



Queensland Government

Department of **Infrastructure**

Jilalan Rail Yard Project

**FINAL
TERMS OF REFERENCE
FOR AN
ENVIRONMENTAL IMPACT STATEMENT**

**UNDER PART (4) OF THE QUEENSLAND STATE DEVELOPMENT AND
PUBLIC WORKS ORGANISATION ACT 1971**

JULY 2007

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PREAMBLE

Project Proponent

The Proponent for this proposal is Queensland Rail (QR). QR provides innovative rail-based transport services and is a \$2 billion a year business. On any week day, the QR network operates 900 train services, and moves more than 400,000 tonnes of freight. QR has expertise in the design and construction of railways and the systems needed to operate them.

Project Background

The Jilalan Rail Yard is located south-east of the town of Sarina in the Sarina Shire, Central Queensland. The proposed expansion of the Yard will incorporate two new bypass tracks with room for a third, two provisioning tracks, a train provisioning facility, a wagon maintenance facility, and modifications to the existing yard and maintenance tracks.

The key objective of Jilalan Rail Yard Project (“the Project”) is to increase the capacity and operational efficiency of the rail system, in line with other infrastructure expansions at the Hay Point Services Coal Terminal (HPSCT) and the Dalrymple Bay Coal Terminal (DBCT). The Project is designed to eliminate a bottleneck in the rail system by: providing full mainline tracks, extending the length of rail yard tracks to handle longer trains, and extending the capacity of maintenance and provisioning facilities in the Yard. The upgrade will provide the ability to handle up to 584 trains movements per week compared to fewer than 390 currently.

As the proposal traverses land under the jurisdiction and interest of local and State Government Agencies, this Terms of Reference (ToR) document has been drafted to meet the legislative requirements of all Government agencies.

QR has prepared an Initial Advice Statement (IAS), which provides further detail relating to the Project, which can be viewed at <http://www.infrastructure.qld.gov.au/eis>

Administrative Procedures for these Terms of Reference

On 8 May 2007, the Project was declared to be a ‘significant project for which an Environmental Impact Statement is required’ by the Queensland Coordinator-General (CG) pursuant to Section 26(1)(a) of the *State Development and Public Works Organisation Act 1971* (SDPWO Act), which requires QR to prepare an Environmental Impact Statement (EIS).

On 10 April 2007, the Commonwealth Department of Environment and Water Resources (DEW) determined that the Project was **not** a ‘controlled action’ under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

Representatives of State and local governments and other relevant authorities have accepted an invitation to act as advisory agencies for the EIS process, and examine the Initial Advice Statement (IAS) and provided comment on the draft ToR (list of contributors provided -page ii) . The IAS and draft ToR were also placed on public exhibition, inviting comments on the draft ToR. The Department of Infrastructure (DoI) will manage the impact assessment process for this Project on behalf of the CG.

QR will prepare a draft EIS addressing the ToR. Once the EIS meets the CG’s requirements, a public notice will be placed in relevant newspapers. The notice will state: where copies of the EIS can be viewed or purchased; the submission period; and where submissions should be sent. QR may need to prepare a Supplementary Report to the EIS to address specific matters raised in submissions. At the end of the EIS phase, the CG will prepare a report assessing the EIS and other material, in accordance with section 35 of the SDPWO Act.

The CG Report will include an assessment and conclusion about the environmental effects of the Project, and any associated mitigation measures. Material that will be assessed includes: the EIS; properly made submissions, and other submissions accepted by the CG; and any other material the CG thinks relevant to the Project, such as a Supplementary Report, comments and advice from Advisory Agencies and other entities, technical reports, and legal advice.

The CG Report will be provided to QR, the Queensland Minister for Transport, the Queensland Minister for the Environment, and the relevant Assessment Manager for any approvals required for the Project. An expansion of the Jilalan Rail Yard is likely to require a material change of use under IPA, for which the Sarina Shire Council (or its successor) will be the Assessment Manager.

The Report may also state for the Assessment Manager for development approval under IPA one or more of the following:

- the conditions that must be attached to the development approval;
- that the development approval must be for part only of the development; and/or
- that the approval must be a preliminary approval only.

Alternatively, the Report must state for the Assessment Manager that:

- there are no conditions or requirements for the Project; or
- the application for development approval is refused.

Results of Consultation on these Terms of Reference

Submissions on the draft ToR were received from the following Departments, as well as from private individuals (not listed for confidentiality reasons):

- Department of Communities; Primary Industry & Fisheries; Natural Resources and Water; Mines and Energy; State Development; Emergency; Local Government Planning, Sports & Recreation; Health; Main Roads; and Housing;
- Queensland Transport, EPA; Queensland Police Service; and
- The Sarina Shire Council.

These ToR provide information in two broad categories:

- Part A – Information and Advice on the Preparation of the EIS; and
- Part B – Specific Requirements – Contents of the EIS.

The Project Manager for further inquiries is:

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ABBREVIATIONS

The following abbreviations have been used in this document:

ACH Act	<i>Aboriginal Cultural Heritage Act 2003 (Qld)</i>
AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment and Conservation Council
CG	The Coordinator-General of the State of Queensland
CHMP	Cultural Heritage Management Plan
CO	Carbon monoxide
CO ₂	Carbon dioxide
CPMA	<i>Coastal Protection and Management Act 1995</i>
DEW	Australian Government Department of Environment and Water Resources
DLGPSR	Queensland Department of Local Government, Planning, Sport and Recreation
DMR	Queensland Department of Main Roads
DME	Queensland Department of Mines and Energy
DNRW	Queensland Department of Natural Resources and Water
DPI&F	Queensland Department of Primary Industries & Fisheries
DSD	Queensland Department of State Development
EIS	Environmental Impact Statement, as defined by Part 4 of the <i>State Development & Public Works Organisation Act 1971</i>
EMP	Environmental Management Plan
EMR/CLR	Environmental Management Register / Contaminated Land Register
EP Act	<i>Environmental Protection Act 1994 (Qld)</i>
EPA	Queensland Environmental Protection Agency
EPBC Act	<i>Environment Protection & Biodiversity Conservation Act 1999 (C'th)</i>
EPP	Environmental Protection Policy
ERA	Environmentally Relevant Activity
GOAL	Good Quality Agricultural Land in State Planning Policy 1/92: Development and the Conservation of Agricultural Land.
IAS	Initial Advice Statement, as defined by Part 4 of the <i>State Development & Public Works Organisation Act 1971</i>
IPA	<i>Integrated Planning Act 1997 (Qld)</i>
Mtpa	Million tonnes per annum
NCA	<i>Nature Conservation Act 1992 (Qld)</i>
NO _x	Oxides of nitrogen

NTRB	Native Title Representative Body
QR	Queensland Rail
RoW	Right-of-Way
SDPWO Act	<i>State Development & Public Works Organisation Act 1971 (Qld)</i>
SPP 1/03	State Planning Policy 1/03 Mitigating the Adverse Impacts of Flood, Bushfire and Landslide
TAL	Tonnes axle loading
ToR	Terms of Reference as defined by Part 4 of the <i>State Development & Public Works Organisation Act 1971</i>

Part A: INFORMATION AND ADVICE ON THE PREPARATION OF THE EIS

1. Introduction

The objective of the ToR is to identify those matters that should be addressed in the EIS. The ToR is based on the initial outline of the proposed Project given in the Initial Advice Statement (IAS).

The State Government, from which the Project Proponent requires approvals, may request additional information on any matters not adequately dealt with in the EIS report. In order to clarify the nature and level of investigations that are envisaged in the ToR, the Proponent may contact relevant Government agencies (known as Advisory Agencies), peak community interest organisations and relevant individuals and groups as necessary. However, the Coordinator-General (CG) reserves the final decision on interpretation of the requirements of the ToR.

2. EIS Objectives

The objective of the EIS is to ensure that all potential environmental, social and economic impacts of the Project are identified and assessed and, where possible, how any adverse impacts would be avoided. Direct, indirect and cumulative impacts must be fully examined and addressed. The Project, including selection of the rail route, should be based on sound environmental protection and management criteria.

The EIS should be a self-contained and comprehensive document that provides sufficient information for an informed decision on the potential impacts of the Project, and the management measures employed to mitigate adverse impacts. The EIS document should provide:

- for interested bodies and persons: a basis for understanding the Project, prudent and feasible alternatives, affected environmental values, impacts that may occur, and the measures to be taken to mitigate all adverse impacts.
- for groups or persons with rights or interests in land: an outline of the effects of the proposed Project on that land, including access arrangements.
- for government agencies and referral bodies: a framework for decision-makers to assess the environmental aspects of the proposed Project with respect to legislative and policy provisions, and based on that information, to make an informed decision on whether the Project should proceed or not, and if so, subject to what conditions, if any.
- for the Proponent: a mechanism by which the potential environmental impacts of the Project are identified and understood, including information to support the development of management measures, such as an Environmental Management Plan, to mitigate the effects of adverse environmental impacts of the Project.

Completion of the EIS in accordance with the final ToR does not mean the Project will be approved.

3. General EIS Guidelines

The EIS is to provide stakeholders with sufficient information to understand the type and nature of the Project, the potential environmental, social and economic impacts, and the measures proposed by the Proponent to mitigate all adverse impacts on the natural, built and social environment. It should be recognised that State and Local Governments, special interest groups and the general public will have an interest in the EIS.

All phases of the Project should be described in the EIS including pre-construction, construction, operation and decommissioning, including final rehabilitation. Direct, indirect and cumulative impacts should be identified and assessed with respect to the environmental values of the Project area.

Specifically the EIS provides:

- an executive summary of the potential environmental impacts of the Project;
- an overview of the Proponent and its existing operations;
- a description of the entire Project, including associated infrastructure requirements;
- a description of feasible alternatives capable of substantially meeting the proposal's objectives;
- an outline of the various approvals required for the Project to proceed;
- descriptions of the existing environment, particularly where this is relevant to the assessment of impacts;
- measures for avoiding, minimising, managing and monitoring adverse impacts, including a statement of commitment to implement the measures;
- rigorous assessment of the risks of adverse and beneficial environmental impacts arising from the Project and relevant alternatives on environmental, social and economic values, relative to the 'no Project' scenario;
- any information derived from baseline and predictive studies, the required extent of which will be commensurate to risks;
- a description of stakeholder consultation undertaken; and
- responses to issues raised during public and stakeholder consultation.

The main EIS document needs to be supported by appendices containing relevant data, technical reports and other sources of the EIS analysis. In preparing the EIS, the approach to be adopted requires that:

- predictions of environmental impacts are based on scientifically supported studies;
- the EIS is to present all technical data, sources or authority and other information used to assess impacts;
- the methods used to undertake any specialist studies are outlined, together with any relevant assumptions and professional or scientific judgements;
- the scientific reliability of investigations and predictions is indicated, including the estimated degree of certainty or, if possible, statistical confidence wherever appropriate;
- proposed measures to mitigate and manage identified issues are described and evaluated; and
- residual impacts that are not quantifiable are described qualitatively, in as much detail as reasonably practicable.

The assessment of all environmental impacts needs to encompass both potential impacts on and uncertain risks to the environment. The level of investigation of potential impacts or particular risks needs to be proportionate to both the severity of the potential consequences of possible events and the likelihood of those events occurring.

Specific types of relevant impacts requiring investigation are set out in Part B. However, the EIS will need to address other issues or aspects that may emerge during the investigations and preparation of the EIS. Ultimately, it is the Proponent's responsibility to ensure that adequate studies are undertaken and reported.

4. Stakeholder Consultation

The Proponent should undertake a comprehensive and inclusive program of consultation with government agencies, key stakeholders and interested parties. The consultation program should provide stakeholders with the opportunity to obtain information about the Project, to raise issues and express their concerns, and to receive feedback on how the Proponent intends to address the issues and mitigate all adverse impacts of the Project.

Consultation with the advisory agencies should be the principal forum for identifying legislation, regulations, policies and guidelines relevant to the Project and EIS process.

Where appropriate, information bulletins can be used to disseminate information to a wider audience. These bulletins can also be used to inform stakeholders of the Proponent's progress in the EIS process and on specific investigations.

The Proponent is encouraged to provide opportunities for the general public to obtain information about, and comment on, the Project through public information sessions.

5. General EIS Format

The EIS should be written in a format matching the ToR or include guidelines (preferably as an appendix) describing how the EIS responds to the ToR. The EIS documentation is to include appendices containing:

- a copy of the final ToR;
- a list of persons, interest groups and agencies consulted during the EIS;
- a list of advisory agencies consulted with an appropriate contact; and
- the names of, and work done by, all personnel involved in the preparation of the EIS.

Maps, diagrams and other illustrative material should be included in the EIS to assist in the interpretation of the information.

The EIS should be produced on A4-size paper capable of being photocopied, with maps and diagrams on A4 or A3 size. The EIS should also be produced on CD ROM. CD ROM copies should be in ADOBE® PDF format for placement on the internet. All compression must be down-sampled to 72 dpi (or ppi). PDF documents should be no larger than 2 MB in file size. Text size and graphics files included in the PDF document should be of sufficient resolution to facilitate reading and enable legible printing.

Part B: SPECIFIC REQUIREMENTS – CONTENTS OF THE EIS

The EIS report should include the following sections, but need not be limited to these sections or structure.

Executive Summary

The Executive Summary should be written as a separable document, able to be reproduced on request and distributed to interested parties, who may not wish to read or purchase the EIS as a whole.

The structure of the Executive Summary should generally follow that of the EIS, but focus on key issues to enable the reader to obtain a clear understanding of the Project and its potential adverse and beneficial environmental, social and economic impacts and the management measures to be implemented by the Proponent to mitigate all adverse impacts.

The Executive Summary should include:

- the title of the Project;
- name and contact details of the Proponent, and a discussion of previous Projects undertaken by the Proponent and their commitment to effective environmental management;
- a concise statement of the aims and objectives of the Project;
- the legal framework, decision-making authorities and advisory agencies;
- an outline of the background to and need for the Project, including the consequences of not proceeding with the Project;
- an outline of the alternative options considered and reasons for the selection of the proposed development option;
- a brief description of the Project (pre-construction, construction and operational activities) and the existing environment, utilising visual aids where appropriate;
- an outline of the principal environmental impacts predicted and the proposed environmental management strategies (including waste minimisation and management) and commitments to minimise the significance of these impacts; and
- clear maps of the proposed Project location.

Glossary of Terms

A glossary of technical terms and acronyms should be provided.

1. Introduction

The introduction should clearly explain the purpose of the EIS, to whom it is directed and contain an overview of the structure of the document.

1.1 Project Proponent

This section should describe the relevant experience of the Project Proponent, including nature and extent of business activities, experience and qualifications, and environmental record including reference to the Proponent's environmental policy.

1.2 Project Description

This section should provide a brief description of the key elements of the Project, including associated infrastructure requirements with specific locations illustrated on maps.

1.2.1 Relationship to Other Projects

This section should describe how the Project relates to any other actions, of which QR should reasonably be aware, that are being, or might be taken, or that have been approved in the area affected by the Project. In particular, mention should be made of other relevant rail facilities upgrades, and to the proposed expansion of the facilities at Dalrymple Bay/ Hay Point, and the nature of the interdependency of these Projects.

1.3 Project Rationale

This section should provide a statement of the objectives of the proposal and a brief outline of the events leading up to the proposal's formulation. Information should be provided on the envisaged time scale for implementation, Project life, and actions already undertaken within the Project areas. The current status of the Project should be described and an outline of the relationship of the Project to other developments or actions to which it may relate.

1.3.1 Need for the Project

The EIS should describe the justification for the Project in a regional, state and national context. This section should also describe:

- the rationale and justification for the Project in relation to any relevant policy or regulatory framework. In particular, details should be provided on the Project achieves/ complements any relevant Queensland Government policy and QR's ten-year Master Plan for the State's rail infrastructure;
- expected local, regional, State or national benefits; and
- how this Project achieves / complements current throughput efficiency strategies being employed by QR.

1.3.2 Costs and Benefits of the Project

This section should summarise:

- the economic costs and benefits to other industries and the wider community arising from the Project; and
- regional social impacts including employment, skills development and any workforce accommodation issues arising from the Project.

1.4 Alternatives to the Project

The EIS should describe any prudent and feasible conceptual, technological and locality alternatives to the Project, or specific elements of the Project. The consequences of not proceeding with the Project must be discussed. Alternatives should be discussed in sufficient detail to justify the ultimate selection of the preferred option. Compliance with government policy should be included in this discussion. Reasons for selecting preferred options should be delineated in terms of technical, commercial, social and natural environment aspects.

1.5 The Environmental Impact Assessment Process

1.5.1 Methodology of the EIS

This section should provide an outline of the approvals process including the environmental impact assessment process, and any associated licence or permit application processes. It should include information on the relevant stages of the approvals process, statutory and public consultation requirements and any interdependencies that exist between the approvals sought. This section should make clear the objectives of the EIS process under the SDPWO Act, and development approval under IPA and EP Act and CPMA.

This section should also include a description of the impact assessment process steps and timings and decisions to be made for relevant stages of the Project. In particular, this section should outline mechanisms in the process for public input, as it is necessary for the Proponent to undertake wide consultation as part of the impact assessment process, as set out in section 1.6.

1.5.2 Objectives of the EIS

This section should provide a statement of the objectives of the environmental impact assessment process, detail how the relevant legislation will be addressed and highlight the EIS as the key environmental document for providing advice to decision makers considering approvals for the Project.

It should be highlighted that the purpose of the EIS is to:

- provide public information on the need for, and likely effects of the Project;
- set out acceptable standards and levels of impacts (both beneficial and adverse) on environmental values; and
- demonstrate how environmental impacts can be managed through the protection and enhancement of the environmental values.

The relationship of other Project environmental management planning documentation, conditions, approvals and environmental authorities should be discussed in relation to the EIS.

1.5.3 Submissions

Interested and affected persons should be made aware of how submissions on the EIS will be addressed and taken into account in the decision-making process. The EIS should inform the readers on:

- how to make submissions;
- what form the submissions should take; and
- when submissions must be made to gain standing for any appeal process.

1.6 Public Consultation Process

This section should outline the public consultation process that has taken place during EIS preparation and the results of such consultation. It should outline any further opportunities for public input on the EIS.

The public consultation program should provide opportunities to encourage and facilitate active community involvement. The public consultation process should identify broad issues of concern to local community and interest groups at all stages including Project planning, construction, commissioning, operations and final decommissioning.

The key objectives of the consultation program should be to:

- inform the different interest groups about the Project proposal;
- seek an understanding of interest group concerns about the proposal;
- explain the impact assessment research methodology, and how public input might influence the final recommendations for the Project;
- provide an understanding of the regulatory approval process; and
- seek local information and input into the Project.

The public consultation program should be incorporated into the EIS and provide ongoing opportunities for community involvement, feedback and education.

Details should be provided on programs for public meetings, interest group meetings, production of regular summary information and updates and any other consultation mechanisms for encouraging and facilitating active public consultation. A list of affected persons and interested stakeholders, which includes information on consultation with each party, should be included.

Any indigenous component of the public consultation program should be guided by engagement that:

- is geographically specific;
- uses appropriate language and media; and
- takes into account the communication skill level of participants.

In particular, the EIS should describe:

- QR's program for communicating and consulting with the public and stakeholder groups during the course of the EIS preparation and include the information provided and the methods for engaging with local stakeholders in the assessment of social and economic impacts; and
- the outcomes of consultation undertaken as part of specific impact studies, the issues and suggestions of stakeholders or members of the public (by theme and source, rather than individually) and the response made by QR in the context of either the EIS studies or the refined proposal.

1.7 Project Approvals

1.7.1 Relevant Approvals Legislation Policy and Planning Requirements

This section should identify the principal development approvals for the Project, and specify the legislation and policies controlling the approvals process. Reference should be made to the Environmental Protection Act 1994, State Development and Public Works Organisation Act 1971, Transport Infrastructure Act 1994, Coastal Protection and Management Act 1995, Integrated Planning Act 1997 and other relevant Queensland laws.

A description of the Environmentally Relevant Activities necessary for each aspect of the Project should be given. The EIS should clearly identify all activities either directly or indirectly associated with the Project that will require development approval under IPA, or under other legislation. Any requirements of the Australian Government EPBC Act, including the results of a Referral, should also be included. Requirements of the Native Title Act 1993 should also be covered.

This section should identify all relevant State, regional and local planning policies and plans and discuss how the Project complies with these policies and plans. This section should outline the Project's consistency with existing land uses or town planning criteria.

2. Description of the Project

This section should describe the Project and its components, including how it would be constructed, operated and decommissioned (including rehabilitation). Details should include:

- design parameters for aspects of the Project that may impact upon any endangered and threatened species;
- a program covering activities relating to design (including work camps), construction, commissioning, first operating activities, and decommissioning (including rehabilitation); and
- an outline of any major transport routes impacted on by the supply of construction materials, equipment and personnel involved in the construction process.

2.1 *Site Location*

This section should include a detailed description of the proposed sites associated with the Project, including plans of the areas in relation to the surrounding features and land uses.

Mapping should include details of:

- the location of the facilities in a regional and local context;
- land tenures;
- present land uses and Planning Scheme zonings;
- surrounding industries and other land uses;
- outline of exact footprint of the Project;
- location of the site in relation to the supporting local and State-controlled roads, complete with road names, adjunct rail and road crossings points and access arrangements;
- any features of environmental significance;
- any required buffers and identification of incompatible land uses on adjoining land parcels;
- Results of EMR/CLR searches and their impacts on the Project site; and
- the locations and layouts of new structures, including:
 - rail alignments, rail facilities and yards;
 - location of construction works and compounds;
 - accommodation camps; and
 - access tracks and any future maintenance roads.

The EIS should provide details on adjacent areas that could be affected by the Project and existing infrastructure facilities available on, and adjacent to, the various sites/locations.

2.2 *Construction Activities*

The extent and nature of the Project's construction phase should be described for each major element of the Project (e.g. road infrastructure as well as rail infrastructure elements). The description should include:

- a description of the pre-construction activities proposed;
- an indicative construction timetable, including expected commissioning and start-up dates and hours of operation;
- major work programs for the construction phase; including construction techniques used on all components of the project, in particular creek/stream crossings;
- process inputs, handling and storage including an outline of procedures for loading and unloading materials and contingency plans for spillages;

- cleanup and restoration of areas used during construction, including camp site(s) and storage areas; and
- the arrangements and facilities for supply of permanent way ballast for the construction of the rail facilities should be described. This should indicate the location of ballast storage and handling works, and transport logistics for this material, both during construction and operation.

2.3 Commissioning Activities

This section should describe the activities involved in commissioning the expanded Rail Yard.

2.4 Operation Activities

This section should describe the operation and maintenance requirements for all elements of the Project including:

- impact on surrounding area as a result of operation and maintenance activities; and
- safety plans in event of an emergency;

2.5 Decommissioning

It is understood that rail facilities such as the Jilalan Rail Yard are anticipated to have a very long operational life spanning many decades. Consequently, there is less expectation of detailed decommissioning strategies in the EIS for this Project than for other types of Projects. Nonetheless, this section should present the general strategies and methods for final closure, decommissioning, and rehabilitation of all Project elements, should that ever be required. The removal of plant, equipment, structures and buildings should be described and the methods proposed for the stabilisation of the affected areas should be given. Information should be provided on how buildings and structures would be removed or made safe.

The EIS should outline the development and implementation of rehabilitation success criteria for the decommissioning of the Rail Yard at the end of operational life.

2.6 Workforce, Accommodation & Support Infrastructure

The EIS should provide information on the number of personnel to be employed, the skills base of the required workforce and the likely sources (i.e. local, regional or other) for the workforce during the construction and operational phases for each aspect of the Project.

The estimated number of people to be employed during construction and arrangements for their transport to and from the Project areas should be provided. Estimates should also be provided according to occupational groupings and variations in the workforce numbers over the duration of the Project (e.g. histogram). The information should also show anticipated peaks in worker numbers during the construction period.

An outline of policies for recruitment of workers (addressing recruitment of local and non-local workers) should be included. An accommodation strategy for the construction workforce should be included, which addresses the estimated housing needs of both single and accompanied construction workers. This should include details of the size, location and management of any temporary worker accommodation that will be required either on-site or off-site. Maps should be included as necessary to illustrate the site and should include the location of any proposed construction workers' accommodation on-site or in the vicinity of the Project. These maps should show any access points to and from accommodation camps to the local and State-controlled road network.

If camp sites are to be used to accommodate the workforce, details on the number, location (shown on a map), proximity to the construction site and typical facilities for these sites should be provided. Information should include data relating to facilities for:

- food preparation and storage;
- ablution facilities;
- disease vector and vermin control;
- fire safety;
- dust and noise control in relation to proximity of camp site to the construction area; and
- the service personnel required to maintain the camp and the supply of services to each construction camp.

Local government approvals required for the establishment and operation of such camps should be outlined.

The EIS should indicate how the proposed workforce accommodation proposals address the following issues:

- the Building Codes Queensland's 'Temporary Accommodation Building in Mining Communities' draft report;
- the potential for redeveloping existing tourism facilities (i.e. caravan parks, motels) for workers accommodation;
- the overall benefit to the community of the proposals, both during construction and for end-use arrangement for the worker camps site(s) once they no longer required; and
- consultation with the local police in relation to work camp locations and associated operational arrangements.

2.7 Energy and Telecommunications Requirements

Electricity supply requirements for the construction and operation of the Project should be provided and locations of any associated easements should be shown on an infrastructure plan. Timeframes should be provided for the anticipated dates for the commencement of construction of supply facilities, testing and final commissioning. This section of the EIS should include details on energy demand and annual consumption.

The EIS should provide details of telecommunication requirements, sources and methods, and describe any impacts on existing telecommunications infrastructure (such as optical cables, microwave towers, etc.) and identify the owners of any existing infrastructure.

2.8 Water Supply & Management

The EIS should provide information on water usage by the Project. In particular, information should be provided on the demand for raw and treated water for the various processes and the proposed and optional sources of water (e.g. bores, any surface storage such as dams and weirs, municipal water supply pipelines) for construction and operation for all aspects of the Project.

Details on the estimated rates of supply from each source (average and maximum rates) should be included. Details on daily, seasonal and/or peak operational requirements should include:

- quality of water required, including strategies to prevent contamination;
- quantity of water required including:
 - maximum hourly and daily demand,
 - mean daily demand, and
 - total annual consumption;
 - any additional water supply infrastructure; and
 - requirements for fire-fighting or other emergency services.

A determination of potable water demand and supply requirements for each phase of the Project should be made, including existing town water supply to meet such requirements. Any on-site water storage and treatment proposals for use by the workforce should be described. An assessment of the capability of the water network to provide the necessary demand should include:

- current and projected raw and treated water consumption and storage;
- contingency plans for planned and non-planned supply failures; and
- projected dates for increased raw and treated water supplies.

2.9 Sewage and Stormwater

The EIS should describe the amount and nature of sewage and stormwater generated for onsite or offsite treatment and disposal, and the facilities proposed to accommodate these streams. Site layout plans should be provided, which incorporate requirements and conceptual plans for sewage and stormwater management facilities, including descriptions of any discharge requirements for both the construction and operational stages. This should include proposals for drainage structures and dams and an overall site water balance. The topography of the site and adjacent areas should be discussed, if any run-off is expected to leave the site.

2.10 Transport – Road, Rail, and Sea

This section of the EIS should provide a brief overview of transport requirements. Full details of transport volumes and routes should be provided under Section 3.8.

2.11 Waste

This section should provide a brief overview of the waste management requirements of the Project. Full details of the waste volumes, characteristics and management strategies should be provided in Section 3.7.

2.12 Air & Noise Emissions

The EIS should provide an overview of any air emissions and sources of dust particulates and any toxic gases. Measures to mitigate their effects should be outlined. More detailed information requirements for air emissions, to be presented in the EIS, are set down in Section 3.5.

A description of noise emissions should be provided and include principal noise sources, and any noise abatement measures proposed. More detailed information requirements for noise emissions, to be presented in the EIS, are set down in Section 3.6.

3. Environmental Values & Management of Impacts

This section of the EIS should:

- describe the existing environmental values of the areas affected by the Project through reference to background information and studies;
- describe the potential adverse and beneficial impacts of the Project on the identified environmental values, including analysis of any cumulative impacts;
- present environmental protection objectives, standards and indicators; and
- propose viable strategies for managing or mitigating any negative impacts.

The EIS should detail environmental protection measures which are to be incorporated in the planning, construction, operations, decommissioning and associated works for the Project. Measures proposed in the EIS should aim to minimise environmental harm and maximise socio-economic and environmental benefits of the proposal.

It is recommended that the EIS follow the heading structure shown below. The mitigation measures, monitoring programs, etc., identified in this section of the EIS should be used to develop the Environmental Management Plans for the Project.

3.1 *Climate*

This section should describe climatic conditions in the Project area and seasonal conditions (e.g. cyclones, floods) that may influence timing and/or construction methods, and how this would be managed. This section should also include a discussion on how weather conditions would be taken into account in the minimisation of risk of adverse impacts to the Project area during the construction period.

3.2 *Land*

This section should detail the existing land environment for all areas associated with the Project, including any new permanent or temporary facilities (e.g. accommodation camps) constructed for the Project. This section should also 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.

3.2.1 *Land Use and Infrastructure*

Description of Environmental Values

The EIS should identify the following, with the aid of maps:

- land tenure (including reserves, tenure of special interest such as protected areas and forest reserves, roads and road reserves, railways and rail reserves, and stock routes);
- land use (urban, residential, industrial, agricultural, forestry, recreational, mining and petroleum exploration tenures, mining leases, mining claims, mineral development licences, extractive industry permits, petroleum leases and pipeline licences);
- areas covered by applications for native title determination, with a description of Native Title Representative Bodies' (NTRB) boundaries;
- location of gas and water pipelines, water drainage lines, stream and water courses, power lines, telecommunication cables, bridges, airports, airstrips, and helipads;
- location of any road-rail intersections/ grade separation crossings and any proposed rail routes adjacent to roads; and
- the distance of the Project from residential and recreational facilities, or other potentially non-compatible land uses.

Potential Impacts and Mitigation Measures

This section should include:

- assessment of the compatibility of the proposal with surrounding land uses, and accordance with the Sarina Shire Planning Scheme 2005 (i.e. land use designation, zones and overlays);
- description of possible impacts on surrounding land uses and human activities, addressing loss of access to land, fragmentation of sites, increase of fire risk and loss of productive land for those purposes, as well as residential and industrial uses;
- strategy and progress in relation to making of any required Native Title agreements;
- proposed management of any nearby pipelines, electric power transmission lines especially where construction and maintenance machinery are likely to be used in the vicinity of other infrastructure corridors;
- potential for other non-Project activities to impact on the Project area (e.g. quarrying, trenching, excavation for construction, residential, industrial, and transport and road construction); and
- management of fences and gates to be crossed during construction and neighbouring site access proposals.

3.2.2 Topography & Geomorphology

Description of Environmental Values

Maps should be provided locating the Project elements and its environs in both regional and local contexts. The topography of the Project area should be detailed, with contours at suitable increments shown with respect to Australian Height Datum (AHD), as well as the lines of Highest Astronomical Tide and Mean High Water Springs. Significant features of the landscape and any environmentally sensitive areas, or areas of a high conservation value, should be included on the maps and discussed.

Potential Impacts and Mitigation Measures

Any measures taken to avoid or minimise impacts on major topographic features should be described. The objectives to be used for the Project in re-contouring and landscaping should be described. The extent to which use is made of appropriate native plant species during any landscaping and re-vegetation should be described.

3.2.3 Geology & Soils

Description of Environmental Values

The EIS should provide a description and map of the geology of the Project area, with particular reference to the physical and chemical properties of surface and sub-surface materials and geological structures within the proposed areas of disturbance/ subsidence. Geological properties that may influence: ground stability (including seismic activity, geological faults and associated geological hazards); occupational health and safety; rehabilitation programs; or the quality of wastewater leaving any area disturbed by the proposal should be described.

Soils of the Project sites should be mapped at a suitable scale, with particular reference to the physical and chemical properties of the soils which would influence erosion potential, stormwater run-off quality, rehabilitation and agricultural productivity of the land. Information should also be provided on soil stability and suitability for construction of all Project facilities.

Soils should be mapped and described in accordance with Australian Soil and Land Survey Field Handbook (Gunn et al 1988 and McDonald et al, 1990). An appraisal of the depth and quality of useable soil should be undertaken.

Information, including borehole locations, should be presented in accordance with the standards required in the Planning Guidelines: The Identification of Good Quality Agricultural Land (DPI, DHLGP, 1993), which supports State Planning Policy 1/92: Development and the Conservation of Agricultural Land.

This section should also discuss:

- the existence of GQAL within and adjacent to the disturbance zone of the Project; and
- land contamination from existing and past uses based on land use history and the nature and quantity of any contaminants. (a preliminary site investigation should be prepared including a risk based search of the Contaminated Land Register and Environmental Management Register).

Potential Impacts and Mitigation Measures

This section of the EIS should provide information on potential impacts to the land resources and proposed mitigation and management methods to be used for the proposal. This section should provide information on:

- the availability and suitability of rock, sand and gravel for construction materials;
- the environmental consequences of the excavation and removal of soils from any borrow pits;
- measures to ensure that soil erosion does not accelerate in the Project area due to construction or maintenance activities;
- influence of the time of year of construction on the impact on soil erosion;
- management of any contaminated land and potential for contamination from construction and/or operation;
- details of erosion control measures and criteria used to assess methods that would minimise or alleviate sedimentation over various terrain types, including waterway beds, banks and adjacent areas;
- methods of stockpiling and disposal of trench material from excavated streambed, bank, and adjacent areas;
- impacts of the Project on surrounding GQAL, and adjustments of the Project area and/or measures to minimise impacts on GQAL;
- a description of topsoil management, including transport, storage and replacement of topsoil to disturbed areas, and minimisation of topsoil storage times;
- an assessment of the potential for any heavy metals to be released from sorbed geological materials, including potential effects and mitigation methods to reduce any impact;
- erosion and sediment control measures to ensure:
 - prevention of soil loss in order to maintain land capability/suitability;
 - reduction of wind-generated dust concentrations.; and
 - prevention of significant degradation of local waterways by suspended solids.

This section should also provide information on the potential risk for intercepting acid sulfate soils (ASS) and groundwater draw-down during the construction phase of the Project. In particular, this should assess all areas subject to excavation or filling below the level of 5 metres AHD, and for wetland areas where the natural hydrology (surface or groundwater) may be affected by the proposal such that oxidation of potential ASS may occur.

This preliminary report should have regard to State Planning Policy 2/02 and any consultations with Department of Natural Resources and Water. If there is potential for acid sulfate soils to be disturbed, an acid sulfate soil sampling plan should be prepared, underlining the methodology in accordance with the SPP2/02, to be undertaken at the time of further geotechnical investigations.

The means of preventing land contamination (within the meaning of the EP Act) should be addressed and methods proposed for preventing, recording, containing and removing any contaminated land outlined. Intentions should be stated concerning the classification (in terms of the Queensland Contaminated Land Register) of any contamination on the land and storage areas after proposal completion. For parcels of land that are subject to a Notifiable Activity or affected by a Hazardous Contaminant, site investigations may be required.

3.3 Nature Conservation

This section should detail the existing nature conservation values of the Project area. The flora and fauna communities should be described, in particular those that are rare or threatened, in environmentally sensitive localities, including watercourses, riparian zones and habitat corridors. The description should include species lists.

Reference should be made to both Queensland and Australian Government legislation and policies on threatened species and ecological communities. All surveys undertaken should be in accordance with best practice advice from the EPA and should include consideration of seasonality, potential for occurrence of significant species, rarity of species and the sensitivity of the species to disturbance.

This section should also discuss all likely direct and indirect environmental harm on flora and fauna in both terrestrial and aquatic environments in sensitive areas.

The EIS should demonstrate how the Project elements, including all access routes and campsites, would comply with the following hierarchy:

1. avoiding impacts on areas of remnant vegetation and other areas of conservation value;
2. mitigation of impacts through rehabilitation and restoration;
3. measures to be taken to replace or offset the loss of conservation values, where avoidance and mitigation or impacts cannot be achieved; and
4. explanation of why measures 1 to 3 above would not apply in areas where loss would occur.

3.3.1 Terrestrial Flora

Description of Environmental Values

Terrestrial vegetation maps at a suitable scale should be provided for the Project area.

Mapping should show and discuss:

- location and extent of vegetation types using the EPA's regional ecosystem type descriptions and the EPA's website (www.epa.gov.qld.au/environment/science/wildlife/) listing the biodiversity status of regional ecosystems;
- location of species listed as Protected Plants under the *Nature Conservation (Wildlife) Regulation 1994* and subsequent amendments;
- any plant communities of cultural, commercial or recreational significance;
- areas of re-growth or restoration and remnant vegetation; and
- any threatened species or communities under the EPBC Act.

Discussion of vegetation map units should include their relationship to regional ecosystems. Sensitive or important vegetation types should be highlighted and their value as habitat for fauna and conservation of specific rare floral and faunal assemblages or community types discussed.

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 interest. The assessment should also include the significance of native vegetation (including re-growth and restored areas in addition to remnant vegetation), from a local, regional, state and national perspective.

For each significant natural vegetation community likely to be impacted by the Project, vegetation surveys should be undertaken at a sufficient number of sites. Discuss the potential for seasonal changes in these vegetation communities. Surveys should be conducted as follows:

- all data requirements of the Queensland Herbarium CORVEG database should be collected;
- a complete list of species present at each site should be recorded;
- the relative abundance of plant species present should be recorded;
- any plant species of conservation, cultural, commercial or recreational significance should be identified;
- vegetation mapping and data should be submitted to the Queensland Herbarium to assist the updating of the CORVEG database; and
- specimens of species listed as Protected Plants under the *Nature Conservation (Wildlife) Regulation 1994*, other than common species, are to be submitted to the Queensland Herbarium for identification and entry into the HERBRECS database.

The location of any horticultural crops in the vicinity of the Project area should be shown.

Existing information on plant species may be used instead of new survey work provided that the data are derived from surveys consistent with the above methodology. Methodology used for flora surveys should be specified in the appendices to the EIS. Any existing information should be revised and comment provided on whether the areas are degraded, cleared or affected in ways that would affect their environmental value.

The occurrence of pest plants (weeds), particularly declared plants under the Land Protection (Land and Stock Route Management) Act 2002, should be shown on a map at an appropriate scale. A weed management strategy will be required to include the provision of surveys for pest plants to occur after significant rainfall events that would allow germination.

Potential Impacts & Mitigation Measures

This section should include:

- a discussion of the potential impacts of the removal of remnant vegetation resulting from the Project and measures proposed to mitigate these impacts;
- a discussion of the ability of identified vegetation to withstand any increased pressure resulting from the Project and any measures proposed to mitigate potential impacts;
- a description of 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;
- details of any post construction monitoring programs and what benchmarks will be used;

- a description of methods of minimising the potential for the introduction and/or spread of weeds or plant disease, including:
 - identification of the origin of construction materials, machinery and equipment;
 - vehicle and machinery wash-down and any other hygiene protocols; and
 - staff/operator education program.

To assist with the information required for an application regarding the clearing of vegetation, the EIS should provide:

- a detailed spatial plan of the proposed clearing application area;
- specific details on the methods of clearing; and
- detailed evidence of how clearing meets all the performance requirements in Part S of the Regional Vegetation Management Code: Coastal Bioregions, 20 November 2006.

3.3.2 Terrestrial Fauna

Description of Environmental Values

The terrestrial and riparian fauna occurring in the areas affected by the Project should be mapped and described, 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 areas should include:

- species diversity (i.e. a species list) and abundance of animals, including amphibians, birds, reptiles, mammals and bats;
- habitat requirements and sensitivity to changes; including movement corridors and barriers to movement;
- the existence of feral or exotic animals;
- existence of any listed rare, threatened or otherwise noteworthy species/communities in the study areas, and current level of protection; and
- use of the areas by migratory birds, and nomadic birds, fish and terrestrial fauna.

Discuss the potential for seasonal changes in these fauna distribution patterns.

The EIS should also indicate how well any affected communities are represented and protected elsewhere in the sub-region where Project sites occur. Site data should be recorded in a format compatible with EPA Wildnet databases.

Potential Impacts & Mitigation Measures

This section of the EIS should include:

- impacts the proposal may have on: terrestrial fauna, relevant wildlife habitat, other fauna conservation values, and mitigation measures to reduce these impacts;
- measures to minimise wildlife capture and mortality;
- monitoring of terrestrial fauna health, productivity and biodiversity;
- details of the methodology that would be used to assess and handle injuries that may be inflicted on livestock or native fauna as a result of construction or operational works for the Project;
- methods of minimising the introduction of feral animals and other exotic fauna; and

- effects of construction activities and disposal of construction wastes on biting insect species or pests and health significance, including measures to prevent increase in these species.

3.3.3 Aquatic Biology

Description of Environmental Values

The aquatic flora and fauna occurring in the areas affected by the Project should be described, noting the patterns and distribution in the waterways. A description of the habitat requirements and the sensitivity of aquatic flora species to changes in flow regime, water levels and water quality in the Project areas should be described. The discussion of the fauna and flora present or likely to be present in the Project area at any time during the year should include:

- fish species, mammals, reptiles, amphibians, and aquatic invertebrates occurring in the waterways within the Project area;
- aquatic (waterway) plants and weeds; and
- aquatic substrate and stream types, including extent of tidal influence and common levels such as Highest Astronomical Tide (HAT) and Mean High Water Spring (MHWS).

Potential Impacts & Mitigation Measures

This section should include:

- Discussion of the potential impacts of the Project on the aquatic ecosystems and a description of the methods to be used to mitigate and rehabilitate impacts on these ecosystems;
- potential for, and mitigation measures to prevent, the creation of new mosquito and biting midge breeding sites during construction (e.g. in quarries and borrow pits);
- proposed stream diversions, causeway construction and crossing facilities, stockpiled material and other impediments that would restrict free movement of fish;
- measures to avoid fish spawning periods, such as seasonal construction of waterway crossings and measures to facilitate fish movements across or through water crossings;
- details of alternatives to waterway crossings where possible (e.g. designs to span creeks to avoid the requirement of infrastructure within the creek bed or bank);
- offsets proposed for unavoidable, permanent loss of fisheries habitat within the Project footprint;
- monitoring of aquatic biology health, productivity and biodiversity in areas subject to direct discharge; and
- all permits/authorities required by the Project associated with activities in waterways (e.g. permits under the *Fisheries Act 1994* to construct temporary or permanent waterway barriers).

3.4 Water Resources

3.4.1 Water Management

Description of Environmental Values

The section of the EIS should provide a description of the existing environment for water resources that may be affected by the Project in the context of environmental values as defined in such documents as the *EP Act 1994*, Environmental Protection (Water) Policy 1997 (EPP(Water)) and Australian and New Zealand Environment and Conservation Council (ANZECC) 2000.

An indication should be provided of the quality and quantity of water resources in the vicinity of the Project area. This section should describe:

- existing surface and groundwater in terms of physical, chemical and biological characteristics;
- The geomorphic condition, with photographic evidence, of any water courses likely to be affected by disturbance or stream diversion;
- existing surface drainage patterns, flows (including seasonal variations), history of flooding including extent, levels and frequency and present water uses;
- environmental values of the surface waterways of the affected area in terms of:
 - values identified in the EPP (Water);
 - physical integrity, fluvial processes and morphology of watercourses, including riparian zone vegetation and form;
 - hydrology of waterways and groundwater;
- existing and other potential surface and groundwater users and holders of Quarry Material Allocation Notices in the Project area; and
- any Water Resource Plans relevant to the affected catchments.

If the Project is likely to use or affect local sources of groundwater, this section should provide a description of 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; and
- vulnerability to pollution.

The environmental values of the groundwater of the affected areas should be described in terms of:

- values identified in the EPP (Water);
- sustainability, including both quality and quantity; and
- physical integrity, fluvial processes and morphology of groundwater resources.

Potential Impacts & Mitigation Measures

This section should assess potential impacts of the Project on water resource environmental values identified in the previous section. It should 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 the objectives will be monitored, audited and managed. Matters to be addressed should include:

- the potential impacts the proposed Project may have on the flow and the quality of surface and ground waters from all phases of the Project, with particular reference to their suitability for the current and potential downstream uses and discharge licences;
- the potential impacts of surface water flow on existing infrastructure, with reference to the EPP (Water) and the *Water Act 2000*;
- chemical and physical properties of any waste water including stormwater at the point of discharge into natural surface waters, including the toxicity of effluent to flora and fauna;
- potential impacts on other downstream creeks, if it is proposed to discharge water to the creek system;
- the results of a risk assessment for uncontrolled releases to water due to system or catastrophic failure, implications of such emissions for human health and natural ecosystems, and list strategies to prevent, minimise and contain impacts; and
- an assessment of the potential to contaminate groundwater resources and measures to prevent, mitigate and remediate such contamination;

In relation to water supply, usage and wastewater disposal, the EIS should assess:

- anticipated flows of water to and from the Project areas;
- the effects of predictable climatic extremes (droughts, floods) upon the structural integrity of containment walls where dams, weirs or ponds are proposed;
- quality of water contained in dams; and
- the need or otherwise for water licences or any other authorisation under the *Water Act 2000* for any proposed activities to be undertaken e.g. bores, stream diversions, dams (including referable dams).

Stormwater management should address:

- nominated stormwater discharge points and discharge criteria;
- design criteria, diversions, volume and capacity of any retention ponds, process tanks or bunded areas, as well as those reasonable and practicable measures proposed to prevent the likely release of contaminated stormwater to any drain or waters;
- potential impacts during extreme rainfall events;
- information on the collection, treatment and disposal of contaminated stormwater runoff from the plant and associated materials handling facilities;
- details of contaminants (e.g. chemical composition, particulates, metals, effluent temperature and pH) in controlled discharges of proposed wastewater and stormwater management systems; and
- impacts of discharges on all potential receiving waters, particularly effects on the downstream environment of stormwater releases.

The ANZECC 'National Water Quality Management Strategy, Australian Water Quality Guidelines for Fresh and Marine Waters' (November 1992), the EPP (Water), and the Queensland Water Quality Guidelines (2006) should be used as a reference for evaluating the effects of various levels of contamination.

Management 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. Monitoring programs, which will assess the effectiveness of management strategies for protecting water quality during the construction, operation and decommissioning of the Project, should be described.

3.4.2 Coastal Management

The section should provide plans detailing the type, location and extent of the operational or tidal works proposed (e.g. any structures, formations, culverts, abutments or services, and any works proposed to be attached to these structures). The plans submitted should include as a minimum, the following:

- the location of the Coastal Management District in relation to the proposed works;
- a plan view of the proposed works, showing the location of Lowest Astronomical Tide (LAT), Highest Astronomical Tide (HAT) and Mean High Water Springs (MHWS), and including existing works which would abut the proposed works but are not included in the works;
- location of proposed works in relation to current and proposed tenure and lot on plan descriptions);
- indicate the constructional details of the proposed works and any temporary works required for construction of the works; and
- the datum for any levels shown (relative to LAT or Australian Height Datum).

3.5 Air Environment

Description of Environmental Values

This section should describe the existing air environment which may be affected by the proposal having particular regard for dust particulates and gaseous and odorous compounds. The background levels and sources of suspended particulates, and any other major constituent of the existing air environment that may be affected by the proposal should be discussed.

Any existing data on local meteorology and ambient levels of pollutants should be gathered and reported.

The environmental values of the air shed for the affected areas should be described in terms of the Environmental Protection (Air) Policy 1997 (EPP(Air)).

Potential Impacts & Mitigation Measures

The EIS should consider potential air quality variations during construction, and operations. Potential sources include dust from increased train operation through the facility, nitrogen oxides, particulate matter less than 10 micrometers (PM₁₀) and hydrocarbons from diesel locomotive provisioning maintenance and refuelling, wagon maintenance, shunting and fuel storage.

The effects on air quality should be examined and, where appropriate, predictions of ground level concentrations or ambient air quality should be made at any residential, industrial and agricultural developments believed to be sensitive to the effects of predicted emissions.

These predictions should be made for both normal and expected maximum emission conditions, and worst case meteorological conditions. The techniques used to obtain the predictions should be referenced, and key assumptions and data sets explained.

In particular, the assessment of the Project's impact on air quality should consider:

- the potential for the Project to generate a dust nuisance during construction and in operation;
- the potential for the Project to generate health impacts during operation;
- records of any complaints made in the Jilalan area regarding air quality;
- features of the Project designed to suppress or minimise emissions, including dusts and odours; and
- an air quality monitoring program within the Project areas and at sensitive receptors.

The limitations and accuracy of the dispersion models used for calculating ground level concentrations and a sensitivity analysis of each model to variations in the input parameters should be discussed.

Air quality predictions should be compared to the relevant goals and standards contained in the EPP (Air) in the National Environmental Protection Council (Ambient Air Quality) Measure, and the National Health and Medical Research Council goals.

Greenhouse Gas Emissions

Greenhouse gas emissions should be described in the context of the Project's implementation, including:

- an inventory of projected future emissions, both on-site and off-site, attributable to the construction of the Project, expressed as total mass CO₂ equivalents per annum; and
- any intended measures to avoid, minimise or offset greenhouse emissions.

3.6 Noise & Vibration

Description of Environmental Values

The EIS should describe the existing environmental values that may be affected by noise and vibration from Project activities. If Project activities could adversely impact on the noise environment, baseline monitoring should be undertaken at a selection of noise sensitive sites affected by the proposal. Noise sensitive places in relation to the Project should be identified on a map at a suitable scale. The results of any baseline monitoring of noise and vibration in the proposed vicinity of the proposal should be described.

The daily variation of existing noise levels at nearby sensitive sites should be monitored and reported in the EIS, with particular regard given to detailing variations at different periods of the day and night. Monitoring methods should adhere to relevant EPA Guidelines and Australian Standards, and any relevant requirements of the Environmental Protection (Noise) Policy 1997 (EPP (Noise)).

Comment should be provided on any current activities near the Project areas that may cause a background level of noise and ground vibration (e.g. other industry, railway, major roads, etc.).

Potential Impacts & Mitigation Measures

Information should be submitted on the proposed generation of noise. In particular:

- the levels of noise generated during construction (including any blasting) and operation of all components of the Project should be assessed against current typical background levels. Anticipated noise levels, their timing and duration, should be considered in conjunction with the sensitivity of receptors.
- In addition, an assessment should be made of the potential emission of low-frequency noise (noise with significant components below 200Hz) from major items of equipment and plant. If necessary, measures should be described for reducing the intensity of these components. Reference should be made to the Environmental Protection Agency's draft guideline: '*Assessment of Low Frequency Noise*'.
- An estimate should be made of the cumulative noise level at the boundaries of the sites of the Project and at the boundaries of existing and future land uses likely to be affected by noise from the Project. This estimate should include noise from construction, operation and from transport movements.
- The potential environmental harm of noise and vibration at all potentially sensitive places, in particular, any places of work, residence, recreation, or worship, should be quantified and compared with objectives, standards to be achieved and measurable indicators.
- Proposals to minimise or eliminate these effects should be outlined, 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.
- Off-site transport noise and vibration factors due to road and rail should be described and include a discussion on existing speed zones, scheduled transport movements and industry.

3.7 Waste

3.7.1 Waste Generation

This section should provide technical details of waste generation, treatment, minimisation and management. All sources of waste associated with the construction, operation and decommissioning of the Project should be identified and described including:

- the type and amount of wastes produced, including an inventory of all solid and liquid (including wastewater and sewage) wastes generated by each stage of the Project;
- collection, handling, transport and fate of all wastes including storage;
- market demand for recyclable waste (where appropriate); and
- opportunities for waste avoidance and minimisation techniques.

3.7.2 Waste Management

The EIS should provide details of waste management methods which demonstrate that waste minimisation and cleaner production techniques and designs have been implemented through the selection of processes, equipment and facilities to prevent or minimise environmental impacts. This information should include:

- a brief description of the existing environmental values that may be affected by the Project's waste, the impacts on those values and mitigation measures;
- a waste management plan developed in accordance with the waste management hierarchy and principles of the *Environmental Protection (Waste Management) Policy 2000*;

- descriptions of processes, equipment and facilities to be incorporated into the overall Project specifically for the purpose of avoiding waste generation, separation of wastewater from solid waste, reusing or recycling wastes, or on-site treatment methods (including details on design, discharge criteria, discharge quantities and any nominated discharge points) to lessen their effect on the natural environment;
- proposed means for management of wastes produced under circumstances other than as a result of normal Project development, including wastes generated during modification (e.g. run-off, chemical cleaning before commissioning), unusual conditions when the facilities are operating (e.g. start-up, maintenance, shut-down) and domestic sewage and refuse;
- methods to prevent seepage and contamination of groundwater from waste stockpiles;
- methods to avoid stormwater contamination by raw materials, wastes or products and present the means of containing, recycling, reusing, treating and disposing of stormwater, having regard for the requirements of the EPP (Water); and
- Where solid or liquid wastes are to be disposed of off-site outline the expected disposal strategies.

3.8 Transport

3.8.1 Transport Methods and Routes

The EIS should detail all requirements for the transport of plant, equipment, raw materials, product, wastes and personnel during the construction, operation and decommissioning phases of the Project. The description should address the use of existing facilities and all requirements for the construction, upgrading or relocation of any transport related infrastructure. This information should cover all transportation modes (i.e. road, rail and sea) required for all aspects of the Project and include:

- the types, quantities, origin and destination of goods to be moved, including construction materials, plant, raw materials, wastes and hazardous materials;
- the volume of traffic generated by workforce personnel and service vehicles;
- methods of movement, including transportation type and volume of transport modes likely to be used, with consideration given to the impact and mitigation measures in relation to school bus routes within the nominated area;
- the proposed transport haulage routes;
- anticipated times at which each type of transportation movements may occur;
- details of vehicle traffic and transport of heavy and oversize indivisible loads (including types and composition);
- proposed road closures (temporary or permanent);
- the ability of existing transport infrastructure to support the additional demand; and
- any requirements for new transport facilities, upgrades (e.g. new access requirements) and increased maintenance.

This section should describe existing infrastructure facilities within and adjacent to the Project area. The location and owner/custodians of all tenures, reserves, roads and road reserves, railways and rail reserves, stock routes easements and the like, covering the affected land should be shown. The locations and descriptions of all existing roads and railways likely to be affected by Project activities should be provided.

Potential Impacts & Mitigation Measures

Assessment of the Project impacts on transport infrastructure and operations for all components of the Project should be discussed, with reference to the *Transport Infrastructure Act 1994*, the *Transport Planning and Coordination Act 1994*, the *Transport Operations (Road Use Management) Act 1995* and related legislation.

The EIS should provide sufficient assessment of the impacts of Project traffic on both State-controlled and local government roads during construction and operations to allow the Department of Main Roads (DMR) and Queensland Transport to ascertain its effect on transport safety and efficiency requirements.

The Proponent should fully assess all transport-related impacts of the Project including sea, rail, road and air, such as:

- road and rail safety issues, for example, ensuring safe access to construction sites and safety for other transport users (including appropriate incident management strategies);
- road use resulting in reduced life of roads/pavements requiring additional or accelerated rehabilitation and maintenance;
- seasonal considerations such as potential for transport impacts during wet weather;
- impact of traffic numbers and flows associated with workforce transport to and from the site. This information should also include the extent and timing of employees travelling from Mackay, detailing likely routes on the State-controlled road network;
- reduced efficiency of traffic flows along road sections and at intersections along key routes, especially during construction including details on maximum traffic delays; and
- environmental issues relating to transport (e.g. weed management, vegetation clearing in road/rail reserves, dust control and erosion protection).

This section should 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;
- strategies to minimise the effects of Project transport on existing and future public road or rail corridors;
- steps to be taken to prevent access from public roads/rail corridors to the rail yard; and
- access requirements to the public road/rail reserves to allow rail maintenance.

The EIS should discuss the results of consultation with the relevant district and regional officers of DMR and local government regarding the potential impacts of the Project on the road network.

This section should address how transport elements and impacts of the Project, taking into account future demand growth, relate to Queensland Transport's and the DMRs' existing transport strategies for the Central Queensland area and the future infrastructure needs of this area as presented in State Government documents. Also identify the impacts of the Project's construction transport tasks on any road infrastructure plans of the relevant local governments.

3.8.2 Road Infrastructure Alterations

The EIS should detail proposed alterations to road infrastructure occasioned by the Project. This includes road realignments, grade separated crossings, level crossings, road upgrades and resurfacing, bridges, access roads, and associated civil works. Where the Project necessitates an alteration to road infrastructure, the EIS should outline alternative options and a reason for the selection of the proposed development option, giving full regard to environmental, safety, economic and community factors (including business continuity during construction).

Indicate any requirements for changes in land tenure/ ownership of any proposed grade separated, or at-grade crossings of, and the need for changes to the reserve boundaries of local and/or State-controlled roads. Identify responsibility for the on-going maintenance of any structures.

A traffic analysis should be presented to indicate the impacts or improvements to traffic flows and capacity both during construction and after completion. Particular attention should be paid to:

- requirements for access to road/rail corridors during construction, including emergency access;
- methods to be adopted to ensure safety and avoid obstruction to other road/rail users during construction;
- proposed traffic management arrangements and plans; and
- capacity and safety improvements as a result of road infrastructure alterations

3.8.3 Coal Haulage

This section should describe the additional transport task of coal haulage that will be undertaken on the rail line, as well as any road transport tasks directly related to servicing the rail line during operations. This should address at least the following information with comparison to existing operations:

- tonnage rates per day, per month, or per annum for various stages, or scenarios of operation (such as initial operation, growth scenarios and ultimate capacity expectations);
- train size, speeds and frequency of movement; and
- operating hours, daylight, night time, during adverse weather conditions.

3.9 Cultural Heritage

Description of Environmental Values

The EIS should describe the existing cultural heritage values that may be affected by the Project activities. A cultural heritage study should be undertaken to describe Indigenous and non-Indigenous cultural heritage sites and places and their values. The Indigenous component of the study must be conducted by the appropriate Aboriginal Party and/or an appropriately qualified cultural heritage practitioner, in accordance with the *Aboriginal Cultural Heritage Act 2003 (ACH Act)*. Approval for the study of Non-Indigenous cultural heritage from the EPA is a requirement under the *Queensland Heritage Act 1992*.

The study should include:

- findings of consultation with:
 - the Department of Environment and Water Resources concerning the Register of the National Estate, Commonwealth Heritage list and National Heritage list;

- the EPA regarding the Queensland Heritage Register and other information regarding places of potential non-Indigenous cultural heritage significance;
 - QR heritage section and relevant QR records and databases regarding any objects or places of potential cultural heritage significance that may occur in the area;
 - the Queensland Department of Natural Resources and Water regarding the Indigenous Site Database;
 - any local government heritage register; and
 - any existing literature relating to the affected areas.
- liaison with relevant community groups/organisations (e.g. local historical societies) concerning:
 - places of non-indigenous cultural heritage significance; and
 - opinion regarding significance of any cultural heritage places located or identified.

Investigations and consultation should be undertaken in such manner and detail as to satisfy statutory responsibilities and duties of care, including those under the *Queensland Heritage Act 1992 and the ACH Act 2003 and the Australian Aboriginal and Torres Strait Islander Heritage Protection Act 1984*.

Potential Impacts & Mitigation Measures

Every attempt should be made by the Project to avoid any significant heritage areas. The Proponent should provide an assessment of any likely effects on sites of non-indigenous or 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; and
- recommended means of mitigating any negative impact on cultural heritage values and enhancing any positive impacts.

The management of cultural heritage impacts should be detailed in a Cultural Heritage Management Plan (CHMP) that is developed specifically for the Project in accordance with the *ACH Act 2003*. The CHMP should provide a process for the management of identified cultural heritage places and values within the Project area. The CHMP should be based on information contained in the cultural heritage study reports and/or information from Indigenous community/communities.

3.10 Visual and Lighting Impacts

3.10.1 Description of visual amenity

Describe the existing visual quality/landscape character of the Project site and the surrounding area and its prominence including local, regional, state and national significance. Information in the form of maps, sections, elevations and photographs may also be utilised, particularly addressing the following:

- major views and other features contributing to the amenity of the area;
- Character of the local and surrounding areas including character of built form (scale, form, materials and colours) and vegetation (natural and cultural vegetation); and
- identification of the areas of the proposal that have the capacity to absorb land use changes without detriment to the existing visual quality and landscape character.

Potential Impacts and Mitigation Measures

Identify the potential exposure of the proposed new facilities from public areas. This is to be placed into context of the current views of the existing Rail Yard. Present mitigation measures if appropriate.

3.10.2 Description of Existing Light Sources

Determine the existing light sources within the Project site and its immediate surroundings. Of particular interest would be:

- visual aspect at night in relation to the location of the Rail Yard in a predominantly rural setting;
- vehicular and rail movements at night within the surrounding area; and
- proximity of existing light sources to significant receptor areas such as fauna habitats, residential and business establishments.

Potential Impacts and Mitigation Measures

An assessment of all potential impacts of lighting of the Project should be undertaken both during the construction and operational phases, with particular reference to:

- alterations to visual impact at night;
- potential impact of increase in vehicular and rail traffic in the area;
- effects of lighting from night operations and maintenance on residents; and
- changed habitat conditions for nocturnal fauna and associated impacts.

Potential mitigation measures and their corresponding effectiveness should be discussed.

3.11 Social and Economic Environment

Description of Environmental Values

This section should detail the existing social and economic environment. Issues to be addressed include:

- key characteristics of potentially affected communities in the Project area, with community profiles, providing information on:
 - rural properties, cane lands, croplands and grazing areas;
 - population and demographics of the affected community (including size, age structure, gender composition, residency);
 - workforce characteristics, including types of skills or occupations and availability both for construction and operation phases of the Project;
 - identification of existing labour force and unemployment statistics;
 - health, emergency services and educational facilities; and
 - other community services and facilities (e.g. recreational, cultural, leisure and sporting facilities);
- accommodation, with an emphasis on:
 - the size of the private rental market in the area;
 - the vacancy rate and price of rental accommodation, including assessment of seasonal fluctuations;
 - the availability and typical cost of housing for purchase in the area; and
 - the level of, and demand for, social housing in the area.

- housing and other land uses:
 - constraints and opportunities for new housing construction or other land uses in the vicinity of the Project area, including the potential for growth of the urban area to encroach on the Project site; and
 - land areas in the Shire for residential purposes including available serviced residential lots, land under development and undeveloped broad acre land that is appropriately zoned.
- the character and basis of the local and regional economies, including:
 - existing economic base and economic activity;
 - types and numbers of businesses;
 - availability and prices of goods and services; and
 - a description of large scale industrial developments and their effects in the region.

Potential Impacts & Mitigation Measures

The social and community impacts of the Project should be addressed, incorporating any stakeholder concerns about adverse impacts to the natural, social, economic or built environment. Relevant strategies and resources that will be committed to address all expected impacts should be outlined. Attention should be paid to impacts on:

- demographic, social, cultural and economic profiles;
- local residents, current land uses, existing lifestyles, enterprises and values;
- affected and adjoining landowners/occupiers resulting from the Project (e.g. land values and commercial operations);
- local and state labour markets, with regard to the source of the workforce and competing projects, with the information presented according to occupational groupings of the workforce;
- the potential for both the construction and operation workforces and associated contractors to affect housing demand, and the rental market;
- impacts on community services such as social housing, education, health, and child care; and
- impacts on other industries including tourist facilities (should this be taken for workers accommodation).

For identified impacts on social values, proposed mitigation and enhancement strategies should be described, and approaches to facilitate initial negotiations towards community acceptance of these strategies identified. Practical monitoring regimes should also be discussed.

Reference should be made to the expected cumulative impacts on local workforce and accommodation needs this Project will have in relation to other major projects, if any, which are currently occurring or planned for the region.

Any new skills and training to be introduced in relation to the Project should be identified. Adequate provision should be made for apprenticeship and worker training schemes. The EIS should indicate the occupational skill groups required and potential skill shortages anticipated.

The EIS should include strategies responding to Government Policy relating to:

- the level of training provided for construction contracts on Queensland Government building and construction contracts - The State Government Building and Construction Contracts Structured Training Policy (the 10% Policy);

- Indigenous employment opportunities - Indigenous Employment Policy for Queensland Government Building and Civil Construction Projects (the 20% Policy); and
- the use of locally sourced goods and services – Department of State Development, Local Industry Policy.

The general economic benefits from the Project should be described, including:

- the relative significance of this proposal in the local and regional economic context.
- the short and long-term beneficial (e.g. job creation) and adverse (e.g. competition with local small business) impacts that are likely to result from the development.
- the need for any additional infrastructure provision by government to support the Project;
- implications for future development in the locality (including constraints on surrounding land uses and existing industry); and
- the extent to which local and other Australian goods and services will be used.

3.12 Hazard and Risk

3.12.1 Risk Assessment

The Proponent shall carry out a Risk Assessment in accordance with appropriate parts of AS/NZS Risk Management Standard 4360:1999. The study shall assess risks during the construction, operational and decommissioning phases of the rail line. Where possible these risks are to be assessed in quantitative terms.

Indicate possible hazards, accidents, and abnormal events that may arise for the Project, both during construction and in operation. This would be expected to include accidents involving train operations, explosions and fires associated with such incidents, and interfaces with other infrastructure such as surrounding roads.

Based on historical data provide an indication of incidents, consequences and frequency of occurrence of train accidents associated with rail yards and long haul coal lines in the QR network.

Details are to be provided of the safeguards which will be employed or installed to reduce the likelihood and severity of hazards, consequences and risks to persons, and fauna at the rail yard. Where possible indicate the reduced level of risk which would be experienced with these safeguards in place. Compare assessed and mitigated risks with acceptable risk criteria for land uses adjacent to the corridor, including public roads which border or cross the corridor.

3.12.2 Health and Safety

Details should be provided of any impacts of the Project during construction and operation on the health, safety and quality of life of the community, workforce, suppliers and other stakeholders from factors such as air emissions, odour, dust, pests, traffic noise and vibration, waste and water. This includes health and safety matters associated with on-site and off-site workforce accommodation. It should include details of:

- compliance with relevant Health and Safety legislation;
- security arrangements; and
- details of on-site emergency response capabilities (e.g. on-site paramedic or first-aid officer), for both the construction and operation phases of the Project, which should include personnel trained for fire suppression and containment, rescue and first aid.

3.12.3 Emergency Management Plan

An outline of the proposed emergency management procedures is to be provided for the range of situations identified in the above risk assessment as providing measurable risks, including strategies to deal with contingencies such as hydrocarbon/ oil spills, natural disasters, and train accidents during operations.

In regard to fires, the EIS should address:

- building fire safety measures for any construction or permanent accommodation;
- details of any emergency response plans and bushfire mitigation plans under the SPP 1/03 Annex 3/ A3.3.
- on-site fire fighting equipment provided and the level of training of staff who will be tasked with emergency management activities; and
- detailed maps showing the plant outline, hazardous material store, incident control points, fire fighting equipment, etc.

In regards to landslide hazards:

Any landslide hazard and risk assessment should also consider the distinct possibility that certain slopes (including slopes in volcanic rock and its derivatives) are liable to fail at much lower slopes than 15%. Particular attention should be paid to the area where the development passes through steep ground along, and near, Armstrong Beach Road.

Depending on the work to be undertaken at the site, SPP 1/03 applies to the proposed development under Annex 1/AI 1c - work on potentially unstable slopes that involves Earthworks, vegetation clearing, or redirecting the existing flow of surface or groundwater.

The EIS should present emergency planning and response strategies to deal with relevant incidents above, which have been determined in consultation with State and regional emergency service providers. The EIS should present plans for involvement of the relevant State agencies (such as the Queensland Ambulance Service) in relation to emergency medical response and transport and first aid matters.

4. Environmental Management Plans

This section of the EIS should present environmental management plans (EMPs) developed for the Project. It is expected that all EMPs will, where relevant, be prepared in accordance with the EPA Guidelines- Preparing Environmental Management Plans and Site Based Management Plans. The EMPs should be developed from the preceding information in the EIS. An EMP should provide life-of-proposal control strategies in accordance with agreed performance criteria for specified acceptable levels of environmental harm. In addition, EMPs should identify:

- potential impacts on environmental values;
- mitigation strategies;
- relevant monitoring;
- appropriate indicators and performance criteria;
- reporting requirements; and
- appropriate corrective actions, should an undesirable impact or unforeseen level of impact occur.

The aims of an EMP are to provide:

- commitments by the Proponent to practical and achievable strategies and design standards (performance specifications) for the management of the Project to ensure that environmental requirements are specified and complied with;
- an integrated plan for comprehensive monitoring and control of impacts;
- local, State and Australian Government authorities, stakeholders and the Proponent with a common focus for approvals conditions and compliance with policies and conditions; and
- the community with evidence that the environmental management of the Project is acceptable.

The recommended structure of each element of the EMP is:

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 will be implemented to achieve the performance criteria.
Monitoring:	The monitoring requirements to measure actual performance (i.e. 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).

5. Conclusions and Recommendations

The EIS should make conclusions and recommendations with respect to the proposal, based on the studies presented, the Environmental Management Plans and conformity of the proposal with legislative and policy requirements.

6. References

All references used in the preparation of the EIS should be presented in a recognised format such as the Harvard standard (refer to the Style Guide, Australian Government Publishing service). This standard lists references by presenting in the following order: author (date of publication) title, publisher, and place of publication.

7. Recommended Appendices

7.1 *Final Terms of Reference*

The finalised Terms of Reference should be included as an Appendix to the EIS.

7.2 *Development Approvals*

A list of the development approvals required by the Project should be provided.

7.3 *Consultation Report*

A list of advisory agencies should be provided in a summary Consultation Report, which should also list the Australian, State and Local government agencies consulted, and the individuals and groups of community stakeholders consulted. A summary of the issues raised by these groups, and the means by which the issues have been addressed, should be provided in the text of the EIS. The discussion should include the methodology used in the community consultation program, including criteria for identifying stakeholders and the communication methods used.

Information about identifying interested and/or affected persons (as defined by the EP Act) should be included.

7.4 *Study Team*

The qualifications and experience of the study team and specialist sub-consultants should be provided.

7.5 *Technical Data and Baseline Studies*

Relevant supporting data and information generated from specialist studies undertaken as part of the EIS are to be included as appendices. These studies may include:

- geology;
- soil survey and land suitability, use and capability;
- Waterway hydrology and groundwater;
- flora and fauna;
- air quality, noise and vibration;
- transport and traffic;
- housing and accommodation;
- social, and socio-economic impacts; and
- hazard and risk.

7.6 *List of Proponent Commitments*

A list of all commitments made by the Proponent in the EIS should be provided, together with a reference to the relevant section in the EIS.