The Coordinator-General

Central Queensland Integrated Rail Project

Terms of reference for an environmental impact statement

September 2012

Queensland Government

Contents

Introduction

QR Limited proposes to develop the Central Queensland Integrated Rail Project (CQIRP) (the project), which was declared a 'significant project' by the Coordinator-General on 27 January 2012. The project components to be assessed include:

- approximately 200 kilometres of new greenfield rail line that would connect emerging resource projects in the Galilee Basin and Bowen Basin into the existing central Queensland coal network at a point on the Goonyella line
- spur rail lines from mines connecting into the central rail line
- upgrades and deviations to the existing (brownfields) coal network.

These terms of reference (TOR) set out the matters to be addressed in an environmental impact statement (EIS) for the project.

The document is divided into two parts:

(a) About the project

(b) Content of the EIS.

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 Part A, Section 4 for contact details).

In finalising this TOR, the Coordinator-General took into account comments made by members of the public and advisory agencies in submissions.

The draft TOR was advertised for public comment from 5 May 2012 to 4 June 2012. Twenty-one submissions on the TOR were received. Where appropriate, comments made have been incorporated into the TOR.

Part A. About the project

1. Project summary

The CQIRP proposes development of an integrated, heavy haul rail system that would link mines in the Galilee and Bowen basins to Queensland ports.

CQIRP is comprised of around 200 kilometres of new greenfield rail line that would connect emerging resource projects in the Galilee Basin and Bowen Basin into the existing central Queensland coal network at a point on the Goonyella line. Spur rail lines from mines connecting into the central rail line are also part of the project.

In addition, upgrades and deviations to the existing (brownfields) coal network (for example, at Collinsville, Merinda and the Leichhardt Range) are part of the project's scope.

1.1. CQIRP footprint

After the submission period for the draft TOR concluded, QR Limited advised that the company had re-considered the CQIRP footprint in light of the state government's 6 June 2012 announcement that rail proposals in the Galilee Basin should be consolidated into a maximum of two corridors.

As a result of the new government policy, QR Limited has confirmed the company would not be proceeding with the Galilee Junction to South Galilee (GJSG) section of the project which had been included in the Initial Advice Statement supporting the significant project declaration made on 27 January 2012, and the draft TOR. Therefore, the EIS, and subsequent Coordinator-General's evaluation report, will not include the GJSG section of the declared project.

The brownfields areas that are part of the declared project are broadly described as:

- Merinda Upgrade from the boundary of the Abbot Point State Development Area to several kilometres south of Pring, including additional tracks, possible deviation and upgrades to the existing Pring yard.
- Bowen Developmental Road to south of Collinsville, which contains three deviations at Aberdeen, Briaba and Collinsville.
- Leichhardt Range potential yard location
- Denham Junction to Goonyella major deviation and/or duplication of existing track.

The greenfield rail works consists of two new rail corridor sections:

- Denham Junction to Lambing Lagoon Junction, including potential holding roads
- Lambing Lagoon Junction to Central Galilee.

Prior to finalising these TOR, Denham Junction was known as Newlands Junction and Lambing Lagoon Junction was known as Diamond Creek. QR Limited has confirmed the names have been changed to avoid confusion with existing rail place names and provide greater clarity and relevance to the locality.

Other infrastructure included in the project are rail yards, lay down areas, buildings, signals and communication equipment, construction camps and road works.

QR Limited has advised that, apart from the major deviations and the Leichhardt Range rail yard, upgrades to the existing Newlands/Goonyella to Abbot Point and Northern Goonyella (brownfields) rail systems are not included in the scope of this project and are proposed to be managed through a separate process as part of the expansion of the existing Goonyella and Newlands networks.

Therefore, the proponent does not seek an evaluation from the Coordinator-General about upgrades to sections of the brownfields alignment that are not included in the project's scope. However, the EIS may consider the upstream and downstream impacts of such upgrade works, should they impact on project areas.

1.2. Project delivery

QR Limited and its contractors will build, operate and maintain the rail system on behalf of proponents who use the line. Subject to obtaining project approvals, QR Limited proposes to commence construction in 2013, with completion estimated to take approximately two years.

QR Limited advises that up to 2500 people will be employed during construction to deliver the project. In operation, the railway will employ around 800 permanent staff.

It is estimated that the project will require a capital investment of at least $2 billion over a 5–10 year period.

Further information on the project can be viewed at: **www.dsdip.qld.gov.au/cqirp**

2. Project proponent

The proponent is QR Limited (of which QR National is a subsidiary).

QR Limited is Australia's largest rail freight operator with over 145 years experience in operating key freight sectors and supply chains across the country. Its operations focus is on the transportation of coal, iron ore, other minerals, agricultural products and general freight.

QR Limited advises the company is the world's largest rail transporter of coal from mine to port for export, hauling an average of 500 000 tonnes per day in 2009–10.

QR Limited operates and manages around 2300 kilometres of largely dedicated and purpose-built heavy haul rail infrastructure. It has business operations in Queensland, New South Wales, Victoria, South Australia and Western Australia. QR Limited employs approximately 9000 people and controls fixed assets with a book value of $9.2 billion (as at 30 June 2011).

Contact details for the proponent are:

Central Queensland Integrated Rail Project (CQIRP)
Mr Robert Stuart
Group Manager, Major Projects, QR Limited
Level 14, Rail Centre 1, 305 Edward Street

Brisbane Q 4000
Tel +61 7 3235 3707
Email robert.stuart@qrnational.com.au

3. Legislative framework

On 27 January 2012, the Coordinator-General declared the CQIRP project to be a 'significant project' under section 26(1)(a) of the SDPWO Act. This declaration initiated the statutory environmental impact assessment procedure of Part 4 of the SDPWO Act, which requires the proponent to prepare an EIS for the project.

The declaration of the project as a 'significant project' does not indicate support for, or approval of, the project by the Coordinator-General or the Queensland Government. Rather, it is a requirement for the project to undergo a rigorous EIS process.

On 19 April 2012, the Australian Government determined that the project is a 'controlled action' under the EPBC Act for which an EIS is required, due to the likely potential impacts on matters of national environmental significance (MNES) (reference numbers EPBC 2012/6321 and EPBC 2012/6322).

The controlling provisions under the EPBC Act are:

- sections 12 and 15(A) (World Heritage properties)
- sections 15(B) and 15(C) (National Heritage places)
- sections 18 and 18(A) (listed threatened species and communities)
- sections 20 and 20(A) (listed migratory species)
- sections 23 and 24(A) (Commonwealth marine areas)
- sections 24(B) and 24(C) (Great Barrier Reef Marine Park).

As a consequence, the project requires assessment and approval under the EPBC Act. The Commonwealth's assessment matters will be addressed under a separate administrative process conducted by the Department of Sustainability, Environment, Water, Population and Communities (SEWPaC). The project will require approval from the responsible Commonwealth Minister under Part 9 of the EPBC Act before it can proceed.

The Coordinator-General is managing the EIS process. The Coordinator-General has invited relevant state and local government representatives, and other relevant authorities, to participate in the process as advisory agencies.

3.1. 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*.

The Coordinator-General is also required to give the assessment manager a copy of the Coordinator-General's report, and to publicly notify it.

4. Contact information

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

EIS Project Manager—Central Queensland Integrated Rail Project
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 CQIRP@coordinatorgeneral.qld.gov.au
web www.dsdip.qld.gov.au/cqirp

Part B. Content of the EIS

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.

1. Executive summary

The executive summary should convey the most important aspects and options relating to the project to the reader 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 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
- a clear description of what areas of the alignment are included in the project, and so what the Coordinator-General's assessment will address (that is, the greenfields corridor and the brownfields deviations)
- 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 and commitments 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.

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 Part B, Section 4 (refer to page 14).

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.

The project rationale is to describe how the project will meet the state government's policy to support no more than two rail corridors from the Galilee basin enabling access to eastern ports, and that multiple user requirements for all proponents are instituted.

Inherent in this policy is that a corridor is developed which, to the greatest extent possible, minimises real and potential impacts, including land acquisition issues, ongoing farm management, severance, floodplain issues and impacts on the environment generally.

3.4. Relationship to other projects

Describe how the project relates to other infrastructure 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. Detail the criteria used to determine the alternatives and provide sufficient detail to enable the reader to understand 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.

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 and options 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 (for example, 'material change of use' (MCU) applications under SPA) where submitters may have appeal rights. The EIS project manager can assist with preparing information on the submissions process.

3.7. Public consultation process

3.7.1. Overview

The public consultation process should provide opportunities for community involvement and education. It may include interviews with individuals, public communication activities, interest group meetings, printed material and other mechanisms to encourage and facilitate active public consultation. The public consultation processes (community engagement) for all parts of the EIS should be integrated.

Consultation with advisory agencies should be the principal forum for identifying legislation, regulations, policies and guidelines relevant to the project and EIS process. The EIS project manager can assist with identifying advisory agencies.

3.7.2. 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.

3.7.3. 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 Commonwealth, Queensland and 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

List and describe Commonwealth, state and local legislation and policies relevant to the planning, approval, construction and operation of the project. Identify all approvals, permits, licences and authorities that will need to be obtained for the proposed project, in particular, those the proponent seeks to be included in the Coordinator-General's evaluation report. Outline the triggers for the application of each of these and identify relevant approval requirements.

Commonwealth legislation

Relevant Commonwealth legislation may include, but is not limited to:

- *Australian Heritage Council Act 2003*
- *Aboriginal and Torres Strait Islander Act 2005*
- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*
- EPBC Act
- *Maritime Transport and Offshore Facilities Security Act 2003* and Regulations
- *Navigation Act 1912*
- *Native Title Act 1993.*

Identify and outline relevant Commonwealth obligations such as:

- protection of World Heritage values
- migratory animals (China–Australia Migratory Bird Agreement (CAMBA)), Japan–Australia Migratory Bird Agreement (JAMBA), Republic of Korea–Australia Migratory Bird Agreement (ROKAMBA) and Bonn Convention)
- biodiversity
- climate
- wetlands of international importance (Ramsar).

Include reference to the fact that a separate assessment is being conducted under the EPBC Act.

Queensland legislation

Refer to applicable Queensland legislation, which may include, but is not limited to:

- *Aboriginal Cultural Heritage Act 2003* (ACH Act)
- *Acquisition of Land Act 1967*
- *Coastal Protection and Management Act 1995*
- *Dangerous Goods Safety Management Act 2001*
- *Disaster Management Act 2003*
- *Electricity Act 1994*
- *Electrical Safety Act 1994*
- Environmental Protection Regulation 2008
- EP Act
- *Fire and Rescue Service Act 1990*
- *Fisheries Act 1994*
- *Forestry Act 1959*
- *Greenhouse Gas Storage Act 2009*
- *Land Act 1994*
- *Land Protection (Pest and Stock Route) Management Act 2002*
- *Marine Parks Act 2004*
- *Mineral Resources Act 1989*
- *Native Title (Qld) Act 1993*
- *Nature Conservation Act 1992* (NC Act)
- *Petroleum and Gas (Production and Safety) Act 2004*
- *Queensland Heritage Act 1992*
- *Rail Safety Act 2010*
- *Sustainable Planning Act 2009* (SPA)
- SDPWO Act
- *Strategic Cropping Land Act 2011* (SCL Act)
- *Transport Infrastructure Act 1994* (TI Act)
- *Transport Operations (Road Use Management) Act 1995* (TORUM Act) and Regulations
- Transport Operations (Road Use Management—Fatigue Management) Regulation 2008
- Transport Operations (Road Use Management—Mass, Dimensions and Loading) Regulation 2005
- *Transport Planning and Coordination Act 1994*
- *Transport Security (Counter Terrorism) Act 2008* and Regulations
- *Vegetation Management Act 1999* (VM Act)
- *Water Act 2000*
- *Water Supply (Safety and Reliability) Act 2008.*

Queensland approvals

Describe key Queensland approvals required prior to commencement of construction that are to be considered in the EIS process.

Discuss any proposed or potential changes to land tenure or designation and the effect of such changes on approval requirements. Discuss the associated applicable legislation, policy or code provisions.

For all stages of the project, identify the relevant approval agency for each of the approvals required.

Indicate the timing for the close-out of each approval. Discuss which approvals will be proposed to be undertaken as self-assessable works pursuant to legislative requirements.

Note that separate approvals may be required for works outside of the EIS study areas along the existing brownfields alignment.

Key Queensland approvals to be required, and to be considered in the EIS process, include:

Construction

- development permit for operational work that is the removal, destruction or damage of a marine plant—Fisheries Act
- Waterway Barrier Works for in-stream works—Fisheries Act
- Riverine Protection Permit—Water Act
- development permit for operational work that is the clearing of native vegetation—VM Act
- approval to take native wildlife—NC Act
- approval to take protected plants—NC Act
- approval to close a road temporarily or permanently—TORUM Act
- allocation notice for quarry material—Water Act
- permits for the temporary take of water—Water Act
- MCU of a premises for an environmentally relevant activity (ERA)—for example:
  - ERA 16: Extractive and screening activities
  - ERA 18: Boilermaking or engineering
  - ERA 21: Motor vehicle workshop
- road impact assessment (including transport impact assessment) and road-use management plan for development on land not contiguous to a state-controlled road (SCR)—TI Act.

Operation

- ERA 50: Bulk material handling

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 (including regional plans), planning schemes, planning policies, guidelines, strategies and agreements.

Include discussion of the *Planning for stronger, more resilient floodplains* guideline (Queensland Reconstruction Authority 2011b) and *Planning for stronger, more resilient electrical infrastructure* (Queensland Reconstruction Authority 2011a).

4. Project description

Describe the project through its lifecycle of pre-construction, construction, operation and, if relevant, decommissioning. 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.

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
- location, boundaries, and area and size of the project footprint, including easement widths and access requirements
- location and size of any proposed buffers surrounding the working areas (for construction and operation)
- location of existing infrastructure such as the SCR network, local roads, crossings and railways as relevant to the site
- location and description of structures near and/or across SCRs
- location of natural features such as waterways (for example, rivers, streams, creeks, other water bodies and wetlands), shorelines and significant vegetation
- location of any proposed site offices and worker accommodation sites.

4.2.1. Tenements and tenures

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.

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.

4.3. 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.

Provide the following information on the pre-construction, construction and commissioning of the project, including detailed plans, drawings and maps.

4.3.1. Pre-construction activities

Describe all pre-construction activities, including nature, scale and timing of:

- approvals required for this stage
- land acquisitions required, be it in full or as easements, leases etc., and changes to tenure (for example, in SCR reserves)
- 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, sewerage, communication, power, recreation) and safety requirements
- temporary works
- upgrade, relocation, realignment, deviation of or restricted access to roads and other infrastructure
- equipment to be used.

4.3.2. Construction

Describe all the construction elements of the project, including:

- an indicative construction timetable for each section of the project, including expected commissioning and start-up dates
- major work programs for the construction phase, including an outline of construction methodologies

- hours of operation, with any areas where after-hours works are proposed to be undertaken clearly indicated
- workforce numbers
- construction equipment to be used
- construction inputs, handling and storage including an outline of potential locations for source of construction materials, particularly state-owned quarry materials on state and freehold land
- 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 sites and storage areas
- sources of water to be used for construction including camp sites and authorisations required under the Water Act
- proposed sources for extractive materials required for construction of the project.

4.3.3. Commissioning

Describe the commissioning timeframe and process including the associated environmental impacts.

4.4. Operations 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
- hours of operation
- nature and description of all key operational activities
- the capacity of the project equipment and operations
- estimated numbers and roles of persons to be employed during the operational phase of the project
- details of what duties will be automated (for example, driverless trains)
- summary of traffic generation information/transport requirements for the operations of the rail line and facilities associated with the project, including movement of workers.

4.5. Associated infrastructure

Describe, with the aid of maps, concept and layout plans, all other infrastructure required to be constructed, upgraded, relocated or decommissioned for the construction and/or operation of the project, such as resource extraction areas, workforce accommodation, access roads and other transportation, power supply, telecommunications, stormwater, water supply and storage, waste disposal and sewerage.

4.6. Decommissioning and rehabilitation

Describe the options, strategies and methods for progressive and final rehabilitation of the environment disturbed by the project, including:

- developing a preferred rehabilitation strategy with a view to minimising the amount of land disturbed at any one time
- 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 methods for disposing of wastes generated by demolishing project infrastructure, including sufficient detail for their feasibility and suitability to be established
- discussing future land tenure arrangements post-decommissioning of the project.

Include the impacts of the preferred rehabilitation strategy in the appropriate subsections of Section 5 below.

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

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 where prevention is not possible, minimise environmental harm and maximise environmental benefits of the project. Identify and describe preferred measures in more detail than other alternatives.

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).

The mitigation measures, monitoring programs etc. identified in this section of the EIS should be used to develop the EMP for the project. Refer to Part B, Section 10 (page 57).

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 (for example, cyclones) and natural or induced hazards (including bushfire).

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.

Specific storm surge requirements are addressed in Part B, Subsection 8.1 below.

5.1.1. Flood plain management

A comprehensive flood study should be included in the EIS, with particular regard to natural waterways and adjacent floodplain areas determined to have a high flood risk, which includes:

- quantification of flood impacts on properties surrounding and external to the project site from redirection or concentration of flows
- 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 any requirements of local or regional planning schemes for flood affected areas. Flood studies should include a range of annual exceedence probabilities for affected waterways, where data permits. 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.

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

- property and infrastructure, including landholders' businesses and private use of properties
- natural waterways
- the natural landscape in the floodplain area.

The EIS should indicate that consultation with all affected landholders about the flood study data and implications for their properties has been undertaken, and should detail how the landholders' views have been accounted for.

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.

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 infrastructure, gas and water pipelines, powerlines and transport corridors, including local roads, SCRs and rail corridors, and the location of at-grade and grade-separated road crossings
- existing land uses and facilities surrounding the project
- distance of the project areas from residential and recreational areas
- stock routes
- declared water storage catchments
- location of the project in relation to environmentally sensitive areas.

Potential impacts and mitigation measures

Describe the potential changes to existing and potential land uses due to the construction and operation of the project. In particular, describe the following:

- impacts on project site and adjacent land uses and human activities and strategies for mitigation, such as those required by:
  - State Planning Policy 1/92: Development and the Conservation of Agricultural land (Department of Housing, Local Government and Planning & Department of Primary Industries 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 2012b)
  - State Planning Policy 2/07: Protection of Extractive Resources (Department of Mines and Energy 2007a) and *State Planning Policy 2/07 Guideline: Protection of Extractive Resources* (Department of Mines and Energy 2007b), especially with respect to 'key resource areas' defined by that guideline

  - local government planning schemes
- possible effect on town planning objectives and controls, including local government zoning and strategic plans
- constraints to potential developments and possibilities of rezoning adjacent to the development area
- management of the immediate environs of the project including construction buffer zones
- 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
- for grade-separated road crossings, identify:
  - how these will impact on tenure and
  - how approvals for crossings and amendments to tenure will be undertaken
- any land uses requiring specific management measures
- impacts on the use and management of the stock route network due to the construction and operation of the railway. Outline measures to maintain the extent and functioning of the stock route network and associated infrastructure including fences, watering facilities, and access.

Resource sterilisation

Consider the impacts of the project on current and proposed resource mining operations.

Discuss how the proposal will avoid any unnecessary sterilisation of the state's coal, mineral, and petroleum (including gas and coal seam methane) resources that may be impacted upon or sterilised by project infrastructure and activities.

5.2.2. 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. 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 avoid or mitigate the identified 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 and strategies to be implemented to avoid or mitigate, such as:

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

5.2.3. 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.

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. Provide information on soil stability and suitability for construction of project facilities.

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)
- Queensland Acid Sulfate Soil Technical Manual, Soil Management Guidelines 2002

- Acid Sulfate Soil Management Plans for Queensland—*Acid Sulfate Soils: Environmental Issues, Assessment and Management*, Technical Papers (Department of Natural Resources 2000).

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).

Undertake an appraisal of the depth and quality of useable soil. Assess each soil's agricultural land suitability in accordance with:

- *Guidelines for agricultural land evaluation in Queensland* (Department of Primary Industries 1990)
- *Planning guidelines: the identification of Good Quality Agricultural Land*, (Department of Primary Industries & Department of Housing, Local Government and Planning 1993)
- State Planning Policy 1/92: Development and the Conservation of Agricultural Land (Department of Primary Industries & Department of Housing, Local Government and Planning 1992).

Undertake soil tests and laboratory analyses of representative samples down the soil profile, 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. Provide geotechnical information on the soils' stability and suitability for construction of project facilities.

Identify any areas of land within the project study area identified as 'strategic cropping land (SCL) or 'potential SCL' as identified by the SCL Act trigger maps (available from **www.derm.qld.gov.au/land/planning/strategic-cropping/mapping.html**).

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 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 the possible soil erosion rate for all permanent and temporary landforms.

Identify the erosion management techniques to be used to manage the impacts. Include information on how dispersive soils will be managed. Provide details of an erosion monitoring program (including rehabilitation measures for erosion problems identified during construction), and detail acceptable mitigation strategies for the different stages of the project.

Summarise methods proposed to prevent or control erosion with regard to:

- *Best Practice Erosion and Sediment Control* (International Erosion Control Association 2008)
- *Urban Stormwater Quality Planning Guidelines* (Department of Environment and Resource Management 2010)
- preventing soil loss in order to maintain land capability/suitability
- preventing degradation of local waterways.

Discuss the potential for acid generation by 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).

Identify any areas within the project footprint likely to temporarily or permanently impact SCL.

Describe the potential impacts on SCL or potential SCL and adjacent land uses and human activities, and proposed mitigation, consistent with the requirements of the SCL Act, Strategic Cropping Land Regulation 2011 and State Planning Policy 1/12: Protection of Queensland's Strategic Cropping Land (Department of Environment and Resource Management 2012b).

Where areas of identified SCL are likely to be permanently alienated by the project, the proponent should contact the relevant state government agencies to discuss undertaking the SCL assessment process defined by the SCL Act. The EIS project manager can facilitate this contact.

5.2.4. 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
- 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 and operation, 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 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, and ballast contamination resulting from flood impacts.

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

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 species
- conservation of resources
- biological diversity, including habitat of endangered, vulnerable and near-threatened 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 populations.

Provide a list of EPBC Act listed threatened species and communities and listed migratory species identified as likely to be effected by the project. This is required to allow comparison with species and ecosystems listed as ‘endangered’ or ‘of concern’ under state legislation.

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

Identify areas that are environmentally sensitive in proximity to the project on a map of suitable scale. 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 as presumed extinct in the wild, endangered, vulnerable or near-threatened
- 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/ecosystems/biodiversity/regional-ecosystems/index.php**
- sites listed under international treaties such as Ramsar wetlands and World Heritage areas
- sites containing near-threatened or bio-regionally significant species or essential, viable habitat for near-threatened or bio-regionally significant species
- sites in, or adjacent to, areas containing important resting, feeding or breeding sites for migratory species of conservation concern listed under the Convention of Migratory Species of Wild Animals, and/or bilateral agreements between Australia and other countries
- sites adjacent to nesting beaches, feeding, resting or calving areas of marine species of special interest (for example, marine turtles, dugongs and cetaceans)
- 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/protected areas to ensure survival in the longer term; such land may contain:
  - natural vegetation in good condition or other habitat in good condition (for example, 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 (for example, high habitat diversity and areas of high endemism)
- ecosystems that provide important ecological functions such as:
  - wetlands of national, state and regional significance including those subject to the State Planning Policy 4/11: Protecting Wetlands of High Ecological Significance

in Great Barrier Reef Catchments (Department of Environment and Resource Management 2011e)
  - riparian vegetation
  - important buffer to a protected area or important habitat corridor between areas
- declared fish habitat areas and sites containing protected marine plants under the Fisheries Act
- sites of palaeontologic significance such as fossil sites
- sites of geomorphological significance, such as lava tubes or karst
- protected areas that have been proclaimed under the NC Act and Marine Parks Act, or are under consideration for proclamation
- areas of major interest, or critical habitat declared under the NC Act
- remnant vegetation listed under the VM Act as containing endangered and of-concern REs where clearing is likely to result in land degradation and a loss of ecosystem function and biodiversity.

Areas of special sensitivity include the marine environment and wetlands, 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 national 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 listed species and their habitat
- 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 a threatened community, include reasons for the preferred alignment and the viability of alternatives.

The EIS should provide details about the approvals that will be required under the NC Act and the VM Act for development made assessable under SPA. The overall 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:

- Policy for Vegetation Management Offsets (Department of Environment and Resource Management 2011b)
- Queensland Biodiversity Offset Policy (version 1) (Department of Environment and Resource Management 2011c)
- Marine Fish Habitat Offset Policy (FHMOP 005.2) (Department of Agriculture, Fisheries and Forestry 2012).

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

Provide sufficient information to demonstrate that offset requirements of relevant policies are able to be complied with. Consultation with advisory agencies responsible for administering offsets under the above policies is recommended to clarify offset requirements.

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, with reference to the *Landscape Expert Panel Report for the Biodiversity Planning Assessment Northern Brigalow Belt Bioregion* (Environmental Protection Agency 2008a).

Discuss any variances between site mapping and mapping produced by the Queensland Herbarium.

Note that it is recommended that the proponent carry out a bio-condition assessment of each RE to be impacted at the same time as the flora survey as this may be more cost-effective and better inform the proponent of the offset requirements.

Describe the terrestrial vegetation communities within the affected areas at an appropriate scale (at least 1:50 000), with mapping produced from aerial photographs and ground-truthing, showing the following:

- location and extent of vegetation types using the RE type descriptions in accordance with the REDD
- location of vegetation types of conservation significance based on RE 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 Land Act)

- any plant communities of cultural, commercial or recreational significance
- the location of any horticultural crops in the vicinity of the project area
- location and abundance of any exotic or weed species.

Where there is potential to find threatened species within the project area (for example, special localised habitat) the scale of survey and mapping should be relevant to the particular species.

Highlight the value of sensitive or important vegetation types 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.

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
- 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 2006 (Qld), other than common species, are to be submitted to the Queensland Herbarium for identification.

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.

Note that consultation with relevant advisory agencies on scale and methodologies before commencing surveys is required. The EIS project manager can assist with advice on consultation (refer to page 6).

Discuss any variances between site mapping and mapping produced by the Queensland Herbarium, including sufficient details of survey timing, location and methodology, to allow assessment of the accuracy of the revised mapping.

Note: Changes to RE mapping can be confirmed by applying for a Property Map of Assessable Vegetation (PMAV)—refer to
www.derm.qld.gov.au/vegetation/pmavs.html

Potential impacts and mitigation measures

Describe the potential environmental harm 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.

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
- a description of any foreseen impacts which increase the susceptibility of ecological communities and species to the impacts of climate change.

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

Weed management

Weed management strategies are required for containing existing weed species (for example, 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. Include in the EIS results of consultation with the local government authority about the pest management plan for the local area, and how comments received were incorporated in the project's weed management approach.

Discuss the project's management 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 area should include:

- species diversity and abundance, including a site list of animal species and abundance for each RE or ecological community surveyed
- any species that are poorly known but suspected of being endangered, vulnerable and near-threatened
- habitat requirements and sensitivity to changes, including movement corridors and barriers to movement
- the existence of feral or introduced animals including those of economic or conservation significance
- existence (actual or likely) of any species/communities of conservation significance in the study area, including discussion of range, habitat, breeding, recruitment feeding and movement requirements, and current level of protection (for example, any requirements of protected area management plans or threatened species recovery plans)
- an estimate of commonness or rarity for the listed or otherwise significant species
- use of the area by migratory fauna.

Identify any species listed by the EPBC Act and 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 the government agency responsible for maintaining the Wildlife Online database for listed threatened species in a format compatible with the database (refer to **www.ehp.qld.gov.au/wildlife/wildlife-online/index.html**).

Potential impacts and mitigation measures

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
- commitments to the provision of fauna passage between habitat fragmented by the rail corridor, of suitable design and location for affected species and their habitat.

Outline how these measures will be implemented in the overall EMP for the project. Rehabilitation of disturbed areas should incorporate, where appropriate, provision of nest hollows and ground litter.

Feral animal management

Address feral animal management strategies and practices. The study should develop strategies to ensure that the project does not contribute to increased encroachment of a feral animal species.

Refer to the local government authority's pest management plan and any strategies and plans recommended for the project area by Biosecurity Queensland. Include in the EIS results of consultation with the local government authority about the pest management plan for the local area, and how comments received were incorporated in the project's feral animal management approach.

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 proposal. 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 endangered, vulnerable and near-threatened marine species
- 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 and exotic/weed species
- aquatic and benthic substrate
- habitat downstream of the project or potentially impacted due to currents in associated lacustrine and marine environments

- aquatic substrate and stream type, including extent of tidal influence and common levels such as highest astronomical tide and mean high water springs
- 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 the state 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 ecosystems and describe proposed mitigation actions, including:

- potential impacts due to alterations to the long-term hydrodynamic processes of the coastal environments should be discussed, with specific reference to impacts on riparian vegetation and other sensitive vegetation communities, including mangrove stands and seagrass meadows
- proposed location, type and design of waterway barrier works (temporary and permanent structures in both permanent and ephemeral waterways) that would impact on aquatic resources, particularly fish movement, with an appropriately scaled map
- potential mechanism to ensure adequate fish passage is provided at proposed marine infrastructure
- 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
- potential impacts from climate change and the project's potential to increase the susceptibility of aquatic ecological communities and species.

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

5.4. Water resources

5.4.1. Description of environmental values

Describe and illustrate the surface watercourses, overland flow, palustrine and lacustrine wetlands that may be affected by the project.

The description is to include suitably scaled maps of catchments, watercourses, drainage pathways, wetlands, or sources of water supply (such as farm dams) potentially affected by the project, whether on or off the project site.

Describe, with supporting photographs, the geomorphic condition of any watercourses likely to be affected by disturbance or any stream diversions. The results of this description will form the basis for the planning and subsequent monitoring of watercourse rehabilitation. The description will be given in the context of environmental values, as defined in such documents as:

- EP Act
- Environmental Protection (Water) Policy 2009 (EPP (Water)),
- Isaac River Sub-basin Environmental Values and Water Quality Objectives (Department of Environment and Resource Management 2011a)
- *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) and
- *Queensland Water Quality Guidelines 2009* (Department of Environment and Resource Management 2009c).

Provide an indication of the quality and quantity of water resources in the vicinity of the project area, describing:

- 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.

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

- values identified in the EPP (Water)
- physical integrity, fluvial processes and morphology, including riparian zone vegetation and form, if relevant
- any impoundments (for example, dams, levees, weirs) and permanent or temporary structures in permanent or ephemeral waterways
- hydrology of waterways
- sustainability, including both quality and quantity
- dependent ecosystems
- existing and other potential surface water users
- water resource plans relevant to the affected catchments.

Groundwater

A groundwater assessment is to be undertaken if the project is likely to use or affect local sources of groundwater. The assessment must describe groundwater resources in the area in terms of:

- geology/stratigraphy

- aquifer type—such as confined, unconfined
- 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
- 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).

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, the aquifer itself and any connected aquifers will be affected by the take of water.

The review should identify existing groundwater supply facilities (bores, wells, or excavations). The information to be gathered for analysis is to include:

- location
- pumping parameters
- drawdown and recharge at normal pumping rates
- seasonal variations (if records exist) of groundwater levels.

5.4.2. Potential impacts and mitigation measures

Assess the project's potential impacts on water resource environmental values identified in the previous section. Also, 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 and groundwater from all phases of the project, with reference to their suitability for the current and potential downstream uses and discharge licences
- an assessment of the impacts the rail alignment may have on overland flow paths
- 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
- an assessment of the requirements of the relevant water resource plans for sourcing of water supply for the project

- 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
- impacts of any impoundments on aquatic ecology, fauna and flora at the site and downstream of the site due to lost habitat within the impoundment and changes in flow patterns downstream
- an assessment of the potential to contaminate surface and groundwater resources and measures to prevent, mitigate and remediate such contamination
- details of the design of crossings for watercourses sufficient to determine the level of approval required under the Water Act
- potential impacts of in-stream works on hydrology and water quality and proposed measures for avoiding or mitigating the impacts and stabilising and rehabilitating any works.

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.

If a major re-alignment of a watercourse is proposed and a licence to interfere with a watercourse is required, then the diversion must be designed, constructed and monitored in accordance with the relevant ACARP reports as advised by the relevant state agency. The state government regional guideline entitled Watercourse Diversions – Central Queensland Mining Industry dated 15 March 2011 should also be utilised.

Surface water and water courses

Assess the hydrological impacts of the proposal on surface water and water courses, particularly with regard to stream diversions, scouring and erosion, and changes to flooding levels and frequencies both upstream and downstream of the project. If flooding levels will be affected, modelling of afflux should be provided and illustrated with maps.

Discuss the need or otherwise for licensing of any dams or creek diversions under the Water Act, and referable dams under the Water Supply (Safety and Reliability) Act. Water allocation and water sources, including impacts on existing water entitlements (including water harvesting) should be established in consultation with the relevant state government agency (the EIS project manager can assist with this consultation).

Describe the regulatory requirements under the Water Act and SPA that may be required for the access to water supply. Address the volumetric water requirements of the project, any investigation work required to determine the availability of the supply, and the proposed construction of any works required for water supply. The capacities of any storage to be constructed to capture water for water supply should also be included within this section.

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
- structural integrity of the containing walls
- relevant operating regime
- 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

The EIS is to demonstrate that existing groundwater entitlements will be maintained.

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.

The impact assessment should define the extent of the area within which groundwater resources are likely to be affected by the proposed operations and the significance of the project to groundwater depletion or recharge.

Describe the proposed management options available to monitor and mitigate these effects. In particular, state the proposed methods and the feasibility of those methods to ‘make good’ any adverse affects on the groundwater resources utilised by adjacent landholders

Describe the response of the groundwater resource to the progression and finally cessation of the project, particularly in relation to the recharge potential of aquifers affected by the project.

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 vegetation. Describe avoidance and mitigation measures.

5.5. Coastal environment

Describe the existing coastal environment that may be affected by the project in the context of coastal values identified in the Queensland State of the Environment reports and environmental values as defined by the EP Act and environmental protection policies.

Identify actions associated with the project that are assessable development within the coastal zone and will require assessment under the provisions of the Coastal Protection and Management Act.

Assess the project's consistency with the relevant policies of the *Queensland Coastal Plan* (Department of Environment and Resource Management 2012a), including the State Planning Policy: Coastal Protection (Department of Environment and Resource Management 2011g) and the State Policy: Coastal Management (Department of Environment and Resource Management 2011e).

5.5.1. Water quality

Description of environmental values

Provide baseline information on water quality of coastal waters that could be affected by run-off from the project. This information should include (but is not necessarily limited to) general physical and chemical water quality parameters such as dissolved oxygen, pH, heavy metals, nutrients, temperature, salinity, oil in water and turbidity (measured in Nephelometric Turbidity Units). For coastal areas potentially affected by sediment run-off, include suspended solids concentration and turbidity. Discuss the interaction of freshwater flows with coastal waters and the significance of this in relation to marine flora and fauna adjacent to the project area.

Describe the environmental values of coastal waters in the affected area in terms of:

- variability associated with the local wind climate, seasonal factors, freshwater flows and extreme events
- values identified in the EPP (Water) 2009.

Potential impacts and mitigation measures

Define and describe the water quality objectives and practical measures for protecting, mitigating or enhancing coastal environmental values. This includes how nominated quantitative standards and indicators may be achieved, and how the achievement of the water quality objectives will be monitored, audited and managed. The potential environmental harm caused by the project on coastal resources and processes shall be described in the context of controlling such effects.

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) should be addressed, as should the *Queensland Coastal Plan* (Department of Environment and Resource Management 2012a) and the *Fish Habitat Guideline FHG 002—Restoration of fish habitats: fisheries guidelines for marine areas* (Hopkins, White & Clarke 1998).

Specific issues to be addressed include:

- the water quality objectives used (including how they were developed), and how predicted activities will meet these objectives (refer to the *Queensland Water Quality Guidelines 2009* (Department of Environment and Resource Management 2009b) and *The 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)
- potential threats to the water quality and sediment quality of the coastal environment, specifically associated with constructing and operating the facilities. This assessment shall consider, as a minimum:
  - potential accidental discharges of contaminants during construction and operation of the project
  - stormwater run-off from the project facilities and associated infrastructure
  - flooding of relevant river systems and other extreme events.

Describe strategies for protecting Ramsar wetlands; and discuss any obligations imposed by state or Commonwealth legislation or policy, or international treaty obligations (that is, JAMBA, CAMBA and ROKAMBA).

5.6. Air quality

5.6.1. 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
- pollutants, including greenhouse gases, that may be generated by the project
- baseline monitoring results that are representative of the nearest sensitive receptors
- data on local meteorology and ambient levels of pollutants. This is needed to provide a baseline for later studies or for the modelling of the project's potential influence on air quality and risk of causing environmental harm.

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

5.6.2. Potential impacts and mitigation measures

Consider the following to assist in documenting the air quality issues associated with the project and their mitigation:

- an inventory of air emissions from the project expected during construction and operational activities (including source, nature and levels of emissions)
- '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 is subject to the requirements of 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
- potential for project emissions, including coal dust emissions during operation of the line, to cause impacts on dust sensitive places, terrestrial flora and fauna, and other natural values.

Detail the best practice mitigation measures together with proactive and predictive operational and maintenance strategies that could be used to prevent and mitigate impacts. Include in these measures the veneering of coal to manage dust.

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

Detail the commitment to implement across the project's rail network the coal dust management plan as approved by state government, which details measures to manage dust including requirements for new coal-loading facilities, load controls, spray-on coal dust suppressant systems, and train unloading and cleaning systems.

5.7. Greenhouse gas emissions

5.7.1. 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 2010c) 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.

5.7.2. 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
- any opportunities to further offset greenhouse gas emissions through indirect means including sequestration and carbon trading.

5.8. Noise and vibration

5.8.1. 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)).

The *Code of Practice – Railway Noise Management* (Queensland Rail 2012) and *Noise Measurement Manual* (Environmental Protection Agency (EPA) 2000) should be considered and reference should be made to the EPA Guideline *Noise and Vibration from Blasting* (Environmental Protection Agency 2006).

Identify sensitive noise receptors adjacent to all project components and estimate typical background noise and vibration levels based on surveys at representative sites. Discuss the potential sensitivity of such receptors and nominate performance indicators and standards.

5.8.2. Potential impacts and mitigation measures

Describe the impacts of noise and vibration generated during the construction and operational phases of the project. Noise and vibration impact analysis should include:

- the levels of noise and vibration generated, including noise contours, assessed against the performance indicators and standards nominated in section 5.8.1 of these terms of reference, using modelling where appropriate
- impact of noise and vibration at all potentially sensitive receivers compared with the performance indicators and standards nominated above
- impact on terrestrial 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.

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 (for example, 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 (including transportation to and from site) and associated mitigation measures to be undertaken by the proponent
- the methods that will be used to communicate with affected residents.

5.9. Waste

5.9.1. Waste generation

Identify and describe all sources, likely volumes and quality (where applicable) of waste associated with pre-construction, construction, operation and decommissioning of all aspects of the project. Refer to regulated waste listed in Schedule 7 of the Environmental Protection Regulation 2008. Describe:

- waste generated by delivery of material to sites
- all chemical and mechanical processes conducted on the construction sites that produce waste
- the amount and characteristics of solid and liquid waste produced on site by the project
- hazardous materials to be stored and/or used on site, including environmental toxicity data and biodegradability.

5.9.2. Waste management

Assess the potential impact of all wastes 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). Provide details of each waste in terms of:

- the options available for avoidance/minimisation
- operational handling and fate of all wastes including storage
- on-site treatment methods proposed for any wastes
- methods of disposal (including the need to transport wastes off site for disposal) proposed to be used for any trade wastes, liquid wastes and solid wastes
- 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 and/or 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.

5.10. 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.

5.10.1. Existing infrastructure

Describe the extent, condition and capacity of the existing transport infrastructure on which the project will depend.

Describe the project's impact on the local and SCR networks.

Include overview maps of the existing and proposed locally controlled road (LCR) network and SCR network to reference the LCR and SCR networks and other major transport infrastructure features (for example, bridges along the networks) to enable the project site locations to be fully understood in the context of the networks.

The maps should also include the location of construction activities (including lay down areas, construction camps, etc), access locations (existing and proposed) to the LCR and SCR networks, and any potential crossings of the networks associated with the proposed rail line.

5.10.2. Transport tasks and routes

Describe:

- expected volumes of project inputs and outputs to be transported, such as raw materials, wastes, hazardous goods and finished products for all phases of the project
- how identified project inputs and outputs will be moved through the transport network (mode, volume, composition, trip timing, numbers of trips, sources, and routes for haulage of materials) for all phases of the project
- traffic generated by workforce personnel including core, contractors and visitors (volume, composition, timing and routes) for all phases of the project
- likely heavy and oversize/indivisible loads (volume, composition, timing and routes) highlighting any vulnerable bridges and structures along proposed routes
- description of current and any change in rail activity at existing at-grade rail crossings.

Traffic data should be presented in a format similar to the Department of Transport and Main Roads (TMR) ARMIS (A Road Management Information System) format. The data should include average annual daily traffic, including totals and data provided separately for each direction of traffic flow. Include information on percentages of vehicles by class (taking into account Austroads vehicle classes).

5.10.3. 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 new infrastructure, and upgrading of existing infrastructure within or impacting on the jurisdiction of any transport authority.

5.10.4. 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).

Assess project impacts on:

- capacity, safety, local amenity, efficiency and condition of transport operations, services and assets (from either transport or project operations)
- existing transport uses, for example, agriculture, industry and (rail) passenger services, for road and rail networks
- LCR and SCR networks, including key road and road/rail intersections, for all project phases, with due consideration given to project inputs and outputs, coal freight and all workforce travel. Any impact to level crossings resulting from increased rail activity should be assessed using the Australian Level Crossing Assessment Model (ALCAM) during the detailed design phase and again during the operations phase
- possible interruptions to transport operations, including other rail services
- the natural environment within the jurisdiction of an affected transport authority (for example, road and rail corridors)
- for discussion about management of heavy and oversize/indivisible vehicles, include consideration of the requirements of the Transport Operations (Road Use Management—Mass, Dimensions and Loading) Regulation
- as construction, replacement and maintenance works on bridges, culverts and other road crossings are considered waterway barrier works, identify waterway crossing points that will require such work be undertaken by the project
- the nature and likelihood of product-spill during transport, if relevant
- driver fatigue for workers travelling to and from regional centres and key destinations (with reference to the Transport Operations (Road Use Management—Fatigue Management) Regulation)
- 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 impact management strategies

Discuss and recommend how identified impacts will be mitigated so as to maintain safety, efficiency and condition of each mode. Include consideration of avoiding delays

and interruptions to use of the existing Newlands line. These mitigation strategies are to be prepared in close consultation with relevant transport authorities and should consider those authorities' works program and forward planning.

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

Consultation with policing and safety services authorities is also required to inform development of the transport management plan. Consider engaging early with policing authorities on project requirements for police escort duties (for example, for over-dimensional vehicles) to ensure adequate resourcing.

Describe how road safety will be addressed in the EMP for the project. Refer to the *Queensland Road Safety Action Plan 2010–2011 'Safe4life'* (Department of Transport and Main Roads 2010) or the most recent version of the plan. Indicate results of consultation with police and safety advisory agencies on road safety considerations.

Road/rail management planning

Outline:

- procedures for assessing and agreeing on the scope of required mitigation works with road/rail corridor managers, including any associated works, such as sourcing water and gravel
- infrastructure-based and other strategies to minimise the effects of project transport on existing and future public road or rail corridors
- strategies to minimise road-based trips by optimising project transport logistics during the construction and operations phases
- 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
- the process for decommissioning any temporary access to road/rail reserves, for example, stockpile sites

Findings of studies and transport infrastructure impact assessments should be an input into preparing a draft road-use management plan which should also detail strategies for impact mitigation and road-use management. In developing the plan, consideration should be given to the *Guideline for preparing a Road-use Management Plan*. Conditions of approval for transport management impacts should also be detailed in the EMP.

Air services

Describe the air services and their current capacity serving the region. Estimate the project's requirements for air transport to and from these regions, and the services required to supply these projections. Provide an assessment of the infrastructure needed to support the projected level of air services.

5.11. Indigenous cultural heritage

5.11.1. Description of existing Indigenous cultural heritage values

Subject to any legislated confidentiality provisions, describe the existing Indigenous cultural heritage values that may be affected by the project, including significant Indigenous objects and significant Indigenous areas, and the environmental values of the cultural landscapes of the affected area in terms of the physical and cultural integrity of the landforms.

Also describe how, in conjunction with the appropriate Indigenous people, subject to confidentiality requirements, the cultural heritage values were ascertained. This could include:

- the results of any Aboriginal cultural heritage survey undertaken
- the state government Aboriginal Cultural Heritage Register and Database
- any existing literature relating to Indigenous cultural heritage in the project area.

5.11.2. Potential impacts and mitigation measures

Define and describe the objectives and practical measures for protecting or enhancing Indigenous cultural heritage environmental values. Describe how nominated quantitative standards and indicators may be achieved for cultural heritage management, and describe how the achievement of the objectives will be monitored, assessed and managed.

To the greatest extent practicable, significant cultural heritage areas should be avoided by the project. The EIS should provide an assessment of likely effects on sites of Indigenous cultural heritage values, including but not limited to the following:

- description of the significance of artefacts, items or places of conservation or cultural heritage values likely to be affected by the project and their values at a local, regional and national level
- recommended means of mitigating any negative impact on cultural heritage values and enhancing any positive impacts.

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

During the EIS process, the proponent should initiate a native title agreement (NT agreement), as defined under the ACH Act, which includes management and protection strategies for Indigenous cultural heritage or a Cultural Heritage Management Plan (CHMP) under the ACH Act. An NT agreement or an approved CHMP in a form which complies with Part 7 of the ACH Act will ensure that the project meets the Aboriginal cultural heritage duty of care imposed by the ACH Act.

An NT agreement or CHMP should be negotiated between the proponent and the appropriate native title/Indigenous parties and should include the following:

- a process for including Indigenous people associated with the development areas in protection and management of Indigenous cultural heritage

- processes for mitigating, managing and protecting identified cultural heritage sites and objects in the project areas, including associated infrastructure developments, during both the construction and operational phases of the project
- provisions for managing the accidental discovery of cultural material, including burials
- a clear recording process to assist initial management and recording of accidental discoveries
- a cultural heritage induction for project staff
- developing a cultural heritage awareness program to be incorporated into the contractor/employee manual and induction manual. This is to be in the form of a plain language, short document that is easy for contractors and staff 'on the ground' to understand
- a conflict resolution process.

If an NT agreement is not finalised or a CHMP has not been approved, when the EIS is submitted to the Coordinator-General the following must be provided:

- an outline of the draft CHMP or draft plan within the NT agreement that addresses management and protection strategies for cultural heritage, subject to any confidentiality provisions, outlining the position of the relevant parties
- details of the proposed steps and timeframes for finalising the CHMP or NT agreement.

5.11.3. Native title

Identify 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.

Identify the potential for 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.

5.12. Non-Indigenous cultural heritage

5.12.1. Description of existing non-Indigenous cultural heritage values

Include a systematic non-Indigenous cultural heritage study/survey that describes non-Indigenous cultural heritage sites and places, and their values over the project footprint. Desktop analysis and consultation should determine what level of field survey is necessary to confirm and assess expected heritage occurrences.

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 (for example, 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.

Consideration of DEHP's draft *Guideline: Archaeological Investigations* should inform the studies (refer to **www.ehp.qld.gov.au/heritage/archaeology/index.html**).

5.12.2. Potential impacts and mitigation measures

Provide an assessment of any likely effects on sites of non-Indigenous cultural heritage values, including but not limited to the following:

- description of 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
- recommended means of mitigating any negative impacts on non-Indigenous cultural heritage values and enhancing any positive impacts
- strategies to manage places of historic heritage significance, taking account also of community interests and concerns.

As a minimum, investigation, consultation, impact assessment, management and protection strategies should satisfy statutory responsibilities and duties of care, including those under the Queensland Heritage Act.

6. Social values and management of impacts

6.1. Description of existing social values

Conduct a social impact assessment (SIA) in consultation with the office of the Coordinator-General's Coordinated Project Delivery Division. Matters to be considered include the social and cultural area, community engagement, a social baseline study, a workforce profile, potential impacts and mitigation measures and management strategies.

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 (for example, integrity of social conditions, visual amenity and liveability, social harmony 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 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 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.

The social baseline study should describe and analyse a range of demographic and social statistics determined relevant to the project's social and cultural area including:

- major population trends/changes that may be 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

- a profile of the workforce that describes the projected non-resident workforce
- housing costs (monthly housing repayments (per cent of dwellings in each category), and weekly rent (per cent 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
- with regard to analysis of issues in the Collinsville region, the *Bowen Abbot Point Accommodation and Community Infrastructure Study* (Whitsunday Regional Council & Department of Infrastructure and Planning 2010) should be considered
- 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 Part B, Subsection 7.1 (Economy).

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/significantprojects.aspx**
- a workforce profile that describes the projected non-resident workforce
- 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/significantprojects.aspx**) provides essential information, contact and relevant program details to develop the workforce management plan.

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/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
  - 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, with regard to the source of the workforce. Present this information according to occupational groupings of the workforce. Detail whether the proponent, and/or contractors, is likely to employ

locally or through other means and whether there are initiatives for local employment business opportunities

- 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's Coordinated Project Delivery Division, 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 2011b) 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.

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

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.

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).

7. Economies and management of impacts

7.1. Economy

7.1.1. 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
- the key regional markets relevant to the project:
  - labour market
  - 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 (wage rates, building costs, housing rent etc.)
- land values in the region by type of use.

7.1.2. 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 and/or other relevant measure of industry activity
- 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 economic impacts on local agriculture and industry if transportation of their product by the project is tenable
- the distributional effects of the proposal including proposals to mitigate any negative impact on disadvantaged groups.

7.2. Strategies for local participation

The assessment of economic impacts should outline strategies for local participation, including:

- strategies for assessing the cost effectiveness of sourcing local inputs from the regional economy during the construction, operation and rehabilitation phases of the project
- the potential impact on extractive resource availability in the regions, both during and after construction and any economic consequences for the regions
- 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 responding to relevant government policy, relating to:
  - 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, with consideration of the intent of 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)
  - development of a Local Industry Participation Plan in accordance with the Local Industry Policy (Department of Employment, Economic Development and Innovation 2010) and the *Local Industry Policy Guidelines* (Department of Employment, Economic Development and Innovation 2011a) in consultation with the DSDIP Office of Advanced Manufacturing, to embrace the use of locally sourced goods and services.

7.3. 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 (for example, disruption to stockyards, fences, water points, sowing or harvesting of crops, movement of livestock, agricultural machinery and any loss of agricultural land)
- range of measures required to mitigate real and potential disruptions to rural practices and management of properties.

With reference to flooding impacts, the EIS should describe:

- any potential flood impacts on adjacent properties as a result of the project
- how potential impacts will be minimised through the design and delivery of the project
- what mitigation measures will be implemented to further manage impacts.

7.4. 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.

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 and abnormal events that may occur during all stages of the project, including possible frequency of occurrence
- identifying possible causes of fire due to construction and maintenance activities of the proposed development and the existing fire hazard severity of the areas on and immediately adjacent to the project site using 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 2003), or a similar assessment method. A bushfire management plan should be developed for areas with a medium to high bushfire hazard rating

- identifying all hazardous substances to be used, stored, processed or produced and the rate of usage
- potential wildlife hazards, natural events (for example, cyclone, storm surge, flooding, bush fire) 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). With respect to risk assessment, the EIS should:

- deal comprehensively with external and on-site risks including transport risks. Consider also potential impacts to emergency services delivery due to project works and infrastructure
- 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.

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

Provide a draft risk management plan.

8.2. Health and safety

8.2.1. 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.

8.2.2. 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 impacts 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.

Include relevant consultation with the appropriate regional health service (including Queensland Ambulance Service) providers.

8.3. 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 and policing providers.

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 operation and construction including identification of key stakeholders.

Provide information on the design and operation of proposed safety and contingency systems to address Queensland's counter-terrorism and critical infrastructure protection policies and arrangements and an operational security plan.

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:

- terrorist attack
- fire prevention/protection
- leak detection/minimisation
- release of contaminants
- emergency shutdown systems and procedures
- natural disasters
- train derailments
- level crossing collisions.

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 2003)
- 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, etc.
- an outline of any dangerous goods stores associated with the plant operations, including fuel storage and emergency response plans.

Present outlines of emergency planning and response strategies, including traffic contingencies, to deal with relevant incidents above, which have been determined in consultation with state and regional emergency services and police, 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 Police Services, 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 projects publicly known or advised by the office of the Coordinator-General to be in the region, to the greatest extent practicable. Assess cumulative impacts with respect to both geographic location and environmental values. 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). Include consideration of impacts on, and by, transport networks.

10. Environmental management plan

Detail the EMPs for both the construction and operation phases of the project. The EMP should be developed from, and be consistent with, the information in the EIS. The EMP must 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 other 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

– a rehabilitation program for land proposed to be disturbed under each relevant aspect of the proposal.

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).
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 as Coordinator-General's 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.

11. Conclusions and recommendations

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

12. References

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

13. Appendices

Provide the following as appendices to the EIS:

- the final TOR

- a 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 (cross reference this to Part B, section 3.8 of the TOR)
- the consultation report, as described in Part B, Subsection 3.7, (page 10)
- a list of the relevant qualifications and experience of the key study team members and specialist sub-consultants
- a glossary of technical terms and a list of abbreviations
- all reports generated on specialist studies undertaken as part of the EIS
- 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.

Acronyms and abbreviations

Acronym/abbreviation	Definition
ACH Act	*Aboriginal Cultural Heritage Act 2003* (Qld)
AS/NZS	Australian standard/New Zealand standard
ARMIS	A Road Management Information System
CAMBA	China–Australia Migratory Bird Agreement
CHMP	cultural heritage management plan
DAFF	Department of Agriculture, Fisheries and Forestry, Queensland (formerly part of DERM)
DEEDI	The former Department of Employment, Economic Development and Innovation, Queensland (now DSDIP)
DSDIP	Department of State Development, Infrastructure and Planning, Queensland (formerly DEEDI)
DEHP	Department of Environment and Heritage Protection (formerly part of DERM)
DERM	The former Department of Environment and Resource Management, Queensland (now various departments)
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
GJSG	Galilee Junction to South Galilee
JAMBA	Japan–Australia Migratory Bird Agreement
MNES	matters of national environmental significance (under the EPBC Act)
NC Act	*Nature Conservation Act 1992* (Qld)
NGA	National Greenhouse Accounts
NT agreement	native title agreement
RE	regional ecosystem
REDD	Regional Ecosystem Description Database
ROKAMBA	Republic of Korea–Australia Migratory Bird Agreement
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	QR National
TMR	Department of Transport and Main Roads, Queensland
TOR	terms of reference
VM Act	*Vegetation Management Act 1999* (Qld)

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