, including extent of any tidal influence and common levels such as highest astronomical tide and mean high water springs
- habitat upstream of the project and the value of these habitats to fish (as defined under section 5 of the *Fisheries Act 1994*
- any other state significant biodiversity values identified in the Queensland Biodiversity Offset Policy (version 1) (Department of Environment and Resource Management 2011c) that are not described elsewhere.

Describe any wetlands listed by DEHP as areas of national, state or regional significance and detail their values and importance for aquatic flora and fauna species.

Potential impacts and mitigation measures

Discuss the potential impacts of the project on the aquatic species and ecosystems and describe proposed mitigation actions, including:

- proposed location, type and design of waterway barrier works (temporary and permanent) that would impact on aquatic resources, particularly fish movement, with an appropriately scaled map
- proposed stream diversions, causeway construction and crossing facilities, stockpiled material and other impediments that would restrict free movement of aquatic fauna
- alternatives to waterway crossings where possible
- measures to avoid fish spawning periods, such as seasonal construction of waterway crossings and measures to facilitate fish movements through water crossings
- offsets proposed for unavoidable, permanent loss of fisheries habitat
- methods to minimise the potential for introducing or spreading weed species or plant disease
- monitoring aquatic biology health, productivity and biodiversity in areas subject to direct discharge.

Outline strategies to avoid, minimise, mitigate and offset potential impacts of the project on aquatic flora and fauna values (on or downstream of the project sites). This should include an assessment of the needs for buffer zones and the retention, rehabilitation or planting of movement corridors.

Outline how these measures will be implemented in the overall EMP for the project.

Address any actions of the project or likely impacts that require an authority under the relevant legislation, including the NC Act and/or the Fisheries Act.

5.4 Water resources

5.4.1 Description of environmental values

Describe the quality and quantity of water resources in the vicinity of the project area, including:

- existing surface and groundwater in terms of physical, chemical and biological characteristics
- existing surface drainage patterns, flows, history of flooding including extent, levels and frequency and present water uses
- baseline details on water assets, including environments supported by those assets a site water balance for each asset, complemented by a regional water balance.

Investigate the relationship between groundwater and surface water to assess the nature of any interaction between the two resources and any implications of the proposed mine that would affect the interaction.

Provide an assessment of how the proposed project will change both the site and regional water balances. The water balance analysis could include (but not necessarily be limited to) the following information:

- usage of the surface water and identified aquifer(s)
- an assessment of regional water assets
- critical dependencies of the identified aquifer(s) and extent of hydrological interconnectivity
- an understanding of the structural and dynamic ground and surface water systems (including recharge and discharge)
- an assessment of the quality of information and data for the identified systems

Include consideration of the Murray Darling basin.

With regard to the quality and quantity of water resources in the vicinity of the project area that may be affected by the project, describe:

- existing surface and groundwater in terms of physical, chemical and biological characteristics. Parameters should include a broad range of water quality indicators including, but not necessarily limited to:
  - electrical conductivity
  - major cations and anions
  - dissolved metals
  - minor ions (such as ammonia, nitrite, nitrate, fluoride)
  - hydrocarbons
  - any other potential toxic or harmful substances
  - turbidity
  - suspended sediments
  - pH
- existing surface drainage patterns, flows, including overland runoff, history of flooding including extent, levels and frequency and present water uses.

Describe the environmental values of the surface waterways and groundwater of the affected area in terms of:

- Environmental Protection (Water) Policy 2009 (EPP (Water))
- *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (Australian and New Zealand Environment and Conservation Council & Agriculture and Resource Management Council of Australia and New Zealand 2000)
- *Queensland Water Quality Guidelines 2009* (Department of Environment and Resource Management 2009b)
- physical integrity, fluvial processes and morphology, including riparian zone vegetation and form, if relevant
- any impoundments (e.g. dams, levees, weirs)
- hydrology of waterways and groundwater
- sustainability, including both quality and quantity
- dependent ecosystems
- existing and other potential surface and groundwater users
- water resource plans, regulations; and associated Moratorium Notices relevant to the affected catchments, including the *Water Act 2000* Amending Moratorium Notice for the Condamine Catchment Underground Water Area 14, July 2012 and the Water Resource (Condamine and Balonne) Plan 2004 Moratorium Notice, 12 December 2008—overland flow

All sampling should be performed in accordance with the *Monitoring and Sampling Manual 2009* (Department of Environment and Resource Management 2009a) or the most current edition. The description of water quality should include medians, ranges and percentiles appropriate for comparison with appropriate trigger levels and guidelines for the protection of aquatic ecosystems and downstream users.

Groundwater

If the project is likely to use or affect local sources of groundwater, describe groundwater resources in the area in terms of:

- geology and stratigraphy
- aquifer type—such as confined, unconfined
- relationship to the Great Artesian Basin
- depth to and thickness of the aquifers
- depth to water level and seasonal changes in levels
- groundwater flow directions (defined from water level contours)
- interaction with surface water, including an estimate of the nature of any connectivity with surface water and inter-aquifer connectivity
- possible sources of recharge
- potential exposure to pollution
- current access to groundwater resources in the form of bores, springs and ponds (including quantitative yield of water and locations of access)
- a schematic water balance for each aquifer potentially affected by the project

- current estimated level of take from each aquifer and analysis of the current aquifer water level conditions (that is, under stress, or not under stress).

The groundwater assessment should also be consistent with relevant guidelines for the assessment of acid sulfate soils, including spatial and temporal monitoring, to accurately characterise baseline groundwater characteristics.

Review the quality, quantity and significance of groundwater in the project area, together with groundwater use in neighbouring areas. Refer to relevant legislation or water resource plans for the region. The review should also provide an assessment of the potential take of water from the aquifer and how current users and the aquifer itself and any connected aquifers will be affected by the take of water.

The review should include a survey of existing groundwater supply facilities (bores, wells or excavations) to the extent of any environmental harm. The information to be gathered for analysis is to include:

- location
- pumping parameters
- draw down and recharge at normal pumping rates
- seasonal variations (if records exist) of groundwater levels
- the GPS location and depths of the potentially affected bores and the aquifers accessed by the bores.

Develop a network of observation points that would satisfactorily monitor groundwater resources both before and after commencement of operations. Describe the role and purpose of the monitoring program and provide justification for existing and proposed monitoring sites.

The data obtained from the groundwater survey should be sufficient to enable specification of the major ionic species present in the groundwater, pH, electrical conductivity and total dissolved solids.

5.4.2 Potential impacts and mitigation measures

Assess the project's potential impacts on water resource environmental values identified in the previous section. Define and describe the objectives and practical measures for protecting or enhancing water resource environmental values, to describe how nominated quantitative standards and indicators may be achieved, and how the achievement of objectives will be monitored, audited and managed. Include the following:

- potential impacts on the flow and the quality of surface water, overland flow water and groundwater from all phases of the project, with reference to their suitability for the current and potential downstream uses and discharge licences and any consequential impacts of changes to water flow or groundwater recharge or discharge on ecosystems
- an assessment of all likely impacts on groundwater depletion or recharge regimes
- potential impacts of surface water flow on existing infrastructure, with reference to the EPP (Water) and the Water Act

- chemical and physical properties of any wastewater (including stormwater at the point of discharge into natural surface waters), and the toxicity of effluent to flora and fauna
- potential impacts on other downstream receiving environments, if it is proposed to discharge water to a riverine system
- the results of a risk assessment for uncontrolled releases to water due to system or catastrophic failure, implications of such emissions for human health and natural ecosystems, and strategies to prevent, minimise and contain impacts
- an assessment of the potential to contaminate surface and groundwater resources and measures to prevent, mitigate and remediate such contamination, including consideration of addressing impacts on existing groundwater users
- details of a monitoring program for the groundwater resources, using existing deep bores, to establish the base line yield and water quality of the supply from those bores
- include potential impacts on the waterways and alluvial aquifers of Doctors, Spring and Lagoon Creek catchments from pit dewatering, depletion of alluvial aquifers, and any impacts on drainage regimes post-mining associated with mine voids adjacent to Lagoon Creek.

Strategies should be adequately detailed to demonstrate best practice management and that environmental values of receiving waters will be maintained to nominated water quality objectives. Describe the monitoring programs that will assess the effectiveness of management strategies for protecting water resources during the construction, operation and decommissioning of the project. Outline how these strategies are incorporated into appropriate sections of the EMP.

Surface water and water courses

The EIS should discuss the need for operational works approval for the construction or raising of waterway barrier works under SPA for dams and/or creek diversions. If there are exemptions for the need to obtain such approvals, state the reasons.

Assess the hydrological impacts of the proposal on surface water and water courses, particularly with regard to scouring and erosion, and changes to flooding levels and frequency of flooding, both upstream and downstream of the project. If flooding levels will be affected, modelling of afflux should be provided and illustrated with maps. Ensure separate consideration is applied to the proposed rail spur.

Discuss the need or otherwise for licensing of any dams (including referable dams) or creek diversions, under the Water Act. Water allocation and water sources, including impacts on existing water entitlements, including water harvesting, should be established in consultation with DNRM. The Department of Energy and Water Supply (DEWS) should be consulted for matters associated with referable dams.

Wastewater treatment

Reference should be made to the properties of the land disturbed and processing liquid wastes, the technology for settling suspended clays from contaminated water, and the techniques to be employed to ensure that contaminated water is contained and successfully treated on the site.

In relation to water supply and usage, and wastewater disposal, discuss anticipated flows of water to and from the proposal area. Where dams, weirs or ponds are proposed, investigate the effects of predictable climatic extremes (storm events, floods and droughts) on:

- the capacity of the water storages (dams, weirs, ponds) and the ability of these storages to retain contaminants
- the structural integrity of the containing walls
- relevant operating regime
- the quality of water contained
- flows and quality of water discharged.

The design of all water storage facilities should follow the technical guidelines on site water management.

Discuss the mitigation options and the effectiveness of mitigation measures, with particular reference to sediment, acidity, salinity and other emissions of a hazardous or toxic nature to human health, flora or fauna.

Groundwater

Include an assessment of the potential environmental impact caused by the project (and its associated project components) to local groundwater resources, including the potential for groundwater-induced salinity.

Describe the response of the groundwater resource to the progression and finally cessation of the proposal.

Assess the impact of the project on the local groundwater regime caused by the altered porosity and permeability of any land disturbance.

Assess and describe any potential for the project to impact on groundwater-dependent ecosystems; describe avoidance and mitigation measures.

Independent Expert Scientific Committee

Queensland is a signatory to the Council of Australian Governments (COAG) National Partnership Agreement on Coal Seam Gas and Large Coal Mining Development (NPA). The NPA requires CSG or large coal mining development proposals undergoing environmental impact assessment that are likely to have a significant impact on water resources to be referred to an Independent Expert Scientific Committee (IESC).

Accordingly, the Coordinator-General is likely to refer this project to the IESC. Therefore, in addition to the information described in Section 5.4, the proponent must provide a stand-alone document to the Coordinator-General that includes details of the project's potential impact on water resources. The document must be provided when the EIS is lodged.

The document must be prepared in accordance with the *Independent Scientific Committee Information Guidelines for Proposals Relating to the Development of Coal Seal Gas and Large Coal Mines where there is a Significant Impact on Water Resources*—available from **www.environment.gov.au/coal-seam-gas-mining/project-advice/pubs/iesc-information-guidelines.pdf**

All fields in the 'request for advice checklist' must be completed. The current template document being used by the Office of Water Science in SEWPaC for the 'request for advice' to the IESC will be provided to the proponent by the Office of Coordinator-General prior to the finalisation of EIS documents.

5.5 Air quality

5.5.1 Description of environmental values

Describe the existing air quality that may be affected by the project in the context of environmental values as defined by the EP Act and Environmental Protection (Air) Policy 2008 (EPP (Air)).

Discuss the existing local and regional air shed environment, including:

- background levels and sources of particulates, gaseous and odorous compounds and any major constituent
- pollutants (including greenhouse gases)
- baseline monitoring results, sensitive receptors.

Data on local meteorology and ambient levels of pollutants should be gathered to provide a baseline for later studies or for the modelling of air quality environmental harms.

Parameters should include air temperature, wind speed and direction, atmospheric stability, mixing depth and other parameters necessary for input to the models.

5.5.2 Potential impacts and mitigation measures

Consider the following air quality issues and their mitigation:

- Accurately describe the activities carried out on the site; include a process flow diagram clearly showing all unit operations to be carried out on the premises; and provide a detailed discussion of all unit operations.
- Describe all pollution control equipment and pollution control techniques employed on the premises and the features of the proposal designed to suppress or minimise emissions, including dusts.
- Describe the back-up measures that will act in the event of primary measures failing, to minimise the likelihood of upsets and adverse air impacts.
- Provide an air emission inventory of the project area for all potential points, area and volume sources including fugitive emissions of dusts; provide a complete list of emissions to the atmosphere including SOx, NOx, CO_2, particulates, PM_{10} and $PM_{2.5}$. The inventory is to include air emissions expected during the construction and operational activities of the project.
- Identify all expected emissions of the hazardous air pollutants and their emissions from known and fugitive sources.
- Provide separate consideration of management of emissions from blasting events.
- Estimate emission rates, based on actual measurements of samples taken from similar facilities—either full-scale facilities operating elsewhere, or experimental or demonstration-scale facilities. Where this is not possible, use published emission factors and/or data supplied by manufacturers of process and control equipment.

- Provide an impact assessment with relevant inputs of emissions and local meteorology to an air dispersion model to estimate the likely impacts (both direct and indirect) on the surrounding environment. The model inputs should be as detailed as possible, reflecting any variation of emissions with time and including at least a full year of representative hourly meteorological data. Estimate maximum ground level concentration and monthly average dust deposition values at the nearest sensitive receptor(s), including on-site offices and worker accommodation camps. Include modelling of dust deposition rates and air pollutant concentrations on surfaces that lead to water tanks and compare predicted pollutants concentrations in water tanks to appropriate guidelines, e.g. *Australian Drinking Water Guidelines* (Commonwealth of Australia 2011)
- Present the results of the dispersion modelling as concentration contour plots and concentrations at the discrete sensitive receptors. Ensure the locations of homesteads within lots are indicated. The predicted ground level concentration should be made for both normal and expected maximum emission conditions and the worst case meteorological conditions should be identified and modelled where necessary. Ensure modelling includes and labels townships and areas including Muldu, Acland, Jondaryan and Oakey.
- Describe the background ambient air concentration from the existing sources in the air shed and evaluate the cumulative impact on the receiving environment.
- Address both acute and cumulative impacts by considering the project in conjunction with existing and known future emission sources within the region.
- Provide an averaging period for ground level concentrations of pollutants that are modelled. This should be consistent with the relevant averaging periods for air quality indicators and goals in the EPP (Air) and the National Environment Protection (Ambient Air Quality) Measure 2003. For example, the modelling of PM_{10} must be conducted for 24-hour averaging periods and annual averaging periods.
- Identify the worst-case meteorological conditions based on the modelled ground level predictions and, using this information, develop dust mitigation measures for the mining activities. Describe the dust management plan that will be employed to mitigate adverse air impacts under the worst meteorological conditions.
- Discuss the limitations and accuracy of the applied atmospheric dispersion models. The air quality modelling results should be discussed in light of the limitations and accuracy of the applied models.
- Where there is no single atmospheric dispersion model that can handle the different atmospheric dispersion characteristics exhibited in the project area (e.g. sea breezes, strong convection, terrain features, temperature inversions and pollutant re-circulation), a combination of acceptable models will need to be applied.
- ‘Worst-case’ emissions that may occur during operation. If these emissions are significantly higher than those for normal operations, it will be necessary to separately evaluate the worst-case impact to determine whether the planned buffer distance between the facility and neighbouring sensitive receptors will be adequate.
- Ground-level predictions should be made at any site that includes the environmental values identified by the EPP (Air), including any sites that could be sensitive to the effects of predicted emissions.

- Dust generation from construction activities especially in areas where construction activities are adjacent to existing road networks or are in close proximity to sensitive receivers.
- Climatic patterns that could affect dust generation and movement.
- Vehicle emissions and dust generation along major haulage routes both internal and external to the project site.
- Assess human health risk associated with emissions from the facility of all hazardous or toxic pollutants.
- Impacts on terrestrial flora and fauna.

For the rail component, consider the following air quality issues:

- impacts of dust generation from construction activities, especially in areas where the corridor follows existing road networks or passes in close proximity to residences
- predicted changes to existing air quality from vehicle emissions and dust
- generation along haulage routes and storage locations of construction materials, including ballast
- potential for impacts on air quality from operating diesel powered locomotives in rail operations
- the potential for coal dust emissions to provide an environmental nuisance to any sensitive receptor along the proposed rail corridor.

Detail the mitigation measures together with proactive and predictive operational and maintenance strategies that could be used to prevent and mitigate impacts.

To ensure that all relevant coal rail transport-related dust mitigation measures are implemented to support the project, the proponent should consult with the Project Manager, Coal Loss Management Project, Aurizon QR Network Division to determine the requirements for new coal-loading facilities, loading controls and spray-on coal dust suppressant systems as a result of the implementation of the Aurizon coal dust management plan (CDMP). The proposed components of the CDMP, consistent with the Aurizon CDMP, are to be described, including proposed measures for a regular dust monitoring program along the West Moreton rail corridor.

Discuss potential air quality impacts from emissions, with reference to the National Environmental Protection (Ambient Air Quality) Measure 2003 and the EPP (Air). If an emission is not addressed in these legislative instruments, the emission should be discussed with reference to its risk to human health, including appropriate health-based guidelines/standards.

5.6 Greenhouse gas emissions

5.6.1 Description of environmental situation

Provide an inventory of projected annual emissions for each relevant greenhouse gas, with total emissions expressed in 'CO_2 equivalent' terms for the following categories:

- scope 1 emissions—means direct emissions of greenhouse gases from sources within the boundary of the facility and as a result of the facility's activities (including emission from vegetation clearing)

- scope 2 emissions—means emissions of greenhouse gases from the production of electricity, heat or steam that the facility will consume, but that are physically produced by another facility.

Briefly describe method(s) by which estimates were made.

Use the *National Greenhouse Accounts (NGA) Factors* (Commonwealth of Australia 2012b) as a reference source for emission estimates, supplemented by other sources where practicable and appropriate. As a requirement of the NGA factors, estimates should include the loss of carbon sink capacity of vegetation due to clearing and impoundment.

5.6.2 Potential impacts and mitigation measures

Discuss the potential for greenhouse gas abatement measures, including:

- the proposed measures (alternatives and preferred) to avoid and/or minimise direct greenhouse gas emissions
- how the preferred measures minimise emissions and achieve energy efficiency
- how the preferred measures for emission controls and energy consumption compare with practice in the relevant sector of industry with a view to achieving best practice environment management
- any opportunities to further offset greenhouse gas emissions through indirect means including sequestration and carbon trading
- the feasibility of utilising natural gas, either compressed natural gas (CNG) or liquefied natural gas (LNG) as a fuel alternative to diesel for mining equipment and on-site coal transport.

Include a specific module in the EMP to address greenhouse abatement including:

- commitments to the abatement of greenhouse gas emissions from the project with details of the intended objectives, measures and performance standards to avoid, minimise and control emissions
- commitments to energy management, including undertaking periodic energy audits with a view to progressively improving energy efficiency
- a process for regular review of new technologies to identify opportunities to reduce emissions and use energy efficiently, consistent with best practice environmental management
- any voluntary initiatives, such as projects undertaken as a component of the national Greenhouse Challenge Plus program, or research into reducing the lifecycle and embodied energy carbon intensity of the project's processes or products
- opportunities for offsetting greenhouse emissions, including, if appropriate, carbon sequestration and renewable energy uses
- commitments to monitor, audit and report on greenhouse emissions from all relevant activities and the success of offset measures.

5.6.3 Potential benefits

Discuss any potential benefits of the project in terms of its overall greenhouse gas footprint.

5.7 Noise and vibration

5.7.1 Description of environmental values

Describe the existing noise and vibration environment that may be affected by the project in the context of the environmental values defined by the Environmental Protection (Noise) Policy 2008 (EPP (Noise)). Refer to the following documents:

- *Noise Measurement Manual* (Environment Protection Agency 2000)
- *Guideline: Noise and vibration from blasting* (Environmental Protection Agency 2006)
- *Guideline: Planning for Noise Control* (Environmental Protection Agency 2004)
- *Australian Standard AS 2187.2-2006 Explosives – Storage and Use, Part 2 Use of Explosives* (Standards Australia 2006).

Identify sensitive noise receptors within or adjacent to all project component areas and identify on a map(s) at an appropriate scale. Ensure the location of homesteads within lots is indicated. Ensure maps and diagrams include and label townships and areas including Muldu, Acland, Jondaryan and Oakey.

Estimate typical background noise and vibration levels based on surveys at representative sites and include the data in the EIS. Background measurements should include daily variations over a week of measurement and seasonal variation giving the predicted minimum and maximum variation in relation to the measurement presented. Additionally, the measurement of background noise should be made away from other constant and intermittent significant noise sources such as existing mining operations, air conditioners and road traffic noise.

Discuss the potential sensitivity of such receptors and nominate performance indicators and standards for each affected receptor.

Approximate locations for construction and operational phase worker accommodation camps and site offices are to be included as sensitive receptors.

5.7.2 Potential impacts and mitigation measures

Describe the impacts of noise and vibration generated during the pre-construction, construction, operational and decommissioning phases of the project.

Noise and vibration impact analysis should include:

- the levels of noise and vibration generated, including noise contours, assessed against current typical background levels, using modelling (such as Environmental Noise Model or SoundPLAN) where appropriate
- impact of noise, including low frequency noise (noise with components below 200 Hz) and vibration at all potentially sensitive receivers (e.g. residences, social and public infrastructure, such as health, recreational, military and educational facilities, roads) compared with the performance indicators and standards nominated above
- impact on terrestrial, avian and aquatic fauna
- proposals to minimise or eliminate these effects, including details of any screening, lining, enclosing or bunding of facilities, or timing schedules for construction and

operations that would minimise environmental harm and environmental nuisance from noise and vibration

- the impact on human health at the sensitive receivers and how impacts will be appropriately mitigated to achieve a satisfactory internal noise level for the preservation of health and well-being identified within the Environmental Protection (Noise) Policy 2008. Provide management options at the sensitive receivers when noise attenuation at the source does not adequately reduce the emissions
- for the proposed construction and operation of railway infrastructure, assess the acoustic impacts of the rail with reference to the *Code of Practice – Railway Noise Management* (Queensland Rail 2007).
- real-time noise monitoring near any sensitive receptors that are likely to be impacted by noise emissions that exceed identified planning noise levels as determined in accordance with relevant guidelines, particularly *Planning for Noise Control* (Environmental Protection Agency 2004).
- details of higher management measures (limiting hours of operation of particular machinery or fleets), where exceedences are likely
- appropriate dispute resolution methods and procedures where it is likely that management methods may not resolve the exceedences/complaint.

Night-time surface works

Provide details of any night-time surface work that may be undertaken. Specifically include:

- the reasons why night-time work may be undertaken (e.g. to avoid peak traffic periods, or to undertake work in a rail corridor)
- the likely duration of work (if known)
- the proposed hours of the work
- the nature of the work to be undertaken
- the likely impact on residents and the associated mitigation measures to be undertaken by the proponent
- the methods that will be used to communicate with affected residents.

5.8 Waste

5.8.1 Waste generation

Provide an inventory of all wastes to be generated by the project during the construction, operational and decommissioning phases of the project. In addition to the expected total volumes of each waste produced, include an inventory of the following per-unit volume of product produced:

- the tonnage of raw materials processed
- the amount of resulting process wastes
- the volume and tonnage of any re-usable by-products.

Provide schematic diagrams of processes to be used at each distinct stage of the project, indicating each waste stream and its intended fate. This applies to all waste outputs—solid, liquid and gaseous—including fugitive emissions from coal seams, and recycling efforts such as stockpiling and reusing topsoil.

The schematic diagrams, or an associated table, will cross-reference the relevant sections of the EIS where the potential impacts and mitigation measures associated with each waste stream are described. Describe the physical and chemical characteristics and the variability of composition and generation rates of each waste material.

In each subsection on waste management, assess how the proposed methods for waste management at each stage of the project achieve the highest possible level on the waste management hierarchy with regard to the principles in the Environmental Protection (Waste Management) Policy 2000.

Describe how the project would achieve natural resource use efficiency (such as minimum use of energy and water, and minimum footprint on used land), integrated processing design, co-generation of power and by-product re-use as shown in a material/energy flow analysis. This information is required to enable the resource management agencies and other stakeholders to assess the efficiency of resource use, and allocation issues.

5.8.2 Waste management

Detail the proposed management of solid and liquid waste. Assess the potential impact of all waste generated during construction and operation, with regard for best practice waste management strategies, the Environmental Protection (Waste Management) Policy 2000 and the Environmental Protection (Waste Management) Regulation 2000 (Qld).

The potential impact of climatic factors, particularly storm events and river flooding, on the capacity of waste containment systems (such as bunding, stormwater management and tailing dams) needs to be considered in terms of the design of waste containment systems and the potential impacts on waterways and groundwater.

Where hazardous materials are to be stored in bulk, the proponent must ensure that storage of hazardous materials provide appropriate levels of immunity from flood hazards. For guidance, refer to:

- Appendix 5A of State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide (Department of Local Government and Planning & Department of Emergency Services 2003a)
- Solution 4.1 and 4.2 of *State Planning Policy Guideline: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide* (Department of Local Government and Planning & Department of Emergency Services 2003b).

Provide details of each type of waste in terms of:

- the options available for avoidance and minimisation
- operational handling and fate of all waste including storage
- on-site treatment methods proposed for any waste
- methods of disposal (including the need to transport waste off site for disposal) proposed to be used for any trade, liquid or solid waste
- the potential level of impact on environmental values
- measures to ensure stability of the waste storage areas and impoundments

- methods to prevent seepage and contamination of groundwater from stockpiles, storage areas and impoundments
- measures to minimise attraction of vermin, insects and pests
- options available for using recycled materials
- market demand for recyclable waste (where appropriate)
- decommissioning of the construction site.

Provide details of waste management strategies (including reduction, re-use, recycling, storage, transport and disposal of waste). Demonstrate that waste minimisation and cleaner production techniques and designs will be implemented to prevent or minimise environmental impacts when selecting processes, equipment and facilities.

Provide information on the variability, composition and generation rates of all waste produced at the site and processing plant.

Provide details of cleaner production waste management planning, especially how these concepts will be applied to prevent or minimise environmental impacts at each stage of the proposal. Discuss measures to improve natural resource use efficiency (e.g. energy and water), integrated processing design, any co-generation of power and by-product re-use as shown in a material/energy flow analysis.

This information is required to enable the resource management agencies and other stakeholders to assess the efficiency of resource use, and allocation issues.

The EIS should consider the following effects:

- groundwater from excavations
- rainfall directly on to disturbed surface areas
- run-off from roads, plant and industrial areas, chemical storage areas
- drainage (i.e. run-off plus any seepage or leakage)
- seepage from other waste storages
- water usage for:
  - process use
  - dust suppression
  - domestic purposes
- evaporation
- domestic sewage treatment—disposal of liquid effluent and sludge
- water supply treatment plant—disposal of wastes.

Air emissions

Provide information on air emissions, including particulates, fumes and odours, during the construction and operation stages of the project. Particulate emissions include those that would be produced by any industrial process, or disturbed by wind action on stockpiles and conveyors, or by transportation equipment (e.g. trucks, either by entrainment from the load or by passage on unsealed roads). The methods to be employed to mitigate impacts from air emissions should be described in Subsection 5.5 (Air quality).

Excavated waste

Describe and show the location, design and methods of constructing dumps for waste rock and subsoil. Show the location of the dumps on a map relative to topography and other natural features of the area. Include the following:

- an estimation of the tonnage and volume of waste rock and subsoil to be excavated during the various stages of operation
- a description of the chemical and physical properties of the waste rock and subsoil, and assessment of the properties that affect their erosion and leaching potential
- a characterisation of the waste in accordance with:
  - the *Assessment and Management of Acid Drainage* guideline of the *Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland* series (Department of Minerals and Energy 1995a)
  - *Managing Acid and Metalliferous Drainage: Leading Practice Sustainable Development Program for the Mining Industry* (Commonwealth of Australia 2007)

  and any other applicable best practice guidelines.
- The characterisation of waste rock and subsoil will include, but not necessarily be limited to:
  - sulfides
  - metals
  - pH
  - conductivity and chloride of slurry samples
  - the Net Acid Producing Potential and Net Acid Generation potential of the mined waste.
- Pay particular attention to materials such as waste rock immediately above or below coal seams, where potentially acid forming material may be concentrated. The sampling effort must be sufficient to provide a statistically valid characterisation of each of the various types of waste rock, taking account of the geological variability and complexity within and between rock types.
- A discussion of the potential for acid, neutral, alkaline or saline drainage from waste dumps:
  - characterise the potential quality of leachate from the mined waste under field conditions, including contaminants such as sulfate, pH, chloride, iron, major cations and anions, and any chemical species in sufficient quantity that is likely to cause environmental harm including nuisance
  - cross-reference to sections elsewhere in the EIS that assess in detail the potential impacts of any direct or indirect discharge of leachate on downstream sensitive environments or users of receiving waters.
- An analysis of the estimated amounts and characteristics of excavated waste to develop appropriate measures for dealing with that waste, including designs for waste dumps, and alternatives for excavated waste disposal such as in-filling of voids, off-site options and treatment of contaminated soil. Assess the likely performance of the proposed waste disposal options with particular regard to:
  - segregating and encapsulating sub-economic but mineralised rock and/or potentially acid-forming rock managing surface drainage and sub-surface

leachate, both during operations at the mine and after mining ceases (note: avoid placing dumps across drainage lines that would pond water behind the dump and cause infiltration)

  - slope profiles and the stability and erosion potential of waste dumps
  - the intended land use after mining ceases, and the land management and maintenance requirements for the subsequent landholder.

- Consideration of the physical, geo-mechanical and chemical properties of waste rock in both fresh and weathered forms when determining their suitability for constructing stable slopes and developing measures to avoid acid generation from waste rock dumps and backfilling operations.
- Illustration of the location and cross-sections of the proposed dumps on maps, drawings and diagrams relative to topography and other natural features of the area.

Tailings

Describe the methods and materials that would be used to produce tailings waste (tailings should be understood to include any fine reject material) including the following:

- Whether the methods to be used to produce and treat tailings would be novel or established. For novel methods, describe the testing undertaken to determine if the method would be suitable for the proposed use. For established methods, provide examples of where the method has been, or is being used and assess the equivalence of those examples to the proposed use.
- Estimate the annual production of tailings waste at the various stages of the project.

Describe how the methods used to produce and treat tailings would be in accordance with the waste management hierarchy and the tailings management principles in the *Tailings Management* guideline of the *Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland* series (Department of Minerals and Energy 1995c).

- Describe in detail the likely physical and chemical characteristics of the tailings waste and the likely chemical characteristics of wastewater from the pressing plant, the decant water from any tailings storage facility (TSF), and the pore water and leachate from any dump containing tailings.
- Describe and illustrate the proposed locations of any pits, dams, bunds or dumps that would be used for disposing of tailings.
- Describe and illustrate the proposed design of any TSF, including any cells for non-flowable tailings within waste rock dumps. Note: a shear strength of greater than 1000 Pascals would generally be required of pastes suitable for dry tailings stacking, while pastes with lower shear strength must be contained in a regulated dam. However, the slumping and plastic properties of any tailings considered for disposal by dry stacking will be derived from tests on representative samples and reported in the EIS.
- Describe the source, and assess the suitability, of the materials to be used to construct containment systems. Describe any proposed staging of the construction for any TSF or disposal cells and demonstrate that the design has been produced by a suitably qualified and experienced engineer.

- Conduct and report on a risk assessment and describe how it has been used to derive the design storage allowance for any regulated dams. Assess whether the proposed design and methods of disposal would minimise the potential hazards and risks, particularly in relation to the potential impacts of failure caused by mass release from structural failure or contaminant release from overflow. Also, assess whether the proposed design maximises site efficiency, such as by minimising the footprint.
- If some form of co-disposal of fine and coarse rejects is proposed, describe the range of proportions, size fractions and mixing method that would produce a stable deposit.
- Describe the proposed discharge locations and conditions for any TSF. Describe the flow path any discharge would take, illustrated on contour maps, and provide an overview of the potentially affected receiving environment with particular regard to downstream sensitive ecosystems or users of receiving waters.
- Discharge should be taken to mean any planned or unplanned overflow or release, any leachate, or any potentially contaminated run-off leaving a TSF.
- Assess in detail the potential impacts of any discharge on downstream sensitive environments or users of receiving waters in the appropriate sections of the EIS and cross-reference to them in this section.
- Describe the proposed monitoring network and regime that would be used to detect any leak from the TSF.
- Describe the proposed measures to be used to decommission any TSF or dump used for the disposal of tailings. Assess any legacy issues for the subsequent landholder.
- Provide a detailed description of tailings disposal facilities stability, capping and rehabilitation, including hydraulic performance of the tailings disposal facilities during operation and post-decommissioning.

Solid waste disposal

Describe the quantity and quality of solid wastes (other than waste rock, subsoil and tailings addressed in other sections) and the proposed methods of their disposal. Show the proposed location on a map of an appropriate scale. Describe site suitability, dimensions and volume of any landfill, including its method of construction.

Liquid waste

Describe the origin, quality and quantity of wastewater and any immiscible liquid (two substances not capable of combining) waste originating from the project other than that addressed in other sections. Pay particular attention to the capacity of wastes to generate acid, and saline or sodic (containing sodium) wastewater. A water balance for the proposal and processing plant is required to account for the estimated usage of water.

5.9 Transport

Present the transport assessment in separate reports for each project-affected mode (road, rail, air and sea) as appropriate for each phase of the project. These assessment reports should provide sufficient information to allow an independent assessment of

how existing transport infrastructure will be affected by project transport at the local and regional level.

5.9.1 Existing infrastructure

Describe (using maps and tables) the extent, condition and capacity of the existing transport infrastructure on which the project will depend. Indicate on maps the local and state controlled roads.

5.9.2 Transport activities and routes

Freight

Provide a summary of all the freight tasks (inputs and outputs, including wastes) associated with all phases of the project. The summary will be in tabular form (or other suitable format) and include for each freight task:

- tonnage/volume
- proposed transport methodologies (modes, vehicle types, payloads)
- estimates of the number of discrete trips required for each task
- origins of inputs and destinations of outputs (including wastes)

Cross-reference to the relevant section in the EIS where the task if fully described and/or assessed.

Traffic generation

For each mode of transport and each phase of the project, provide traffic generation information on:

- existing background traffic including volumes, composition, peak traffic and peak times along the transport routes to and from the project
- background traffic growth for the transport routes for all stages of the project life
- the construction of any project-related plant and utilities within or impacting on the jurisdiction of any transport authority
- the stages, timing and duration of each stage/phase and how these impact on the transport-related infrastructure
- comparison of the traffic situation and road conditions with and without the project
- expected volumes of project inputs and outputs of transported raw materials, plant, construction materials and operational equipment, waste, hazardous goods and finished products for all phases of the project
- for rail transportation, the proposed length of trains, number of carriages and capacity
- the movements of project inputs and outputs through the local and regional transport network (including number and type of vehicles, mode, volume, composition, trip timing and routes). This includes descriptions of all ongoing transport tasks associated with the existing mining operation that will continue post-expansion
- traffic generated by workforce personnel including visitors (volume, composition, timing and routes)

- likely heavy, oversize and indivisible loads (volume, composition, timing and routes) highlighting any vulnerable bridges and structures along proposed routes.

Describe:

- access locations (existing and proposed) to state-controlled roads
- locations of proposed road-crossing points of existing and proposed rail infrastructure associated with the project
- road and rail movements that would occur outside of normal working hours

For ease of understanding both background and project-generated traffic, provide traffic data in a format similar to ARMIS traffic data that can be provided by the Department of Transport and Main Roads (DTMR). This includes the Annual Average Daily Traffic (AADT) total which is to be provided separately for each direction of traffic flow and gives the percentages of vehicle by class in accordance with the Austroads Vehicle Classes (e.g. light vehicle, heavy vehicle, short vehicle, truck or bus, articulated vehicle and road train and so on).

5.9.3 Potential impacts and mitigation measures

Impact assessment reports should include details of the adopted assessment methodology (for impacts on roads: the road impact assessment report in accordance with the *Guidelines for Assessment of Road Impacts of Development*) (Department of Main Roads 2006). Assessment of traffic impacts is to include the transport arrangements for permanent and temporary workforce associated with all phases of the project.

Assess project impacts on:

- local and state-controlled road networks, including key road and road/rail intersections, at project construction, operation and decommissioning stages. Any impact to level crossings should be assessed using the Australian Level Crossing Assessment Model (ALCAM)
- capacity, safety, local amenity, efficiency and condition of transport operations, services and assets from either transport or project operations, including an assessment of pavement life of the road network as a result of the project. Refer, where relevant, to the *Queensland Road Safety Action Plan 2010–2011* (Department of Transport and Main Roads 2010)
- possible interruptions to transport operations, including discussion on any delays at crossings, and how these will be managed to minimise impacts
- access to the road network and private residences by the public
- the natural environment within the jurisdiction of an affected transport authority (e.g. road and rail corridors)
- the nature and likelihood of product-spill to both land and marine environments during transport, if relevant
- confirm how product transported by truck will be secured to avoid spills, including individual pieces of product escaping, and any associated damage to vehicles in the vicinity
- driver fatigue for workers travelling to and from regional centres and key destinations. Use available research from government agencies and organisations

to assess driver fatigue and crash statistics and available guidelines on any rest area location and design

- any existing or proposed strategies for public passenger transport and active transport and address, where relevant, requirements of Part 2A of the Transport Planning and Coordination Act
- access to transport for people with a disability
- transport and handling of hazardous substances and dangerous goods
- the cumulative impact of this project adding to the impact of other known proposed or current major projects impacting on the road network
- road impacts, assessing the project's impacts on, and mitigation measures for:
  - the safety, efficiency and condition of road operations and assets (from either transport or project operations)
  - overland water flows and their interaction with the road network, including the rail spur's impact on existing transport infrastructure and road use due to any changes to existing hydrological conditions
  - any existing or proposed pedestrian/cycle networks
  - any existing or proposed school bus routes and pick-up and drop-off times
  - any existing public transport networks (assets and services)
- rail impact considerations, assessing the project's impacts on, and mitigation measures for:
  - the amenity and health of adjacent land users as a result of dust, noise and vibration
  - the location and nature of proposed rail-road crossings and the requirement for safety measures.

For local and state roads, describe methods to ensure safety at rail crossings, on roads where conflict with traffic and haulage vehicles is likely, including school bus routes and any necessary intersection upgrades.

Include results of consultation with landholders who would be impacted by project works such as road realignments, installation of crossings, or delay/interruption to road access, and how landholder concerns had been taken into account in the development of mitigation measures.

5.9.4 Infrastructure alterations

Detail:

- any proposed alterations or new transport-related infrastructure and services required by the project (as distinct from impact mitigation works)
- construction of any project-related plant and utilities, within or impacting on the jurisdiction of any transport authority.

5.9.5 Transport impact management strategies

Discuss and recommend how identified impacts will be mitigated so as to maintain safety, efficiency and condition of each mode. These mitigation strategies are to be prepared in close consultation with relevant transport authorities (including Queensland Rail, DTMR and local government), consider those authorities' works program and

forward planning, and be in accordance with the relevant transport authorities' methodologies and design manuals.

Findings of studies and transport infrastructure impact assessments should be an input into preparing a transport management plan.

Road/rail management planning

Outline:

- procedures for assessing and agreeing on the scope of required mitigation works with road/rail corridor managers (e.g. maintenance or upgrades), including any associated works, such as sourcing water and gravel
- strategies to minimise the effects of project transport on stock routes and existing and future public road or rail corridors
- steps to be taken to prevent access from public roads/rail corridors to the project sites
- strategies to maintain safe access to public road/rail reserves to allow road/rail/pipeline maintenance activities
- process for decommissioning any temporary access to road/rail reserves, e.g. stockpile sites.

Findings of studies and transport infrastructure impact assessments should be an input into preparing a draft road-use management plan. Conditions of approval for transport management impacts should also be detailed in the EMP.

5.10 Indigenous cultural heritage

Unless an exemption applies under section 86 of the *Aboriginal Cultural Heritage Act 2003*, a Cultural Heritage Management Plan (CHMP) must be prepared in accordance with the requirements of Part 7 of that Act. The gazetted Cultural Heritage Management Plan Guidelines may assist in the development of the CHMP. The EIS project manager must be made aware of the progress of the CHMP approval process and of any related issues that should be addressed in the Coordinator-General's evaluation report.

5.11 Non-Indigenous cultural heritage

5.11.1 Description of existing non-Indigenous cultural heritage values

Include a cultural heritage study/survey that describes non-Indigenous cultural heritage sites and places, and their values.

Describe the significance of artefacts, items or places of conservation or non-Indigenous cultural heritage value likely to be affected by the project and their values at a local, regional, state and national level.

Any such study should be conducted by an appropriately qualified cultural heritage practitioner and should include the following:

- review of:
  - the Australian Heritage Places Inventory

  - the Queensland Heritage Register and other information regarding places of potential non-Indigenous cultural heritage significance
  - any local government heritage register
  - any existing literature relating to the heritage of the affected areas
- liaison with relevant community groups/organisations (e.g. local historical societies) concerning places of non-Indigenous cultural heritage significance located or identified
- locations of culturally and historically significant sites, shown on maps, which could potentially be impacted by the project
- a constraints analysis of the proposed development area to identify and record non-Indigenous cultural heritage places.

5.11.2 Potential impacts and mitigation measures

Provide an assessment of any likely effects on sites of non-Indigenous cultural heritage values.

Provide strategies to mitigate and manage any negative impacts on non-Indigenous cultural heritage values and enhance any positive impacts.

As a minimum, investigation, consultation, impact assessment, management and protection strategies should satisfy statutory responsibilities and duties of care.

5.12 Forestry products and quarry materials

5.12.1 State-owned forest products

The EIS must clearly state the location and quantity of any State-owned forest products administered under the *Forestry Act 1959* that the project might affect.

5.12.2 Privately-owned forest products

The EIS should identify the location and quantity of any privately-owned forest products that the project might affect.

In instances where there is a commercial quantity of privately-owned log, pole and/or fencing timbers, the EIS should discuss how a timber salvage operation will be actioned.

5.12.3 Quarry materials

The EIS is to clearly state the location and quantity of any State-owned quarry material extractive resources administered under the *Forestry Act 1959* that the project might affect.

6. Social values and management of impacts

6.1 Description of existing social values

Conduct a social impact assessment (SIA) in consultation with the Coordinated Project Delivery Division in the office of the Coordinator-General. Matters to be considered in the SIA are detailed in the following subsections.

This section should include, but not be limited to, consideration of the areas and townships of Acland, Jondaryan, Oakey and Muldu.

The EIS is to consider project impacts that have already occurred (e.g. land purchases).

6.1.1 Social and cultural area

Define the project's social and cultural area of influence, including the local, district, regional and state level as relevant, taking into account the:

- potential for social and cultural impacts to occur
- location of other relevant proposals or projects
- location and types of physical and social infrastructure, settlement and land use patterns
- social values that might be affected by the project (e.g. integrity of social conditions, visual amenity and liveability, social harmony, public health and wellbeing, and sense of community)
- Indigenous social and cultural characteristics such as native title rights and interests, and cultural heritage.

6.1.2 Community engagement

Consistent with national and international good practice, and with regard to local and regional strategies for community engagement, the proponent should undertake a community engagement strategy to engage at the earliest practicable stage with likely affected parties to discuss and explain the project, and to identify and respond to issues and concerns regarding social impacts.

Detail the community engagement processes used to conduct open and transparent dialogue with stakeholders. Such processes should include, but not be limited to, community reference group forums. Include the project's planning and design stages and future operations including affected local and state authorities. Engagement processes should consider social and cultural factors, customs and values, and, where relevant, linkages between environmental, economic, and social impact issues.

Discuss engagement strategies and processes, including how complaint resolution will be addressed, for all stages of the project.

6.1.3 Social baseline study

Undertake a targeted baseline study of the people residing in the project's social and cultural area, to identify the project's social issues, potential adverse and positive social impacts, and strategies and measures developed to address the impacts. The social baseline study should be based on qualitative, quantitative, and participatory methods. It should be supplemented by community engagement processes, and reference relevant data contained in local and state government publications, reports, plans, guidelines and documentation, including regional plans and, where available, community plans.

Describe and analyse a range of demographic and social statistics determined relevant to the project's social and cultural area including:

- major population trends and changes occurring irrespective of the project
- total population (the total enumerated population for the social and cultural area and the full-time equivalent transient population), 18 years and older
- estimates of population growth and population forecasts resulting from the proposal
- family structures
- age and gender distributions
- education, including schooling levels
- health and wellbeing measures
- cultural and ethnic characteristics
- the Indigenous population including age and gender
- income including personal and household
- labour force by occupation and industry
- housing costs—monthly housing repayments (per cent of dwellings in each category) and weekly rent (per cent of dwellings in each category), housing tenure type and landlord type, household and family type
- housing availability and affordability: the rental market (size, vacancy rate, seasonal variations, weekly rent by percentage dwellings in each category); the availability and typical costs of housing for purchase, monthly housing repayments by percentage dwellings in each category; and the availability of social housing
- disability prevalence
- the social and economic index for areas, index of disadvantage—score and relative ranking
- crime, including domestic violence
- any other indicators determined through the community engagement process as relevant.

The social baseline study should take account of current social issues such as:

- the social infrastructure, including community and civic facilities, services and networks—for definition see *South East Queensland Regional Plan 2009–2031* (Department of Infrastructure and Planning 2009)
- settlement patterns including the names, locations, size, history and cultural aspects of settlement in the social and cultural area
- the identity, values, lifestyles, vitality, characteristics and aspirations of communities in the social and cultural area, including Indigenous communities
- land use and land ownership patterns including:
  - rural properties, farms, croplands and grazing areas including on-farm activities near the proposed activities
  - the number of properties directly affected by the project
  - the number of families directly and indirectly affected by the project including Indigenous traditional owners and their families, property owners, and families of workers either living on the property or workers where the property is their primary employment
- use of the social and cultural area for forestry, fishing, recreation, business and industry, tourism, aquaculture, and Indigenous cultural use of flora and fauna.

Cross-reference this section with Subsection 7.1.

6.1.4 Workforce profile

The SIA should include a profile of the workforce that describes the following:

Workforce demand

The estimated composition of workforce by occupation, project stage and duration (including any planned construction prior to final investment decision) using the template provided at **www.skills.qld.gov.au/Functions/Coordinated-Projects.aspx**

Supply issues and strategies

- Analysis of relevant local, state and national workforce profiles and labour supply
- strategies and proposed programs for:
  - recruitment and attraction
  - population groups (including Indigenous people, women, secondary school students and unemployed and underemployed)
  - unskilled and semi-skilled labour requirements
  - structured training (apprenticeships, traineeships, graduates)
  - analysis of impact on local community workforce.

The fact sheet on Skills Queensland's website (**www.skills.qld.gov.au/Functions/Coordinated-Projects.aspx**) provides essential information, contact and program details to develop the workforce management plan.

Health services

Indicate the results of discussion with the local hospital and health services and provide the following in the EIS:

- a description of existing health services in the neighbouring community/town
- identification and assessment of the potential impact of the project on the existing health services during the construction and operational phases
- information on the provision of health care facilities for personnel at the mine site; (where medical facilities are to be provided it must be noted that the requirements of the Health (Drugs and Poisons) Regulations 1996 will be applicable)
- a description of how the proponent will manage the delivery of health services and/or support/strengthen local health services. This should specify how health services will be provided to the workforce and/or how the proponent intends to support local health services to ensure they do not become overwhelmed
- an outline of the arrangements with local services and those provided by the relevant hospital and health services regarding emergency management protocols and procedures
- identification of whether utilities (e.g. water, electricity, gas) serving health facilities may be disrupted by project works
- identification and assessment of the risk relating to the health and well-being of workers and residents in the surrounding area from the transmission of communicable diseases. The assessment should incorporate/highlight relevant programs such as proposed vaccination, monitoring of communicable diseases, and response programs.

6.2 Potential impacts

Assess and describe the type, level and significance of the project's social impacts (both beneficial and adverse) on the local and cultural area, based on outcomes of community engagement processes and the social baseline study. Furthermore:

- describe and summarise outcomes of community engagement processes including the likely response of the affected communities, including Indigenous people
- include sufficient data to enable affected local and state authorities to make informed decisions about the project's effect on their business and plan for the provision of social infrastructure in the project's social and cultural area. If the project is likely to result in a significant increase in the population of the area, then the proponent should consult the relevant management units of the state authorities and summarise the results of the consultations
- address direct, indirect and secondary impacts from any existing projects and the proposed project including an assessment of the size, significance, and likelihood of these impacts at the local and regional level. Consider the following:
  - key population and demographic shifts; disruptions to existing lifestyles, the health and social wellbeing of families and communities; social dysfunction including alcohol and drugs, crime, violence, and social or cultural disruption due to population influx
  - discuss the effects of the project on the town of Acland due to the proponent's purchase of a number of Acland landholdings over recent years

- the needs of vulnerable groups including women, children and young people, the aged and people with a disability
- Indigenous peoples including cultural property issues
- local, regional and state labour markets during the construction and operational phases, with regard to the source of the workforce. Present this information according to occupational workforce groupings. Detail whether the proponent and/or contractors are likely to employ locally or through other means and whether there are initiatives for local employment business opportunities and how these workforce strategies relate and align to state and Commonwealth resource workforce planning, skill development and training strategies and policies
- proposed new skills and training related to the project including the occupational skill groups required and potential skill shortages anticipated
- how much service revenue and work from the project would be likely to flow to the project's social and cultural area
- impacts of construction and operational workforces, their families, and associated contractors on housing and accommodation availability and affordability, land use and land availability. Discuss the capability of existing housing and rental accommodation to meet any additional demands created by the project, including direct impacts on Indigenous people.

6.2.1 Cumulative impacts

Evaluate and discuss the potential cumulative social impacts resulting from the project including an estimation of the overall size, significance and likelihood of those impacts. Cumulative impacts, in this context, is defined as the additional impacts on population, workforce, accommodation, housing, and use of community infrastructure and services, from the project, and other proposals for development projects in the area, which are publicly known or communicated by the office of the Coordinator-General, if they overlap the proposed project in the same timeframe as its construction period.

6.3 Impact mitigation measures and management strategies

For identified social impacts, social impact mitigation strategies and measures should be presented to address the:

- recruitment and training of the construction and operational workforces and the social and cultural implications this may have for the host community, including if any part of the workforce is sourced from outside the social and cultural area
- housing and accommodation issues—the *Major resource projects housing policy* (Department of Employment, Economic Development and Innovation 2011a) sets out the core principles to guide the identification and assessment of accommodation and housing impacts and development of mitigation and management strategies
- demographic changes in the profile of the region and the associated sufficiency of current social infrastructure, particularly health and welfare, education, policing and emergency services
- adequate provision of education, training and employment for women, people with a disability, and Indigenous peoples
- impacts on vulnerable groups including people that are unemployed and those with a low socio-economic status.

Describe any consultation about acceptance of proposed mitigation strategies, and how practical management and monitoring regimes would be implemented.

Discuss special strategies that might be deployed by the proponent during all stages of the project to mitigate 'project fatigue' impacts.

The EIS should indicate the proponent's strategy to ensure and enhance the amenity of the town of Acland given its proximity to the proposed mine expansion. If possible, include any indication of how Acland township properties owned by the proponent are proposed to be managed.

6.3.1 Social impact management plan

Present a draft social impact management plan (SIMP) that promotes an active and ongoing role for impacted communities and local authorities through the project life cycle. The draft plan should cover:

- assignment of accountability and resources
- updates on activities and commitments
- mechanisms to respond to public enquiries and complaints
- mechanisms to resolve disputes with stakeholders
- periodic evaluation of the effectiveness of community engagement processes
- practical mechanisms to monitor and adjust mitigation strategies and action plans
- action plans to implement mitigation strategies and measures.

The SIMP processes should take into consideration the project area's varied demographic range. Ensure the SIMP's mechanisms do not disadvantage, e.g. those without internet access.

For further information on preparing the SIMP, refer to *Social impact assessment: Guideline to preparing a social impact management plan* (Department of State Development, Infrastructure and Planning 2012).

6.3.2 Local stakeholder management plan

A local stakeholder management plan (LSMP) is to be developed for residents in the vicinity of the project potentially affected by social, and environmental impacts—e.g. air, noise, lighting, blasting, traffic and other factors. The LSMP is to be a targeted mechanism to address impacts management, consultation strategies and complaints resolution for residents affected by the project.

The LSMP is to show how particular impacts and concerns raised by the residents and their suggested mitigation measures, would be considered and adopted into the plan.

Include a draft LSMP in the EIS.

7. Economies and management of impacts

7.1 Description of affected local and regional economies

Describe the existing economy in which the project is located and the economies materially impacted by the project. Include:

- a map illustrating the local and regional economies (local government areas—LGAs) that could be potentially affected by the project
- gross regional product or other appropriate measure of annual economic production
- demographic and employment profile of the study area as a whole and disaggregated by LGA. Include:
  - existing population (size, age, distribution)
  - existing community profiles of the LGAs directly affected by the project (household type, size, average income)
  - existing employment statistics (part-time/full-time, by occupation)
  - the regional economy's key industries and their contribution to regional economic income
- sufficient baseline economic data to underpin a comprehensive assessment of the direct, indirect, cumulative, costs and impacts of the project
- the key regional markets relevant to the project:
  - labour market
  - education and training markets
  - housing and land markets
  - construction services and building inputs market
  - regional competitive advantage and expected future growth.

With regard to the region's key industries and factor prices, provide information on:

- current input costs (e.g. wage rates, building costs, housing rent)
- land values in the region by type of use.

7.2 Potential impacts and mitigation measures

The potential impacts should consider local, regional, state and national perspectives as appropriate to the scale of the project.

The analysis should describe both the potential and direct economic impacts including estimated costs, if material, on industry and the community, assessing the following:

- property values
- industry output
- employment
- the indirect impacts likely to flow to other industries and economies from developing the project, and the implications of the project for future development
- the distributional effects of the proposal including proposals to mitigate any negative impact on disadvantaged groups
- the economic impact on agricultural production and jobs as a result of mining on land previously used, prior to acquisition by the proponent, extensively and consistently for agriculture.

7.2.1 Strategies for local participation

The assessment of economic impacts should outline strategies to encourage participation by local industry and the local workforce, including:

- strategies for assessing the capacity and cost-effectiveness of sourcing goods and services from the regional and wider state economy during the pre-construction, construction, operation and rehabilitation phases of the project
- strategies for ensuring local suppliers of goods and services receive full, fair and reasonable opportunity to tender for work throughout the life of the project. Private sector projects are asked to commit to adopting the Queensland Resources and Energy Sector Code of Practice for Local Content administered by Queensland Resources Council—see **https://www.qrc.org.au/01_cms/details.asp?ID=3209**
- strategies for utilising Indigenous businesses
- employment strategies for local residents including members of Indigenous communities and people with a disability, including a skills assessment and recruitment and training programs to be offered
- strategies adopting relevant government policy, relating to:
  - government-funded projects must prepare a Local Industry Participation Plan (LIPP) in accordance with the Local Industry Policy – A Fair Go for Queensland (Department of Employment, Economic Development and Innovation 2010) and its associated guidelines
  - the level of training provided for construction contracts on Queensland Government building and construction contracts, with regard to the Queensland Government Building and Construction Contracts Structured Training Policy—the 10 per cent training policy (Skills Queensland 2008)
  - Indigenous employment opportunities—the Indigenous Employment Policy for Queensland Government: Building and Civil Construction Projects—the 20 per cent policy (Department of Employment, Economic Development and Innovation 2008a) could be adopted or its implementation measures used as a guide or tool for engaging Indigenous workers.

7.2.2 Impact upon property management

Address the current and future management processes for adjacent properties that are likely to be impacted by the project during construction and/or operation. Mention the impact of the project on:

- existing agricultural land uses and management practices, (e.g. disruption to stockyards, fences, run-off control works, water points, sowing or harvesting of crops, movement of livestock, agricultural machinery and any loss of agricultural land)
- residential, commercial and industrial land uses, property values and property management practices.

Discuss a range of measures required to mitigate real and potential disruptions to rural, residential, commercial and industrial property uses and management practices.

8. Hazard and risk

8.1 Hazard and risk assessment

Describe the potential hazards and risks to people and property that may be associated with the project, which may include but are not restricted to identifying:

- potential hazards, accidents, spillages, fire and abnormal events that may occur during all stages of the project, including possible risk of occurrence
- all hazardous substances to be used, stored, processed or produced and the rate of usage
- potential wildlife hazards, natural events (e.g. cyclone, storm surge, flooding, bushfire) and implications related to climate change.

Undertake a preliminary risk assessment for all components of the project, as part of the EIS process in accordance with *Australia/New Zealand AS/NZS ISO 31000:2009 Risk management—Principles and guidelines* (Standards Australia/Standards New Zealand 2009) and *Managing environment-related risk* (HB203:2012) (Standards Australia 2012). With respect to risk assessment, the EIS must:

- deal comprehensively with external and on-site risks including transport risks
- assess risks during the pre-construction, construction, operational and decommissioning phases of the project
- include an analysis of the consequences of each hazard on safety in the project area, examining the likelihood of both individual and collective consequences, involving injuries and fatalities to workers and to the public
- present quantitative levels of risks from the above analysis.

Provide details on the safeguards that would reduce the likelihood and severity of hazards, consequences and risks to persons, within and adjacent to the project areas. Include consideration of communication protocols with nearby residents.

Present a comparison of assessed and mitigated risks with acceptable risk criteria for land uses in and adjacent to the project areas.

Identify the residual risk following application of mitigation measures. Present an assessment of the overall acceptability of the impacts of the project in light of the residual uncertainties and risk profile.

Provide a draft risk management plan for inclusion in the EMP.

8.1.1 Aviation hazard management plan

In consideration of potential hazards associated with the Oakey Airbase and the Army Aviation Training Centre at Oakey, prepare an aviation hazard management plan (AHMP).

Prepared in accordance with the procedures developed by Air Services Australia, the AHMP should assess:

- the proposed mine's potential impacts on instrument landing procedures
- the maintenance of a minimum safe altitude up to 21 kilometres away from the runway
- dust generation
- night vision compatible lighting
- vibration analysis.

The AHMP is to be developed in consultation with the Department of Defence.

8.2 Cumulative risk

The risk analysis is to address the potential impacts that may occur on the normal on-site day-to-day activities during the construction and/or operation of the facilities. Furthermore, determine the level of change that may result on the risk contours of other relevant existing or proposed industrial facilities in the area as a result of the proposed project (where details of such proposed facilities are provided to the proponent by the office of the Coordinator-General or otherwise published).

Individual risk criteria should be used to limit risks to individual workers and members of the public. Societal risk criteria should be used to limit risk to the affected population as a whole.

Identify and adopt, where appropriate, any changes to operating or storage procedures that would reduce the possibility of these events occurring, or reduce the severity of the events should they occur. Present draft risk management plans for the construction and operational phases of the project.

8.3 Health and safety

8.3.1 Description of public health and safety community values

Describe the existing health and safety values of the community, workforce, suppliers and other stakeholders in terms of the environmental factors that can affect human health, public safety and quality of life, such as air pollutants, odour, lighting and amenity, dust, noise and water.

8.3.2 Potential impact and mitigation measures

Define and describe the objectives and practical measures for protecting or enhancing health and safety community values. Describe how nominated quantitative standards and indicators may be achieved for social impact management, and how the achievement of the objectives will be monitored, audited and managed.

Assess the cumulative effects on public health values and occupational health and safety impacts on the community, workforce and regional health services from project operations and emissions. Recommend any practical monitoring regimes in this section.

Any impacts on the health and safety of the community, workforce, suppliers and other stakeholders should be detailed, covering factors such as air emissions, odour, dust, product transportation and noise. Also recommend practical monitoring regimes in this section.

Mosquitoes

A mosquito and pest management plan for the entire site and in particular where there is a likelihood to pond significant volumes of water. Reference should be made to the *Guidelines to minimise mosquito and biting midge problem in new development areas* (Queensland Health 2002).

Potable water

Discuss how potable water will be treated, stored and tested to comply with the microbiological, physical and chemical standards stipulated in the National Health and

Medical Research Council's *Australian Drinking Water Guidelines 6* (Commonwealth of Australia 2011). This should also include the establishment and adoption of an appropriate risk framework to ensure a safe potable water supply. Include cross-references to the water resources section of this TOR to discuss.

Driver fatigue

Assess and discuss driver fatigue for workers and their families travelling to and from regional centres and key destinations. Include cross-references to the transport section of this TOR in assessing this issue.

8.4 Emergency management plan

The development of emergency and evacuation planning and response procedures is to be determined in consultation with state and regional emergency service providers including local police services.

Provide an outline of the proposed integrated emergency management planning procedures (including evacuation plans, if required) for the range of situations identified in the risk assessment developed in this section. This includes strategies to deal with natural disasters during construction, operation and decommissioning of the project.

Take into account the response capabilities of the Queensland Fire and Rescue Service to areas where limited infrastructure may be constructed.

Present preliminary information on the design and operation of proposed safety/contingency systems to address significant emergency issues delineated in the risk assessment, together with at least the following areas of emergency:

- fire prevention/protection
- leak detection/minimisation
- on-site drinking water incident notification system
- release of contaminants
- emergency shutdown systems and procedures
- natural disasters.

With regard to management of an on-site drinking water incident, indicate the provision of an alternative temporary potable water supply in the event of an incident (man-made and/or natural) impacting on the water supply.

In addition, undertake an assessment of businesses that may be affected in the event of an emergency, including strategies to mitigate the impact on these businesses.

In regard to fires, outline strategies to manage the provision of:

- fire management systems to ensure the retention on site of fire water or other fire suppressants used to combat emergency incidents
- building fire safety measures for any construction or permanent accommodation
- details of any emergency response plans and bushfire mitigation plans under the State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide (Department of Local Government and Planning & Department of Emergency Services 2003a)

- on-site firefighting equipment provided and the level of training of staff who will be tasked with emergency management activities
- detailed maps showing the plant outline, potential hazardous material stores, incident control points, firefighting equipment and the like
- an outline of any dangerous goods stores associated with the plant operations, including fuel storage and emergency response plans.

The EIS should discuss protocols and procedures to identify and quickly notify all relevant parties where an incident (man made and/or natural) occurs at the mine that is likely to impact upon public health or safety.

Present outlines of emergency planning and response strategies to deal with relevant incidents above, which have been determined in consultation with state and regional emergency service providers, including QHealth and the Queensland Police Service, and which show integration of emergency services into the plans.

Present plans for emergency medical response and transport and first aid matters with involvement of the relevant state agencies (such as the Queensland Ambulance Service, Queensland Fire and Rescue Service and Emergency Management Queensland).

9. Cumulative impacts

Summarise the project's cumulative impacts and describe these impacts in combination with those of existing or proposed project(s) publicly known or advised by the office of the Coordinator-General to be in the region, to the greatest extent practicable. Include consideration of the existing New Acland mining operation.

Cumulative impacts should be assessed with respect to geographic location, health and safety, demand for services, social values and environmental values.

Conduct a strategic assessment of the cumulative impacts of the project's impact on the natural environment, landowners, agricultural activities and communities within the area. Consider impacts on local towns and areas (including Acland, Jondaryan, Oakey and Muldu) separately and collectively.

The project, including its associated infrastructure (e.g. power upgrade and rail facilities), should be evaluated in terms of cumulative impacts on air and water quality, availability and biodiversity.

Explain the methodology used to determine the cumulative impacts of the project, detailing the range of variables considered (including relevant baseline or other criteria upon which the cumulative aspects of the project have been assessed, where applicable).

10. Sustainable development

Provide a comparative analysis of how the project conforms to the objectives for 'sustainable development'—see the *National Strategy for Ecologically Sustainable Development* (Commonwealth of Australia 1992).

Consider the cumulative impacts (both beneficial and adverse) of the project from a life-of-project perspective, taking into consideration the scale, intensity, duration and

frequency of the impacts to demonstrate a balance between environmental integrity, social development and economic development.

This information is required to demonstrate that sustainable development aspects have been considered and incorporated during the scoping and planning of the project.

11. Environmental management plan

Detail the EMPs for the construction, operational and decommissioning phases of the project. The EMP should be developed from, and be consistent with, the information in the EIS. The EMP must meet the requirements of section 203 of the EP Act, address discrete project elements and provide life-of-proposal control strategies. It must be capable of being read as a stand-alone document without reference to parts of the EIS.

The EMP must comprise the following components for performance criteria and implementation strategies:

- the proponent's commitments to acceptable levels of environmental performance, including environmental objectives, performance standards and associated measurable indicators, performance monitoring and reporting
- impact prevention or mitigation actions to implement the commitments
- corrective actions to rectify any deviation from performance standards
- an action program to ensure the environmental protection commitments are achieved and implemented. This will include strategies in relation to:
  - continuous improvement
  - environmental auditing
  - monitoring
  - reporting
  - staff training
  - where relevant, a rehabilitation program for land proposed to be disturbed under each relevant aspect of the proposal.

The EMP is to provide clear and definitive outcome-based commitments and conditions.

The recommended structure of each element of the EMP is shown below.

Element/issue	**Aspect of construction or operation to be managed (as it affects environmental values).**
Operational policy	The operational policy or management objective that applies to the element.
Performance criteria	Measurable performance criteria (outcomes) for each element of the operation.
Implementation strategy	The strategies, tasks or action program (to nominated operational design standards) that would be implemented to achieve the performance criteria and also include the implementation agency for each element of the EMP.
Monitoring	The monitoring requirements to measure actual performance (e.g. specified limits to pre-selected indicators of change).

Element/issue	Aspect of construction or operation to be managed (as it affects environmental values).
Auditing	The auditing requirements to demonstrate implementation of agreed construction and operation environmental management strategies and compliance with agreed performance criteria.
Reporting	Format, timing and responsibility for reporting and auditing of monitoring results.
Corrective action	The action (options) to be implemented in case a performance requirement is not reached and the person(s) responsible for action (including staff authority and responsibility management structure).

The proponent's commitments to environmental performance, as described in the EMP, may be included in the Coordinator-General's evaluation report as conditions, to ensure the commitments are met. Therefore, the EMP is a relevant document for project approvals, environmental authorities and permits, and may be referenced by them.

12. Conclusions and recommendations

Make conclusions and recommendations with respect to the project, based on the studies presented, the EMP, the SIMP and conformity of the project with legislative and policy requirements.

13. References

All references consulted should be presented in the EIS in a recognised format.

14. Appendices

Provide the following as appendices to the EIS:

- final TOR for this EIS
- TOR cross-reference table, which links the requirements of each section/subsection of the TOR with the corresponding section/subsection of the EIS, where those requirements have been addressed
- a list of the project approvals required by the project
- the consultation report, as described in Subsection 3.7
- a list of the relevant qualifications and experience of the key study team members and specialist sub-consultants
- a glossary of technical terms
- a list of abbreviations
- any reports of specialist studies undertaken as part of the EIS
- a copy of the proponent's corporate environmental policy and planning framework document
- a list of all commitments made by the proponent in the EIS, with cross-references to the relevant section in the EIS
- a copy of the proponent's land acquisition protocols.

Contents of the EIS for matters of national environmental significance

1. Background and context

On 24 May 2007, the project was determined to be a 'controlled action' under the EPBC Act, due to the likelihood of significant impacts on listed threatened species and communities (sections 18 and 18A) (reference number EPBC 2007/3423). On 26 October 2012, New Acland Coal Pty Ltd wrote to SEWPaC requesting a variation to the proposal being assessed to reflect alterations to the project. On 9 November 2012 the variation request was accepted.

The project will be assessed under the bilateral agreement between the Queensland and Australian governments. The bilateral agreement sets out the requirements for the purposes of the Australian Government's assessment under Part 8 of the EPBC Act and these requirements are incorporated by the state the EIS assessment process. The bilateral agreement aims to minimise duplication of processes, allowing the Australian Government Environment Minister to rely on the Queensland assessment process for EPBC Act assessments.

The Australian Government Environment Minister's decision under the EPBC Act is separate to the approval decisions made by Queensland state agencies and other agencies with jurisdiction on state matters. Relevant Australian Government policy statements, including in particular the *Matters of National Environmental Significance: Significant impact guidelines 1.1* (Commonwealth of Australia 2009b), should be applied in the compilation of information on EPBC Act matters.

At the conclusion of the bilateral assessment process, the Coordinator-General will provide a copy of the assessment report to the Australian Government Environment Minister. On receiving the evaluation report the minister has 30 business days to decide whether or not to approve the taking of the action under the EPBC Act.

2. Contents of the EIS

2.1 General requirements

In accordance with Section 3.1 of Schedule 1 of the bilateral agreement, the EIS must:

- assess all the relevant direct and indirect (and offsite) impacts that the action will or is likely to have
- provide enough information about the action and its impacts to allow the Commonwealth Environment Minister to make an informed decision whether or not to approve the action
- address the matters set out in Schedule 4 of the Environment Protection and Biodiversity Conservation Regulations 2000 (Cwlth) (EPBC Regulations).

The information provided for a decision under the EPBC Act will be in a stand-alone section of the EIS and must bring together all relevant information and produce a detailed and complete assessment. References to other sections or appendices should be confined to providing additional supporting information, such as technical reports.

The MNES section of the EIS will:

- assess the project's potential direct, indirect and offsite impacts on listed threatened species and communities,
- discuss the avoidance measures considered and incorporated into the project
- discuss the mitigation measures considered and incorporated
- discuss the residual impacts (impacts after avoidance and mitigation)
- propose suitable offsets for residual impacts.

'Indirect' and 'offsite' impacts include:

(a) 'downstream' or 'downwind' impacts, such as impacts on wetlands or ocean reefs from sediment, fertilisers or chemicals which are washed or discharged into river systems

(b) 'upstream impacts' such as impacts associated with the extraction of raw materials and other inputs which are used to undertake the action, and

(c) 'facilitated impacts' which result from further actions (including actions by third parties) which are made possible or facilitated by the action.

All adverse impacts that can be predicted to follow from the action, whether these impacts are within the control of the person proposing to take the action or not must be discussed. Indirect impacts will be relevant where they are sufficiently close to the proposed action to be said to be a consequence of the action, and they can reasonably be imputed to be within the contemplation of the person proposing to take the action.

Components that make up the action will each have their own associated impacts. All components (such as transport, power supply etc) and stages (such as construction stage, operational stage) of an action must be discussed. Alternative approaches to components or stages of the action which impact on protected matters must be considered and discussed in adequate detail to present a rationale to explain the selection of the approach presented for assessment.

Impacts, avoidance and mitigation actions should be discussed in detail for each species and community individually, quantified (wherever possible) and based on sound science. All sources of information relied upon must be referenced and an assessment of reliability and usefulness for prediction must be made. Positive impacts should also be identified and evaluated.

The EIS must address all relevant SEWPaC guidelines, statements or policies. Surveys conducted for the project must demonstrate that they comply with relevant Australian Government survey guidelines, unless adequate justification for alternative survey methodology can be provided.

The extent of any new field work, modelling or testing undertaken to provided information for the assessment should be commensurate with risks and the potential impacts, and should be such that, when used in conjunction with existing information, provides sufficient confidence in predictions that well-informed decisions can be made. (It should be noted that the quality and reliability of information provided, and the certainty of mitigation and rehabilitation outcomes, can be expected to have a direct bearing on any offsets required for residual impacts.)

The EPBC Act section of the EIS will also examine the project's contribution to the cumulative impacts from all known existing or proposed developments in the region for listed threatened species and communities.

2.2 Specific requirements

2.2.1 Impact on listed threatened species and communities

Describe the listed threatened species and threatened communities given below, and any others that are found to be, or may potentially be, present in areas that may be impacted by the project (include EPBC Act status, distribution, life history and habitat).

Consider and assess all of the direct, indirect and offsite impacts (including dust, noise vibration, transport, quarrying, waste disposal etc) to each listed threatened species or threatened community, and discuss whether it may result in:

- decrease in the size of a population or a long-term adverse affect on listed threatened species or threatened community
- reduction in the area of occupancy of the species or extent of occurrence of a community
- fragmentation of an existing species population or community
- disturbance or destruction of habitat critical to the survival of the species or community
- disruption of the breeding cycle of a population
- modification, destruction, removal, isolation or reduction of the availability or quality of habitat to the extent that the species or community is likely to decline
- modification or destruction of abiotic (non-living) factors (such as water, nutrients or soil) necessary for the ecological community's survival
- introduction of invasive species that are harmful to the species or ecological community becoming established
- interference with the recovery of the species or community
- action that may be inconsistent with a recovery plan.

The EIS must enable interested stakeholders and the minister to understand the consequences of the proposed action on listed threatened species and communities. When assessing impacts, the following must be undertaken for each listed threatened species or community:

- discussion of the known threats for each species and community and the threats posed by the proposed action
- description of the methodologies used to detect/quantify each species and community and discussion of the suitability of the approach taken, and a statement of whether the approach taken complies with the Australian Government policies and guidelines
- quantification and discussion of direct, indirect and offsite impacts from the proposed action. This should include impacts from vibration, noise and dust as well as from material acquisitions and disposals, (such as from clearing for additional

quarrying or waste disposal) and from service demands created by the project (such as new transport or accommodation facilities generated)

- discussion of individual impacts for each species and community, then quantification and discussion the combined impact on that species or community
- mapping showing survey locations with overlays of proposed and existing infrastructure and impact areas
- mapping showing areas of suitable habitat for listed threatened species and communities with overlays of proposed and existing infrastructure and impact areas. Supply large-scale maps showing the same information in the context of the surrounding landscape
- quantification of the impact area for each species or community and discussion of the significance this in the context of the larger landscape (connectivity, fragmentation etc)
- description and assessment of the effectiveness of avoidance and mitigation measures for impacts on each species and community. Also descriptions and assessment of any anticipated additional benefits from those measures for each species or community. Provision of supporting evidence and discussion of the level of certainty of achieving the expected outcomes
- quantification and discussion of the acceptability of residual impacts to species and communities and provision of a rationale for your conclusions
- proposal for offsets to compensate for residual impacts (in accordance with the Environment Protection and Biodiversity Conservation Act 1999 Environment Offsets Policy and associated Offsets assessment guide).

Table 1 List of threatened species and threatened communities and their status

Type	Name	Status
	Listed Threatened Ecological Communities	
	White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered
	Brigalow (*Acacia harpophylla* dominant and codominant)	Endangered
	Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions	Endangered
	Bluegrass (*Dichanthium* spp.) dominant grasslands of the Brigalow Belt Bioregions (North and South)	Endangered
	Listed threatened species	
Birds	*Lathamus discolour*, Swift Parrot	Endangered
	Neochmia ruficauda ruficauda, Star Finch (eastern), Star Finch (southern)	Endangered
	Poephila cincta cincta, Black-throated Finch (southern)	Endangered
	Xanthomyza Phrygia, Regent Honeyeater	Endangered
	Erythrotriorchis radiates, Red Goshawk	Vulnerable
	Geophaps scripta scripta, Squatter Pigeon	Vulnerable

Type	Name	Status
	Rostratula australis/ Rostratula benghalensis (sensu lato), Australian Painted Snipe/ Painted Snipe	Vulnerable
	Turnix melanogaster, Black-breasted Button-quail	Vulnerable
Fish	*Maccullochella peelii*, Murray Cod	Vulnerable
Mammals	*Dasyurus hallucatus*, Northern Quoll	Endangered
	Chalinolobus dwyeri, Large-eared Pied Bat, Large Pied Bat	Vulnerable
	Nyctophilus corbeni, South-eastern Long-eared Bat	Vulnerable
	Petrogale penicillata, Brush-tailed Rock-wallaby	Vulnerable
	Potorous tridactylus tridactylus, Long-nosed Potoroo (SE mainland)	Vulnerable
	Pteropus poliocephalus, Grey-headed Flying-fox	Vulnerable
Plants	*Digitaria porrecta*, Finger Panic Grass	Endangered
	Lepidium peregrinum, Wandering Pepper-cress	Endangered
	Streblus pendulinus, Siah's Backbone, Sia's Backbone, Isaac Wood	Endangered
	Cadellia pentastylis, Ooline	Vulnerable
	Clematis fawcettii, Stream Clematis	Vulnerable
	Dichanthium queenslandicum, King Blue-grass	Vulnerable
	Haloragis exalata subsp. *Velutina*, Tall Velvet Sea-berry	Vulnerable
	Homopholis belsonii, Belson's Panic	Vulnerable
	Picris evae, Hawkweed	Vulnerable
	Rhaponticum australe, Austral Cornflower, Native Thistle	Vulnerable
	Sarcochilus weinthalii, Blotched Sarcochilus, Weinthals Sarcanth	Vulnerable
	Thesium australe, Austral Toadflax, Toadflax	Vulnerable
Reptiles	*Tympanocryptis pinguicolla*, Grassland Earless Dragon	Endangered
	Anomalopus mackayi, Five-clawed Worm-skink, Long-legged Wormskink	Vulnerable
	Delma torquate, Collared Delma	Vulnerable
	Egernia rugosa, Yakka Skink	Vulnerable
	Furina dunmalli, Dunmall's Snake	Vulnerable
	Paradelma orientalis, Brigalow Scaly-foot	Vulnerable

Acronyms and abbreviations

Acronym/abbreviation	Definition
ACH Act	*Aboriginal Cultural Heritage Act 2003* (Qld)
AS/NZS	Australian standard/New Zealand standard
CAMBA	China–Australia Migratory Bird Agreement
CHMP	cultural heritage management plan
DEHP	Department of Environment and Heritage Protection, Queensland
DNRM	Department of Natural Resources and Mines
EIS	environmental impact statement
EMP	environmental management plan
EP Act	*Environmental Protection Act 1994* (Qld)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)
EPP	environmental protection policy (water, air, waste, noise)
ERA	environmentally relevant activity
JAMBA	Japan–Australia Migratory Bird Agreement
MNES	matters of national environmental significance (under the EPBC Act)
Mtpa	Million tonnes per annum
NC Act	*Nature Conservation Act 1992* (Qld)
NGA	National Greenhouse Accounts
NT agreement	native title agreement
RE	regional ecosystem (for a definition, refer to the Glossary)
REDD	Regional Ecosystem Description Database
ROKAMBA	Republic of Korea–Australia Migratory Bird Agreement
SCL Act	*Strategic Cropping Land Act 2011* (Qld)
SDPWO Act	*State Development and Public Works Organisation Act 1971* (Qld)
SEWPaC	Australian Government Department of Sustainability, Environment, Water, Population and Communities
SIA	social impact assessment
SPA	*Sustainable Planning Act 2009* (Qld)
The proponent	New Acland Coal Pty Ltd, a subsidiary of New Hope Corporation Limited
TI Act	*Transport Infrastructure Act 1994* (Qld)
TOR	terms of reference
TSF	Tailings storage facility
VM Act	*Vegetation Management Act 1999* (Qld)

References

Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand 2000, *The Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Australian Water Association (Artarmon) and NZ Water and Wastes Association (Auckland), viewed 7 June 2012, <http://www.daff.gov.au/oldmincos/publications/australian_and_new_zealand_guidelines_for_fresh_and_marine_water_quality>.

Australian and New Zealand Minerals Energy Council and Minerals Council of Australia 2000, *Strategic Framework for Mine Closure*, Australian and New Zealand Minerals Energy Council and Minerals Council of Australia, Canberra, viewed 22 November 2012, <http://www.ret.gov.au/resources/Documents/mcmpr/Strategic_Framework_for_Mine_Closure.pdf>.

Coalfields Geology Council of New South Wales and the Queensland Mining Council 2003, *Australian Guidelines for the Estimating and Reporting of Inventory Coal, Coal Resources and Coal Reserves*, Joint Ore Reserves Committee, viewed 24 February 2012, <http://www.jorc.org/pdf/coalguidelines.pdf>.

Commonwealth of Australia 1992, *National Strategy for Ecologically Sustainable Development*, Ecologically Sustainable Development Steering Committee, Canberra, viewed 7 June 2012, <http://www.environment.gov.au/about/esd/publications/strategy/index.html>.

——2007, *Managing Acid and Metalliferous Drainage*: *Leading Practice Sustainable Development Program for the Mining Industry*, Department of Industry, Tourism and Resources, Canberra, viewed 22 November 2012, <www.ret.gov.au/resources/Documents/LPSDP/LPSDP-AcidHandbook.pdf>.

——2009b, *Matters of National Environmental Significance: Significant impact guidelines 1.1*, Department of Environment, Water Heritage and the Arts, Canberra, viewed 25 June 2012, <http://www.environment.gov.au/epbc/publications/nes-guidelines.html>.

——2011, *Australian Drinking Water Guidelines 6, 2011*, National Water Quality Management Strategy, National Health and Medical Research Council, National Resource Management Ministerial Council, Canberra, viewed 21 November 2012, <http://www.nhmrc.gov.au/guidelines/publications/eh52>.

——2012, *National Greenhouse Accounts (NGA) Factors—July 2012*, Department of Climate Change and Energy Efficiency, Canberra, viewed 7 January 2013, <http://www.climatechange.gov.au/publications/greenhouse-acctg/national-greenhouse-factors.aspx>.

——2012, An agreement between the Commonwealth and the State of Queensland under Section 45 of the Environment Protection and Biodiversity Conservation Act 1999 relating to Environmental Assessment, viewed 25 June 2012, <http://www.environment.gov.au/epbc/assessments/bilateral/pubs/qld-bilateral-agreement-june-2012.pdf>.

Department of Employment, Economic Development and Innovation 2008a, *Indigenous Employment Policy for Queensland Government: Building and civil construction projects*, Department of Employment, Economic Development and Innovation, Brisbane, viewed 6 September 2012, <http://www.employment.qld.gov.au/pdf/eii/iep-policy-building-&-civil-construction-projects.pdf>.

——2010, *Local Industry Policy*, Department of Employment, Economic Development and Innovation, Brisbane, viewed 17 July 2012, <http://www.industry.qld.gov.au/documents/AdvancedManufacturing/local-industry-policy.pdf>.

——2011a, *Major resource projects housing policy*, Department of Employment, Economic Development and Innovation, Brisbane, viewed 6 September 2012 <http://www.dsdip.qld.gov.au/assessments-and-approvals/major-resource-projects-housing-policy.html>.

Department of Environment 1998, *Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland,* Department of Environment, Brisbane, viewed 6 September 2012, <http://www.ehp.qld.gov.au/register/p00090aa.pdf>.

Department of Environment and Resource Management 2009a, *Monitoring and Sampling Manual 2009*, Version 2, September 2010, Department of Environment and Resource Management, Brisbane, viewed 22 November 2012, <http://www.ehp.qld.gov.au/water/monitoring/monitoring_and_sampling_manual.html>.

——2009b, *Queensland Water Quality Guidelines, Version 3*, Department of Environment and Resource Management, Brisbane, viewed 17 July 2012, <http://www.ehp.qld.gov.au/water/guidelines/queensland_water_quality_guidelines_2009.html>.

——2009c, State Policy for Vegetation Management, version 2, Department of Environment and Resource Management, Brisbane, viewed 17 July 2012, <http://www.derm.qld.gov.au/vegetation/pdf/state_policy_nov_2009.pdf>.

——2010, *Offsets for Net Gain of Koala Habitat in South East Queensland Policy*, Department of Environment and Resource Management, Brisbane, viewed 7 June 2012, <http://www.derm.qld.gov.au/wildlife-ecosystems/wildlife/koalas/strategy/pdf/offset-netgain.pdf>.

——2011a, *Ecological Equivalence Methodology Guideline: Policy for Vegetation Management Offsets*, version 1, Department of Environment and Resource Management, Brisbane, viewed 17 July 2012, <http://www.derm.qld.gov.au/environmental_management/environmental-offsets/pdf/ecological-equivilance-methodology.pdf>.

——2011b, Policy for Vegetation Management Offsets, version 3, Department of Environment and Resource Management, Brisbane, viewed 6 September 2012, <http://www.ehp.qld.gov.au/management/environmental-offsets/pdf/policy-for-vegetation-management-offsets.pdf>.

——2011c, Queensland Biodiversity Offset Policy (version 1), Department of Environment and Resource Management, Brisbane, viewed 6 September 2012, <http://www.ehp.qld.gov.au/management/environmental-offsets/pdf/biodiversity-offset-policy.pdf>.

——2012b, State Planning Policy 1/12: Protection of Queensland's Strategic Cropping Land, Department of Environment and Resource Management, Brisbane, viewed 6 September 2012, <http://www.derm.qld.gov.au/land/planning/strategic-cropping/legislation-planning.html>.

Department of Infrastructure and Planning 2009*, South East Queensland Regional Plan 2009–2031*, Department of Infrastructure and Planning, Brisbane, viewed 6 September 2012, <http://www.dsdip.qld.gov.au/regional-planning/south-east-queensland-regional-plan-2009-2031.html>.

Department of Local Government and Planning and Department of Emergency Services 2003a, State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide, Brisbane, viewed 6 September 2012, <http://www.emergency.qld.gov.au/publications/spp/pdf/spp.pdf>.

——2003b, *State Planning Policy Guideline: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide*, Department of Local Government and Planning & Department of Emergency Services, Brisbane, viewed 18 March 2013, <http://www.dsdip.qld.gov.au/resources/policy/spp-ifbl-guide.pdf>.

Department of Main Roads 2006, *Guidelines for Assessment of Road Impacts of Development*, Department of Main Roads, Brisbane, viewed 7 June 2012, <http://www.tmr.qld.gov.au/~/media/ace67ef2-b6c3-46a3-91a7-39f790c309fe/garid_guidelines_200406.pdf>.

Department of Minerals and Energy 1995a, *Assessment and Management of Acid Drainage,* in *Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland* series, Department of Minerals and Energy, Brisbane, viewed 22 November 2012, <http://www.derm.qld.gov.au/environmental_management/land/mining/technical_guidelines.htm>.

Department of Minerals and Energy 1995b, *Land Suitability Assessment Techniques* in *Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland* series, Department of Minerals and Energy, Brisbane, viewed 22 November 2012, <http://www.derm.qld.gov.au/environmental_management/land/mining/technical_guidelines.html>.

Department of Minerals and Energy 1995c, *Tailings Management* in *Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland* series, Department of Minerals and Energy, Brisbane, viewed 22 November 2012, <http://www.derm.qld.gov.au/environmental_management/land/mining/technical_guidelines.html>.

Department of Mines and Energy 2007a, State Planning Policy 2/07: Protection of Extractive Resources, Department of Mines and Energy, Brisbane, viewed 6 September 2012, <http://mines.industry.qld.gov.au/assets/land-tenure-pdf/dme_stateplan_policy_1.pdf>.

Department of Mines and Energy 2007b, *State Planning Policy 2/07 Guideline: Protection of Extractive Resources*, Department of Mines and Energy, Brisbane, viewed 6 September 2012, <http://mines.industry.qld.gov.au/assets/land-tenure-pdf/dme_stateplan_guideline.pdf>.

Department of Natural Resources and Mines and Department of Local Government and Planning 2002a, State Planning Policy 2/02: Planning and Managing Development Involving Acid Sulfate Soils, Department of Natural Resources and Mines and Department of Local Government and Planning, Brisbane, viewed 6 September 2012, <http://www.dsdip.qld.gov.au/resources/policy/ass-spp-oct-02.pdf>.

Department of Natural Resources and Mines and Department of Local Government and Planning 2002b, *State Planning Policy 2/02 Guideline: Acid Sulfate Soils*, Department of Natural Resources and Mines and Department of Local Government and Planning, Brisbane, viewed 6 September 2012, <http://www.dsdip.qld.gov.au/resources/policy/spp-guidelines-oct-02-v2.pdf>.

Department of Planning (NSW) 2008, *Hazardous Industry Planning Advisory Paper No. 4: Risk Criteria for Land Use Safety Planning*, consultation draft, Sydney, viewed 7 June 2012, <http://www.planning.nsw.gov.au/plansforaction/pdf/hazards/haz_hipap4_rev2008.pdf>.

Department of Primary Industries 1990, *Guidelines for agricultural land evaluation in Queensland*, Land Resources Branch, Department of Primary Industries, Brisbane.

Department of Primary Industries and Department of Housing, Local Government and Planning 1992, State Planning Policy 1/92: Development and the Conservation of Agricultural Land, Department of Primary Industries and Department of Housing, Local Government and Planning, Brisbane, viewed 6 September 2012, <http://www.dsdip.qld.gov.au/resources/policy/spp1-92.pdf>.

——1993, *Planning guidelines: The identification of good quality agricultural land*, Department of Primary Industries and Department of Housing, Local Government and Planning, Brisbane, viewed 6 September 2012, <http://www.dsdip.qld.gov.au/resources/policy/plng-guide-identif-ag-land.pdf>.

Department of State Development, Infrastructure and Planning 2012, *Social impact assessment: Guideline to preparing a social impact management plan*, Department of State Development, Infrastructure and Planning, Brisbane, viewed 6 September 2012, <http://www.dsdip.qld.gov.au/resources/guideline/cg/social-impact-management-plan-guideline.pdf>.

Department of Transport and Main Roads 2010, *Queensland Road Safety Action Plan 2010–2011*, Department of Transport and Main Roads, Brisbane, viewed 7 June 2012, <http://www.tmr.qld.gov.au/~/media/61ac4911-1036-410f-a048-6b13a16a4f66/pdf_road_safety_action_plan_2010_2011_web.pdf>

Environmental Protection Agency 2000, *Noise Measurement Manual*, 3rd edn, Department of Environment and Resource Management, Brisbane, viewed 17 July 2012, <http://www.derm.qld.gov.au/register/p00367aa.pdf>.

——2004, *Guideline: Planning for Noise Control*, Environmental Protection Agency, Brisbane, viewed 6 September 2012, <http://www.ehp.qld.gov.au/register/p01369aa.pdf>.

——2006, *Guideline: Noise and vibration from blasting*, Environment Protection Agency, Brisbane, viewed 6 September 2012, <http://www.derm.qld.gov.au/register/p01382aa.pdf>.

——2008a, *Guideline: EPA Best Practice Urban Stormwater Management – Erosion and Sediment Control*, Environmental Protection Agency, Brisbane, viewed 17 July 2012, <http://www.derm.qld.gov.au/register/p02301aa.pdf>.

——2008b, Queensland Government Environmental Offsets Policy, Environmental Protection Agency, Brisbane, viewed 6 September 2012, <http://www.ehp.qld.gov.au/register/p02501aa.pdf>.

Eyre, TJ, Kelly, AL, Neldner, VJ, Wilson, BA, Ferguson, DJ, Laidlaw, MJ and Franks, AJ 2011, *BioCondition: A Condition Assessment Framework for Terrestrial Biodiversity in Queensland: Assessment Manual*, version 2.1, Department of Environment and Resource Management, Biodiversity and Ecosystem Sciences, Brisbane, viewed 17 July 2012, <http://www.ehp.qld.gov.au/ecosystems/biodiversity/pdf/biocondition_manual.pdf>.

International Maritime Organization 2003, *International Ship and Port Facility Security Code*, International Maritime Organization, London.

Isbell, RF and CSIRO 2002, *The Australian soil classification*, CSIRO Publishing, Collingwood, Victoria.

Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia 2004, *Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore reserves*, Joint Ore Reserves Committee, Carlton South, Victoria, viewed 7 June 2012, <http://www.jorc.org/main.php>.

McKenzie, NJ et al. 2008, *Guidelines for Surveying Soil and Land Resources*, 2nd edn, CSIRO Publishing, Melbourne.

National Committee on Soil and Terrain 2009, *Australian soil and land survey field handbook*, 3rd edn, CSIRO Publishing, Collingwood.

Queensland Health 2002, *Guidelines to minimise mosquito and biting midge problem in new development areas*, Queensland Health, Brisbane, viewed 18 March 2013, <http://www.health.qld.gov.au/ph/documents/cdb/14804.pdf>.

Queensland Rail 2007, *Code of Practice – Railway Noise Management*, Queensland Rail, Brisbane, viewed 22 November 2012, <http://www.queenslandrail.com.au/aboutus/releaseofinformation/documents/ems-std-46-004.pdf>.

Queensland Reconstruction Authority 2011, *Planning for stronger, more resilient floodplains*, Queensland Reconstruction Authority, Brisbane, viewed 22 November 2012, <http://www.qldreconstruction.org.au/publications-guides/land-use-planning/planning-for-stronger-more-resilient-flood-plains>.

Skills Queensland 2008, Government Building and Construction Contracts Structured Training Policy, Skills Queensland, Brisbane, viewed 7 June 2012, <http://www.skills.qld.gov.au/DownloadAttachment.ashx?AttachmentId=136298>.

Standards Australia 2012, *Managing environment-related risk* (HB203:2012), Standards Australia, Sydney.

Standards Australia and Standards New Zealand 2009, *Risk Management—Principles and guidelines* (AS/NZS ISO 31000:2009), Standards Australia (Sydney) and Standards New Zealand (Wellington).

Department of State Development, Infrastructure and Planning
PO Box 15517, City East Qld 4002
tel 13 QGOV (13 74 68)
fax +61 7 3225 8282
info@dsdip.qld.gov.au

www.dsdip.qld.gov.au