Terms of Reference for the proposed New Acland Coal Mine Stage 2 Expansion Project

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Abbreviations

CAMBA	China and Australia Migratory Bird Agreement
EIA	Environmental impact assessment
EIS	Environmental impact statement
EM Plan	Environmental management plan
EPA	Environmental Protection Agency
ESD	Ecological sustainable development
JAMBA	Japan and Australia Migratory Bird Agreement
MDL	Mineral development licence
ML	Mining lease
Mt	Million tonnes
Mtpa	Million tonnes per annum
Project	New Acland Coal Mine Expansion Proposal
ROM	Run-of-mine
ToR	Terms of Reference

Definitions

"**Administering Authority**" means the Environmental Protection Agency or its successor.

"**Product or clean coal**" means coal that has been processes (washed and separated) by the mine's washplant ready for sale.

"**Coal handling and preparation plant**" or "**washplant**" or "**washery**" means the facility used at the mine to wash the coal ready for sale.

"**Contaminant**" has the meaning provided in Chapter 1, Part 3, Section 11 of the *Environmental Protection Act 1994*.

"**Contamination**" has the meaning provided in Chapter 1, Part 3, Section 10 of the *Environmental Protection Act 1994*, which defines contamination of the environment as the release (whether by act or omission) of a contaminant into the environment.

"**Contaminated land**" has the meaning provided in Schedule 3 of the *Environmental Protection Act 1994*.

"**Environment**" has the meaning provided by Chapter 1, Part 3, Section 8 of the *Environmental Protection Act 1994*. It is defined as:

(a) ecosystems and their constituent parts, including people and communities; and

(b) all natural and physical resources; and

(c) the qualities and characteristics of locations, places and areas, however large or small, that contribute to their biological diversity and integrity, intrinsic or attributed scientific value or interest, amenity, harmony and sense of community;

(d) the social, economic, aesthetic and cultural conditions that affect, or are affected by, things mentioned in paragraphs (a) to (c).

"**Environmental Authority**" means a licence or approval issued by the administering authority under the *Environmental Protection Act 1994*.

"**Environmental compatibility**" means that operations at the mine are conducted with due care for the environment, but at a level commensurate with the impacts of the operations (that is, in terms of safety, the environment and economic efficiency).

"**Environmental impact statement**" is the environmental impact assessment process described by Chapter 3 of the *Environmental Protection Act 1994*.

"**Environmental value**" has the meaning provided by Chapter 1, Part 3, Section 9 of the *Environmental Protection Act 1994*. It is defined as:

(a) a quality or physical characteristic of the environment that is conducive to ecological health or public amenity or safety; or

(b) another quality of the environment identified and declared to be an environmental value under an environmental protection policy or regulation.

"**Mining lease area**" means the total area of the mining lease.

"**Mine**" has the meaning defined in the *Mineral Resources Act 1989*.

"**Notifiable activities**" are listed in Schedule 2 of the *Environmental Protection Act 1994*.

"**Project**" means for the purpose of this document (Final terms of reference) and the voluntary EIS process, New Acland Coal Pty Ltd's proposed expansion of New Acland Coal Mine to 4 million tonnes per annum product coal.

"**Project EM Plan**" means the Environmental Management Plan prepared for the project for development of the Environmental Authority.

"**RAMSAR**" means the Convention on Wetlands, signed in Ramsar, Iran, in 1971 (more commonly known as the Ramsar Convention). It is an intergovernmental treaty dedicated to the conservation and "wise use" of wetlands. The Convention's mission is: the conservation and wise use of wetlands by national action and international cooperation as a means to achieving sustainable development throughout the world.

"**Regulated waste**" has the meaning provided in Schedule 9 of the *Environmental Protection Regulation 1998*. It is defined as non-domestic waste mentioned in Schedule 7 (whether or not it has been treated or immobilised), and includes:

- for an element - any chemical compound containing the element; and
- anything that has contained the waste (for example, regulated waste commonly generated from mining projects include tyres, oils, and batteries).

"**ROM coal**" means run-of-mine coal, which is raw coal that has been mined and not yet processed (washed and separated) by the mine's washplant.

"**Standard criteria**" has the meaning provided in Schedule 3 of the *Environmental Protection Act 1994*.

"**Tailings dam**" or "**Tailings storage facility**" means the dam structure designed for the long-term storage of tailings (fine waste stream) generated by the coal handling and preparation plant (washplant).

"**Terms of Reference**" is a specific stage of the EIS process described by Chapter 3, Division 2 of the *Environmental Protection Act 1994*.

PART A – PREAMBLE

Project

New Acland Coal Pty Ltd (NAC), a subsidiary of New Hope Corporation Limited (New Hope Coal Australia), currently operates New Acland Coal Mine on Mining Lease (ML) 50170 within the Rosalie Shire on the Darling Downs in southern Queensland. The mine is approximately 3 kilometres north-north-east of Acland, 14 kilometres north-north-west of Oakey and 35 kilometres north-west of Toowoomba. New Acland Coal Mine is also situated within NAC's Mineral Development Licence (MDL) 244.

NAC commenced development of New Acland Coal Mine in early 2002, and under its existing environmental approval (that is, an Environmental Authority for non-standard mining activities), has progressed production during 2004 to a rate of 2.5 million tonnes per annum (Mtpa) (product coal). Production at this rate has a projected mine life of approximately 10 years to 2014. Coal at New Acland Coal Mine is presently mined from a single open-cut operation (North Pit).

NAC's proposed project involves the expansion of mining operations at the New Acland Coal Mine to increase production to 4.0 Mtpa (product coal) by 2010 and extend the mine life by a further six years to about 2020 (at the higher rate of production).

Briefly, the project will:

- require within the existing boundary of MDL 244 an additional mining lease to the south and west (minor area) of ML 50170;
- require the gradual development of two new open cut areas, South and Centre Pits, by 2007 and 2013, respectively;
- require an expansion in supporting mine infrastructure (for example, coal washing facilities, etc.);
- allow a total production of approximately 4.0Mt product coal over the life of the mine (based on a 10 year mine plan); and
- allow New Hope Coal Australia to expand its domestic and export markets for the New Acland steaming coal product, which is generally described as a 'greenhouse friendly' coal.

To ensure an appropriate level of environmental impact assessment and community consultation are achieved as part of the project approval process, NAC has applied under Section 70 of the *Environmental Protection Act 1994* to voluntarily prepare an Environmental Impact Statement (EIS).

The Environmental Protection Agency (EPA) is responsible for managing the EIS process under Chapter 3 of the *Environmental Protection Act 1994*.

Environmental impact assessment (EIA) process

This document represents the Terms of Reference (ToR) for the preparation of an Environmental Impact Statement (EIS) for the project. The aims of the EIS and the associated public review process are to provide:

- a source of information from which interested individuals and groups may gain an understanding of the project, the need for the project, the alternatives, the environment that it would affect, the impacts that may occur and the measures to be taken to minimise these impacts;
- a forum for public consultation and informed comment on the project; and
- a framework in which decision-makers can consider the environmental aspects of the project in conjunction with economic, social, technical and other factors.

While every attempt has been made to ensure that these ToR address all of the major issues associated with this project, they are not necessarily exhaustive and should not be interpreted as excluding from consideration

matters deemed to be significant but not incorporated in them or matters (currently unforeseen) that emerge as important or significant from environmental studies, or otherwise, during the course of preparation of the EIS.

These ToR address the major issues associated with the project, but may be refined during the preparation of the EIS if other pertinent matters arise.

The key aspects of the EIA process are outlined below:

- The Draft ToR is prepared and public comment is invited over a four-week period.
- The ToR are finalised to ensure that the EIS:
    - assesses the environmental, social and economic impacts that the project will have or is likely to have; and
    - contains enough information about the project and its relevant impacts to allow the EPA and other relevant administering authorities to make an informed decision whether or not to proceed with approvals.
- An EIS is prepared by the proponent and made publicly available for a period of at least 28 days and submissions are invited.
- The proponent summarises the issues raised in the submissions, addresses the issues raised during the submission period, and prepares a supplementary report.
- The EPA evaluates the EIS and supplementary report and prepares an assessment report. A copy of the assessment report is provided to the proponent.

PART B - CONTENT OF THE ENVIRONMENTAL IMPACT STATEMENT

Executive summary

The executive summary should convey the most important aspects and options of the proposed project. The Executive Summary should be structured the same as the EIS and is designed to focus on the key issues.

Glossary of terms

A glossary of technical terms, acronyms and abbreviations should be provided.

1.0 Introduction

The Introduction should explain why the EIS has been prepared and the intention and objectives of the EIS. The Introduction should also describe the level of detail of information required to meet the approval level being sought, define the EIS's audience, and contain an overview of the structure of the document.

1.1 Project proponent

Section 1.1 should provide details about the project proponent.

1.2 Project description

Section 1.2 should provide:

- a brief description of the key elements of the project;
- a summary of major associated infrastructure requirements;
- location details of the project and its infrastructure requirements; and
- an overview of the studies or surveys which were undertaken for the purposes of project development and preparing the EIS (including reference to any relevant baseline studies or previous investigations).

Section 3.0 of the EIS should provide a comprehensive project description.

1.3 Project objectives and scope

Section 1.3 should outline the:

- objectives for developing the project, including possible alternatives, an envisaged time scale for implementation and the project's life, anticipated establishment costs and actions already undertaken within the project area;
- relationship of the project to other developments or proposed developments or actions in the region; and
- consequences of not proceeding with the project.

1.4 The environmental impact assessment process

Section 1.4 should outline the environmental impact assessment (EIA) process required under the *Environmental Protection Act 1994* for the project's environmental approval process and highlight the public input and decision-making steps of the approval process.

This subsection is designed to ensure the relevant legislation is addressed, provide an awareness of the process to be followed, and make stakeholders aware of all opportunities for input and participation in the environmental impact assessment process.

1.4.1 Methodology of the EIS

Section 1.4.1 should include a description of the:

- impact assessment process, including the steps, timing and decisions to be made for the relevant stages of the project; and
- consultation process (Section 1.5) and how this will integrate with other components of the impact assessment, including stages, timing and mechanisms for public input and participation.

1.4.2 Objectives of the EIS

Section 1.4.2 should include a description of the:

- objectives of the statutory EIA process, in particular the EIS;
- role and purpose of the EIS, including the provision of the environmental management/planning document or environmental management plan (EM Plan) required for the project's ongoing regulation under an Environmental Authority for non-standard mining activities;
- impact assessment process steps, timing and decisions to be made for relevant stages of the project;
- mechanisms for public input in the impact assessment process; and
- process for the public release of the final EIS addressing all responses to stakeholder submissions.

1.4.3 Submissions

Section 1.4.3 should set out how submissions on the draft EIS can be made and should describe how submissions on the draft EIS will be addressed and taken into account in the decision-making process.

1.5 Public consultation process

Section 1.5 should outline the project's stakeholders and describe the communication and consultation strategies for each stakeholder group. The Environmental Protection Agency (EPA)'s role in the consultation process should be outlined. The methodology adopted to identify and mitigate socio-economic impacts that may arise from the project should be outlined.

This subsection should also include details of consultation that may have already been conducted in relation to the project.

The submission of a list of affected persons and interested persons as well as a statement of how the proponent proposes to consult with those persons is a statutory requirement of the EIS process in the *Environmental Protection Act 1994.*

This section should make clear the need to consult stakeholders, not only in close proximity to the mine but also those that might otherwise be affected, for example along the road haul route, particularly in Toowoomba City and River Road near Ipswich.

The project's overall public consultation strategy should identify broad issues of concern to the local community, interest groups, Local Government and government departments and agencies. The public consultation strategy should be designed to continue throughout the complete life of the project (that is, from the planning stage through development and commissioning to operation and finally closure).

1.6 Project approvals

1.6.1 Relevant State legislation and policy requirements

Section 1.6.1 should explain the legislation and policies controlling the approvals process. Reference should be made to the *Queensland Environmental Protection Act 1994* and other relevant Queensland laws. Any requirements of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* should also be included.

Local government planning controls, local laws and policies applying to the development should be described, and a list provided of the approvals required for the project and the expected program for approval of applications.

In particular, the planning controls that may be involved for areas 'internal' and 'external' to the mining lease (ML) should be detailed for existing and revised draft of the relevant planning scheme.

This information is required to assess how the legislation applies to the proposal and which agencies have jurisdiction.

This section should discuss the exemptions under any relevant legislation, particularly the *Vegetation Management Act 1999* and outline commitments to similar government policies, such as the "no nett loss of vegetation" concept.

1.6.2 Planning processes and standards

Section 1.6.2 should discuss the project's consistency with existing land uses or long-term policy framework for the area (for example, as reflected in local and regional plans), and with legislation, standards, codes or guidelines available to monitor and control operations on site. This section should refer to all relevant State and regional planning policies. The impacts of any relevant State Planning Policies applying to the land or nearby land that may be impacted upon by the project should be mapped and assessed. This information is required to demonstrate how the proposal conforms with State, regional and local plans for the area.

1.6.3 Accredited process for controlled actions under Commonwealth legislation

Projects that are undergoing an EIS under a State statutory process may also be controlled actions under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC). In which case, the Commonwealth may accredit the State's EIS process for the purposes of the Commonwealth's assessment under Part 8 of the EPBC.

When a State EIS process has been accredited, it will be necessary for the terms of reference to address potential impacts on the matters of National Environmental Significance (NES) that were identified in the 'controlling provisions' when the project was declared a controlled action.

As a minimum requirement, the Terms of Reference and the EIS should provide separate discussions under sub-headings in the relevant sections that describe the values and address the potential impacts on NES matters. The locations of those sub-headings should be readily identifiable from the 'Table of contents'.

For example, if one of the controlling provisions was 'Listed threatened species and communities', then subsections, headed 'Matters of National Environmental Significance', should be placed in Section 4.8 (Nature conservation) under both the description of environmental values and potential impacts and mitigation measures headings. Those subsections should address exclusively and fully the issues relevant to the controlling provisions.

Alternatively, a stand-alone report could be provided as an appendix to the EIS that exclusively and fully addresses the issues relevant to the controlling provisions. In this case, it should follow the following template outline:

1. Introduction
2. Description of proposed action (as it would impact on NES matters)
3. Description of the affected environment relevant to the controlling provisions (i.e. describe the features of the environment that are NES matters protected under the EPBC)
4. Assessment of impacts on NES matters and mitigation measures
5. Conclusions
6. References

2.0 Project need and alternatives

Section 2.0 should examine the justification for the project and should explore possible project alternatives in terms of the overall project and its major components (for example, infrastructure requirements).

2.1 Project justification

Section 2.1 should describe the justification for the project, with particular reference to the economic and social benefits, including possible employment and business opportunities the project may create.

The status of the project should be discussed in a regional, State and national context.

2.2 Alternatives to the project

Section 2.2 should describe feasible alternatives to the project and its main components (e.g. infrastructure requirements). Discussions should include:

- a description of conceptual, technological and locality alternatives;
- an assessment of the rationale behind each alternative (the pros and cons); and
- a summary of the consequences of not proceeding with the project.

Reasons for selecting the preferred options for the project should also be delineated in terms of:

- technical, commercial, social and natural environment aspects;
- the principals of ESD and sustainable development; and
- potential environmental impacts, including waste management and emissions production.

The interdependencies of the project's components should be explained, particularly in relation to the viability of the project. A description of and rationale behind all the project's components should also be provided.

3.0 Project description

Section 3.0 should describe the project during the developmental phases of planning, construction, operation and decommissioning, and should allow further assessment of which approvals may be required and how they may be managed through the life of the project.

3.1 Location

3.1.1 Regional context

Section 3.1.1 should describe the regional context of the project, including illustrations on maps at suitable scales.

3.1.2 Local context

Section 3.1.2 should describe the local context of the project, including illustrations on maps at suitable scales. Real property descriptions of the project site should be provided.

3.2 Construction

Section 3.2 should describe the extent and nature of the project's construction phase, including the type and methods of construction, the construction equipment to be used and the items of plant to be transported onto the construction site.

The estimated numbers of people to be employed in the project construction phase should be provided with a brief description of where those people may be accommodated and/or how they will be transported to the site.

The EIS should address:

- employee estimates during construction, including subcontractors;
- an outline of recruitment schedules and policies for recruitment of workers (addressing recuitment of local and non-local workers); and
- a schedule of construction phases of the project, showing the estimated number of construction workers and subcontractors employed on site at various stages of the project's construction. This information should show anticipated peaks in worker numbers during the construction period, including the anticipated numbers of workers who will be accompanied by dependents.

3.3 Operations

Section 3.3 should describe the location and nature of the processes to be used as part of the mining operations and illustrated with maps, diagrams and artist's impressions as required. Operational issues to be addressed should include:

- a description of plant and equipment to be employed;
- the capacity of plant and equipment; and
- chemicals to be used.

Concept and layout plans should be provided highlighting proposed buildings, structures, plant and equipment associated with the processing operation. The nature, sources, location and quantities of materials to be handled, including the storage and stockpiling of raw materials, should be described.

3.3.1 Location and tenure

Section 3.3.1 should provide maps at suitable scales showing the precise location of the project area, and in particular:

- the location and boundaries of land tenures, in place or proposed, to which the project area is or will be subject;
- the location and boundaries of the project footprint showing all key aspects including excavations, stockpiles, areas of fill, watercourses, plant locations, water storages, buildings, bridges, culverts, hardstands, car parks, etc; and
- the location of any proposed buffers surrounding the working areas.

3.3.2 Mine life and coal resource base

Section 3.3.2 should provide specific details of the following:

- the proposed mine life and an outline of the coal/mineral resource base; and
- the quantity of coal to be mined annually including any proposed ramping of production or staging of development.

3.3.3 Mining methods and equipment

Section 3.3.3 should provide specific details of the following:

- the mining type and methods to be used, including the major equipment to be used in the various components of the operation;

- the use of different techniques in areas of different topographic or geo-technical character; and
- chemicals to be used.

3.3.4 Mine sequencing

Section 3.3.4 should provide specific details of the following:

- the proposed sequence and timing of mining of each seam/ore body within the mining lease;
- the physical extent of excavations, location of stockpiles of overburden and/or coal/mineral reject to be handled during the project's operation or left after mining ceases—the description should include the rate of throughput of stockpiles of product, reject and overburden;
- the proposed progressive backfilling of excavations; and
- the area disturbed at each major stage of the project.

Mine sequencing should also be used to identify the timing of environmental impacts and measures to ameliorate or offset such impacts. Information should also be provided on the workforce numbers to be employed in the facility's operations during its various phases (construction, commissioning, operation and decommissioning) and stages with a brief description of where those people may be accommodated and/or how they will be transported to the site. Comment should be made on the anticipated basis of employment (permanent, contract, etc).

3.3.5 Processing and products

Section 3.3.5 should describe the quantities and characteristics of the products produced on an annual basis. Indicative process flow-sheets should be provided showing material balances for the processing plant, and the anticipated rates of inputs, along with similar data on products, wastes and recycle streams.

3.3.6 On-going evaluation and exploration activities

Section 3.3.6 should describe the extent and nature of any proposed on-going exploration or geological/geo-technical evaluation within the project area that may be required over the life of the project.

3.4 Coal processing

Section 3.4 should outline the location and nature of the coal washery processes to be used on site; including:

- a description of the plant and equipment to be employed;
- the capacity of plant and equipment;
- water requirements; and
- chemicals to be used.

Concept and layout plans highlighting proposed infrastructure associated with the coal processing operations should be provided. The nature, sources, location and quantities of all materials to be handled, including the storage and stockpiling of raw materials should be described.

Indicative process flow-sheets should be provided showing material balances for the mine and processing plant, and the anticipated rates of inputs, along with similar data on products (product or washed coal), wastes (for example, tailings and coarse rejects) and recycle streams (for example, water).

A description should be provided of the quantities and characteristics of the product or washed coal.

3.5 Product coal handling

Section 3.5 should describe and display on appropriate scaled plans, the proposed methods and facilities to be used for product coal storage and for transferring product coal from the processing plant to the storage facilities and from the storage facilities to the transport facilities. Any environmental design features associated with these facilities should be highlighted.

3.6 Infrastructure requirements

Section 3.6 should provide descriptions, with concept and layout plans, of any requirements for constructing, upgrading or relocating infrastructure in the vicinity of the project area. The matters to be considered include such infrastructure as roads, rail, bridges, tracks and pathways, bore fields, power lines and other cables and pipelines for any services (whether underground or above).

3.6.1 Transport—road/rail

Section 3.6.1 should describe the arrangements for the transport of plant, equipment, products, wastes and personnel during both the construction phase and operational 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.

Details of any proposed use of rail for transport of materials, products or wastes to or from the project site should be provided including any constraints on rail transport of coal to the Port of Brisbane or Swanbank.

Information should be provided on road transportation requirements on public roads for both construction and operations phases, including:

- the volume, composition (types and quantities), origin and destination of goods to be moved including construction materials, plant, raw materials, wastes, hazardous materials, product coal and explosives;
- the volume of traffic generated by workforce personnel, visitors and service vehicles;
- method of movement (including vehicle types and number of vehicles likely to be used);
- anticipated times at which movements may occur;
- details of vehicle traffic and transport of heavy and oversize indivisible loads (including types and composition); and
- the proposed transport routes.

This section should canvass transport modal split issues. For example, the need to double the volume of coal haulage by road to Swanbank should be examined in terms of impacts on the community.

3.6.2 Energy

Section 3.6.2 should describe all energy requirements, including electricity and liquid fuel requirements for the construction and operation of the project. The locations of any easements should be shown on the infrastructure plan. Energy conservation should be briefly described in the context of any Commonwealth, State and local government policies.

3.6.3 Water supply and storage

Section 3.6.3 should provide information on water usage by the project, including the quality, quantity and sources of all water supplied to the site currently and proposed for the Stage 2 expansion. In particular, the optional sources of existing and proposed water supply should be described (for example, bores, any surface storages such as dams and weirs, municipal water supply pipelines).

Estimated rates of supply from each source (average and maximum rates) should be given. Any proposed water conservation and management measures should be described.

A determination of potable water demand should be made for the project, including the temporary demands during the construction period. This should include the identification of the sources of potable water. If potable water storage and treatment is proposed on site, this should be described.

3.6.4 Stormwater drainage

Section 3.6.4 should provide a general description of the proposed stormwater drainage system and the proposed disposal arrangements, including any off-site services.

3.6.5 Sewerage

Section 3.6.5 should describe, in general terms, the sewerage infrastructure required by the project.

3.6.6 Telecommunications

Section 3.6.6 should describe any impacts on existing telecommunications infrastructure (such as optical cables, microwave towers, etc.) and identify the owners of that infrastructure.

3.6.7 Accommodation and other infrastructure

Section 3.6.7 should provide a general description of any other developments directly related to the project not described in other sections, such as:

- camps, townships or residential developments;
- fuel storage areas;
- equipment hardstand and maintenance areas; and
- technical workshops and laboratories.

An accommodation strategy for the construction workforce should be included, which addresses the estimated housing needs of both single and accompanied construction workers and associated subcontractors. 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, as well as the spare capacity of existing on site accommodation to meet this additional demand.

An accommodation strategy for the commissioning and operational workforce should be included, which addresses the estimated housing needs of both single and accompanied workers employed by the mine. This should include details of the size and location of any additional worker accommodation that will be required. Estimates should be provided of permanent accommodation requirements for operational staff and dependents in the catchment area where they are likely to seek accommodation.

3.7 Waste management

Section 3.7 should provide an inventory of all wastes likely to be generated during the project's life (that is, during mine construction, mining and coal production), and as well as providing the expected total volumes of each waste produced per unit volume of product coal produced. The summary should include:

- the tonnage of ROM coal processed;
- the amount of resulting process wastes (tailings and coarse rejects);
- the tonnage and volume of waste rock (overburden/interburden) removed to extract the coal; and
- the volume and tonnage of any by-products left from the processing of the coal.

The physical and chemical characteristics of waste material (e.g. overburden, interburden, coarse rejects and tailings) from the mine and coal washplant should be provided. All other wastes, including regulated wastes, generated by the project (for example, tyres, packaging materials, food waste, general refuse etc.) should be quantified and disposal options discussed.

Schematic diagrams should be provided for each distinct stage of the project (for example, construction/site preparation, commissioning, operation and decommissioning) indicating the processes to be used and highlighting their associated waste streams (that is, all waste outputs: solid, liquid and gaseous), including recycling efforts, such as stockpiling and reusing topsoil. The schematic diagrams, or an associated table, should cross-reference the relevant sections of the EIS where the potential impacts and mitigation measures associated with each waste stream are described. The physical and chemical characteristics of waste material from the process plant should be provided.

Having regard for best practice waste management strategies and the Environmental Protection (Waste) Policy, the proposals for waste avoidance, reuse, recycling, treatment and disposal should be described in the appropriate sub-section below. Information should also be provided on the variability, composition and generation rates of all waste produced at the site and processing plant.

Details on natural resource use efficiency (for example, energy and water), integrated processing design and by product reuse as shown in a material/energy flow analysis should be presented.

3.7.1 Solid waste

Section 3.7.1 should provide details on the proposed location, site suitability, dimensions and volume of dumps (overburden, waste rock and tailings), including their methods of construction. Information should be supplied on the methods proposed to prevent acid formation, seepage and contamination and the measures selected to ensure stability of the dumps and tailings dam (or tailings storage facility).

3.7.2 Wastewater

Section 3.7.2 should describe the nature (e.g. origin, quality and quantity) of wastewater originating from the project over time. A water balance for the project's mining and coal processing requirements is required to account for the estimated usage of water.

Where applicable, the EIS wastewater study should consider the following:

- groundwater from mine pits and other on-site excavations;
- rainfall directly onto disturbed surface areas;
- run-off from haul roads, plant and industrial areas and chemical storage areas;
- drainage (e.g. run-off, seepage or leakage) from dumps and stockpiles;
- seepage from other waste storages;
- water usage for:
    - domestic purposes,
    - process use, and
    - dust suppression;
- evaporation;
- domestic sewage treatment - disposal of liquid effluent and sludge; and
- water supply treatment plant -disposal of wastes.

3.7.3 Air emissions

Section 3.7.3 should assess the expected quantity and quality of all air emissions, including dust and odours, from the project during construction and operation. Where applicable, information should be submitted on the use of new technologies to reduce air emissions from identified emission sources.

3.8 Rehabilitation and decommissioning

Section 3.8 should present the strategies and methods for progressive and final rehabilitation of the environment disturbed by the project. The final topography of excavations, waste dumps and tailings dam sites should be shown. The post-mining land-use suitability of the various land disturbance types should be defined.

The strategies and methods presented for progressive and final rehabilitation of disturbed areas should demonstrate compliance with the objectives of the Environmental Management Policy for Mining in Queensland (1991) or with updated versions of that policy as they become available.

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

Mining and rehabilitation should aim to create a landform with land-use capability and/or suitability similar to that before disturbance unless other beneficial land uses are pre-determined and agreed.

Mine wastes and disturbed land should be rehabilitated to a condition that is self-sustaining or to a condition where the maintenance requirements are consistent with an agreed post mining land use.

Surface and ground waters that leave the lease should not be degraded to a significant extent. Current and future water quality should be maintained at levels that are acceptable for users downstream of the site.

Objectives of rehabilitation should include reference to desired ecosystems, vegetation communities and desired ecological function for these communities.

The means of decommissioning the project, in terms of the removal of plant, equipment, structures and buildings should be described along with the methods proposed for the stabilisation of the affected areas. Final rehabilitation of the plant site and waste dumps should be discussed in terms of ongoing land use suitability, management of any residual contaminated land and any other land management issues.

Detail of the impacts of the preferred rehabilitation strategy should be discussed in the appropriate subsections of Section 4 (Environmental values and management of impacts) with regard to such issues as the disposal of waste and the long-term quality of water in any final voids.

Details of the existing and proposed rehabilitation monitoring program should be provided. This should include the monitoring and control of weeds.

Implications for the long-term use and fate of the site should also be addressed, particularly with regard to the on-site disposal of waste and the site's inclusion on the Environmental Management Register or Contaminated Land Register.

4.0 Environmental values and management of impacts

The functions of Section 4.0 are to:

- describe the existing environmental values of the area which may be affected by the mining activities. Environmental values are defined in Section 9 of the *Environmental Protection Act 1994*, environmental protection policies and other documents such as the ANZECC 2000 guidelines and South East Queensland Regional Water Quality Management Strategy. Environmental values may also be derived following recognised procedures, such as described in the ANZECC 2000 guidelines. Environmental values should be described by reference to background information and studies, which should be included as appendices to the EIS;
- describe the potential adverse and beneficial impacts of the mining activities on the environmental values. Any likely environmental harm on the environmental values should be described;
- to describe any cumulative impacts on environmental values caused by the proposal, either in isolation or by combination with other known existing or planned sources of contamination;
- present environmental protection objectives and the standards and measurable indicators to be achieved; and
- to examine viable alternative strategies for managing impacts. These alternatives should be presented and compared in view of the stated objectives and standards to be achieved. Available techniques, including best practice, to control and manage impacts to the nominated objectives should be discussed. This section should detail the environmental protection measures incorporated in the planning, construction, operations, decommissioning, rehabilitation and associated works for the proposal. Measures should minimise environmental harm and maximise socio-economic and environmental benefits of the proposal. Preferred measures should be identified and described in more detail than other alternatives.

Environmental protection objectives may be derived from legislative and planning requirements which apply to the project including Commonwealth strategies, State planning policies, local authority strategic plans, environmental protection policies under the *Environmental Protection Act 1994*, and any catchment management plans prepared by local water boards or Landcare groups. Special attention should be given to those mitigation strategies designed to protect the values of any sensitive areas and any identified ecosystems of high conservation value within the area of possible proposal impact.

This section should address all elements of the environment, (such as land, water, coast, air, waste, noise, nature conservation, cultural heritage, social and community, health and safety, economy, hazards and risk) in a way that is comprehensive and clear. To achieve this, the following issues should be considered for each environmental value relevant to the project:

- Environmental values affected: describe the existing environmental values of the area to be affected including values and areas that may be affected by any cumulative impacts (refer to any background

studies in Appendices - note such studies may be required over several seasons). It should be explained how the environmental values were derived (for example, by citing published documents or by following a recognised procedure to derive the values).

- Impact on environmental values: describe quantitatively the likely impact of the project on the identified environmental values of the area. The cumulative impacts of the proposal must be considered over time or in combination with other (all) impacts in the dimensions of scale, intensity, duration or frequency of the impacts. In particular, any requirements and recommendations of relevant State planning policies, environmental protection policies, national environmental protection measures and integrated catchment management plans should be addressed.

  Cumulative impacts on the environmental values of land, air and water and cumulative impacts on public health and the health of terrestrial, aquatic and marine ecosystems must be discussed in the relevant sections. This assessment may include air and water sheds affected by the proposal and other proposals competing for use of the local air and watersheds.

  Where impacts from the project will not be felt in isolation to other sources of impact, it is recommended that the proponent develop consultative arrangements with other industries in the proposal's area to undertake cooperative monitoring and/or management of environmental parameters. Such arrangements should be described in the EIS.

- Environmental protection objectives: describe qualitatively and quantitatively the proposed objectives for enhancing or protecting each environmental value. Include proposed indicators to be monitored to demonstrate the extent of achievement of the objective as well as the numerical standard that defines the achievement of the objective (this standard must be auditable). The measurable indicators and standards can be determined from legislation, support policies and government policies as well as the expected performance of control strategies. Objectives for progressive and final rehabilitation and management of contaminated land should be included.

- Control strategies to achieve the objectives: describe the control principals, proposed actions and technologies to be implemented that are likely to achieve the environmental protection objectives; include designs, relevant performance specifications of plant. Details are required to show that the expected performance is achievable and realistic.

- Monitoring programs: describe the monitoring parameters, monitoring points, frequency, data interpretation and reporting proposals.

- Auditing programs: describe how progress towards achievement of the objectives will be measured, reported and whether external auditors will be employed. Include scope, methods and frequency of auditing proposed.

- Management strategies: describe the strategies to be used to ensure the environmental protection objectives are achieved and control strategies implemented e.g. continuous improvement framework including details of corrective action options, reporting (including any public reporting), monitoring, staff training, management responsibility pathway, and any environmental management systems and how they are relevant to each element of the environment.

- Information quality: information given under each element should also state the sources of the information, how recent the information is, how any background studies were undertaken (for example, intensity of field work sampling), how the reliability of the information was tested, and what uncertainties (if any) are in the information.

It is recommended that the final ToR and 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 monitoring program for the project.

4.1 Land

4.1.1 Environmental values affected

Section 4.1.1 should describe the existing environmental values of land that may be affected by the project. It should also define and describe the objectives and practical measures for protecting or enhancing land-based

environmental values, describe how nominated quantitative standards and indicators may be achieved, and how the achievement of the objectives will be monitored, audited and managed.

4.1.1.1 Land use

Section 4.1.1.1 should provide a description of current land tenures and land uses, including native title issues, in the project area, with particular mention of land with special purposes. The location and owner/custodians of native title in the area and details of native title claims should be shown.

Maps at suitable scales showing existing land uses and tenures, and the mine location, should be provided for the entire proposal area and surrounding land that could be affected by the development. The maps should identify areas of conservation value in any locality that may be impacted by the project. The location of existing dwellings, and the zoning of all affected lands according to any existing town or strategic plan should be included.

The land use suitabilities of the affected area should be described in terms of the physical and economic attributes. The potential environmental harm caused by the project on adjacent land uses (for example, agriculture) should be evaluated and the implications of the project for future developments in the impact area, including constraints on surrounding land uses, should be described.

The assessment should set out soil and landform subclasses assigned to soil mapping units in order to derive land suitability classes. The limitations and land suitability classification system in Attachment 2 of Land Suitability Assessment Techniques in the Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland (1995) is to be used to determine land suitability.

A land suitability map of the project and adjacent area, and setting out land suitability and current land uses, for example, for grazing of native and improved pastures and horticulture is to be provided. Land classified as Good Quality Agricultural Land in the Department of Natural Resources' land classification system is to be shown in accordance with the planning guideline, *The Identification of Good Quality Agricultural Land,* which supports State Planning Policy 1/92.

4.1.1.2 Sensitive environmental areas

Section 4.1.1.2 should describe all environmentally sensitive areas (for example, endangered regional ecosystems) within or surrounding the project area and evaluate the potential affect of the project on these areas (both directly and indirectly). The evaluation process should investigate issues such as protected area estates, national parks, conservation parks, wilderness areas, heritage/historic areas or items, national estates, world heritage listings, sites covered by international treaties or agreements (e.g. RAMSAR, JAMBA, CAMBA), areas of cultural significance and scientific reserves.

Matters of national environmental significance under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* should be described, as they relate to the project.

4.1.1.3 Landscape character

Section 4.1.1.3 should describe in general terms the existing character of the landscape that will be affected by the project. It should comment on any changes that have already been made to the natural landscape since European settlement. It should 'set the scene' for the description of particular scenic values in the following section on visual amenity. The difference being that this section describes the general impression of the landscape that would be obtained while travelling through and around it, while the visual amenity section addresses particular panoramas and views (for example, from constructed lookouts, designated scenic routes, etc.) that have amenity value.

4.1.1.4 Visual amenity

Section 4.1.1.4 should describe existing landscape features, panoramas and views that have, or could be expected to have, value to the community whether of local, regional, State-wide, national or international significance. Information in the form of maps, sections, elevations and photographs is to be used, particularly where addressing the following issues:

- identification of elements within the project and surrounding area that contribute to their image of the town/city as discussed in the any local government strategic plan - city image and townscape objectives and associated maps;

- major views, view sheds, existing viewing outlooks, ridgelines and other features contributing to the amenity of the area, including assessment from private residences in the affected area along the route;
- focal points, landmarks (built form or topography), gateways associated with project site and immediate surrounding areas, waterways, and other features contributing to the visual quality of the area and the project site;
- character of the local and surrounding areas including character of built form (scale, form, materials and colours) and vegetation (natural and cultural vegetation) directional signage and land use;
- 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; and
- the value of existing vegetation as a visual screen.

4.1.1.5 Infrastructure

Section 4.1.1.5 should define the location and owner/custodians of all tenures, reserves, roads and road reserves, railways and rail reserves, gas, water pipelines, power lines, stock routes and any other easements within land likely to be affected by the project. The environmental values affected by any new project infrastructure requirements should be described.

4.1.1.6 Topography/geomorphology

Section 4.1.1.6 should describe the topography and geomorphology of the project area (including a suitably scaled and contoured map). The environmental values of the landscape within the project area should be discussed. Maps should be provided locating the project in both regional and local contexts. The topography of the project site should be detailed with contours at suitable increments, shown with respect to Australian Height Datum (AHD). Significant features of the locality should be included on the maps. Such features would include any locations subsequently referred to in the EIS (e.g. the nearest noise sensitive locations) that are not included on other maps in Section 4.1. Commentary on the maps should be provided highlighting the significant topographical features.

4.1.1.7 Geology

Section 4.1.1.7 should detail 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. Geological properties that may influence ground stability (including seismic activity, if relevant), occupational health and safety, rehabilitation programs, or the quality of wastewater leaving any area disturbed by the proposal should be described. In locations where the age and type of geology is such that significant fossil specimens (such as of dinosaurs or their tracks) may be uncovered during construction/operations, the EIS should address the potential for significant finds.

4.1.1.8 Soils

Section 4.1.1.8 should provide the results of a soil survey over the project area (including a map of suitable scale). Soil profiles should be mapped at a suitable scale and described according to the Australian Soil and Land Survey Field Handbook (McDonald et al, 1990) and Australian Soil Classification (Isbell, 1996).

Discussion should involve the physical and chemical properties of the soil, which will influence erosion potential, storm water run-off quality and rehabilitation success and an appraisal of the depth and quality of useable soil. Information should be presented according to the standards required in the Planning Guidelines: *The Identification of Good Quality Agricultural Land* (DPI, DHLGP, 1993) and the State Planning Policy 1/92: *Development and the Conservation of Agricultural Land*.

Analysis of the chemical and physical properties of soils should allow the assessment of their suitability for earthworks at various wastewater compositions.

4.1.1.9 Climate/natural disasters

Section 4.1.1.9 should describe the rainfall patterns (including magnitude and seasonal variability of rainfall), air temperatures, humidity, wind (direction and speed) and any other special factors (for example, temperature inversions) that may affect air quality within the region of the proposal. Extremes of climate (droughts, floods, cyclones, etc) should also be discussed with particular reference to water management at the proposal site.

The vulnerability of the area to natural or induced hazards, such as floods and bushfires, should also be addressed. The relative frequency, magnitude and risk of these events should be considered.

The potential impacts due to climatic factors should be addressed in the relevant sections of the EIS. The impacts of rainfall on soil erosion should be addressed. The impacts of storm events on the capacity of waste containment systems (e.g. site bunding/stormwater management and tailings dams) should be addressed with regard to contamination of waterways and with regard to the design of waste containment systems. The impacts of winds, rain, humidity and temperature inversions on air quality should be addressed.

4.1.1.10 Mineral resources

Section 4.1.1.10 should provide a summary of the results of studies and surveys undertaken to identify and delineate the mineral resources within the project area (including any areas underlying related infrastructure).

The location, tonnage and quality of the mineral resources within the project area should be described in detail as indicated below. Where possible, coal products should be described on a 'seam by seam' basis and include the modifying factors and assumptions made in arriving at the estimates.

The mineral resources should be estimated and reported in accordance with the 'Australasian Code for Reporting of Mineral Resources and Ore Reserves' (the JORC Code - available at www.jorc.org/main.php) and the principles outlined in the 'Australian Guidelines for the Estimating and Reporting of Inventory Coal, Coal Resources and Coal Reserves' (available at www.jorc.org/pdf/coalguidelines.pdf) as appropriate.

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

- the location and areal extent of the mineral resources to be developed or mined;
- the location and boundaries of mining tenures, granted or proposed, to which the project area is, or will be subject;
- the location of the proposed mine excavation(s);
- the location and boundaries of any project sites;
- the location and boundaries of any other features that will result from the proposed mining including waste/spoil dumps, water storage facilities and other infrastructure;
- the location of any proposed buffers, surrounding the working areas; and
- any part of the resource not intended to be mined and any part of the resource that may be sterilised by the proposed mining operations or infrastructure.

Resource utilisation

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

4.1.2 Management of impacts on environmental values

Section 4.1.2 should define and describe the objectives for protecting or enhancing the identified environmental values of land, to describe how nominated quantitative standards and indicators for protecting or enhancing the identified environmental values of land may be achieved, and how the achievement of the objectives will be monitored, audited and managed.

4.1.2.1 Land use suitability

Section 4.1.2.1 should detail the potential for the construction and operation of the project to change existing and potential land uses of the project site and adjacent areas. Post mining land use options should be discussed including suitability of the mined area to be used for agriculture, industry, or nature conservation. The

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

The factors favouring or limiting the establishment of the specified post mining options should be provided in the context of optimising the long-term stability of the site and minimising potential liabilities for long-term management. If the development adjoins or potentially impacts on good quality agricultural land, then an assessment of the potential for land use conflict is required. Investigations should follow the procedures set out in the planning guideline, *The Identification of Good Quality Agricultural Land*, which supports State Planning Policy 1/92.

Measures to avoid unacceptable impacts that result from incompatible land uses (existing and future) adjacent to all aspects of the project should be provided.

4.1.2.2 Land disturbance

Section 4.1.2.2 should outline strategies to minimise disturbance, promote progressive rehabilitation and allow final decommissioning of the project site.

The methods to be used, including backfilling, covering, re-contouring, topsoil handling and revegetation, should be described. Consideration should be given to the use of threatened plant species during any landscaping and revegetation.

Issues to be discussed should include:

- construction activities and proposed earthworks for mining infrastructure;
- where dams, roads and other infrastructure are to be constructed, proposals for the management of these structures after the completion of the project should be given;
- final drainage and seepage control systems and any long-term monitoring plans should be described;
- a description of topsoil management should consider transport, storage and replacement of topsoil to disturbed areas. The minimisation of topsoil storage times (to reduce fertility degradation) should also be addressed. Erosion and sediment control should be described;
- proposed rehabilitation methods (for example, earthworks, topsoil management, revegetation options, etc.);
- erosion and sediment control strategies;
- post-mining management or rehabilitation options for supporting infrastructure (for example, dams, road, etc.);
- post-mining water management strategies;
- site decommissioning requirements (for example, fencing, etc.);
- long term monitoring requirements; and
- alternative final land use options.

4.1.2.3 Land contamination

Section 4.1.2.3 should describe the possible contamination of land from aspects of the project (for example, waste, spills at chemical and fuel storage areas, etc.). The EIS should describe the possible contamination of land from aspects of the project including waste, reject product, acid generation from exposed sulfidic material and spills at chemical and fuel storage areas. Strategies for preventing, reducing and managing occurrences of land contamination within the project area should be addressed (within the meaning of the *Environmental Protection Act 1994*).

In addition, contaminated land discussions should also include:

- identification of current areas listed or proposed areas ('notifiable activities') to be listed on the Environmental Management Register or Contaminated Land Register under the *Environmental Protection Act 1994*;

- identification of any potentially contaminated sites not on the registers which may require future remediation;
- a description of the nature and extent of contamination at each site; and
- discussion of proposed long-term (post-mining) management options for contaminated sites following cessation of the project in terms of the Queensland Contaminated Land Register and Environmental Management Register.

4.1.2.4 Soil erosion

Section 4.1.2.4 should describe the proposed management techniques for erosion control within the project area. The erosion potential (wind and water) of each identified soil type and overburden/interburden should be discussed, an erosion monitoring program should be outlined and rehabilitation measures for erosion problems should be summarised. Mitigation strategies should be developed to achieve acceptable soil loss rates, levels of sediment in rainfall runoff and wind generated dust concentrations.

4.1.2.5 Scenic values

4.1.2.5.1 Lighting

Section 4.1.2.5.1 should provide the results of an assessment of all potential impacts of lighting of the project, during all developmental stages, the environmental protection objectives for lighting and the management strategies to be implemented to mitigate or avoid impacts, including consideration of:

- the visual impact at night;
- night operations/maintenance and effects of lighting on the surrounding environment (e.g. neighbours and local fauna);
- the potential impact of increased vehicular traffic; and
- changed habitat conditions for nocturnal fauna and associated impacts.

4.1.2.5.2 Landscape character

Section 4.1.2.5.2 should describe the potential impacts of the project landscape character of the site and the surrounding area. Particular mention should be made of any changes to the broad-scale topography and vegetation character of the area, such as due to spoil dumps, excavated voids and broad-scale clearing.

4.1.2.5.3 Visual amenity

Section 4.1.2.5.3 should discuss the visual impact of the project on particular panoramas and outlooks. It should be written in terms of the extent and significance of the changed skyline as viewed from places of residence, work, and recreation, from road, cycle and walkways, from the air and other known vantage points day and night, during all stages of the project as it relates to the surrounding landscape. The assessment is to address the visual impacts of the project structures and associated infrastructure, using appropriate simulation.

Sketches, diagrams, computer imaging and photos are to be used where possible to portray the near views and far views of the completed structures and their surroundings from visually sensitive locations. Special consideration is to be given to public roads, public thoroughfares, and places of residence or work, which are within the line-of-sight of the project.

Detail should be provided of all management options to be implemented and how these should mitigate or avoid the identified impacts, such as vegetation screening.

4.1.2.6 Transport

4.1.2.6.1 Road transport

Section 4.1.2.6.1 should provide sufficient information and assessment for the Department of Main Roads and local government to accurately judge how the State-controlled and local government road networks will be affected. For both State-controlled and local government road networks, the impact on stakeholders along the whole route should be detailed and how any impacts will be managed.

Investigations should include:

- detailed analysis of probable impact of identified construction and operational traffic generated by the project with particular concern to impacts road users and road safety and on road infrastructure, for example, levels of service intersections in Toowoomba and road links such as the Toowoomba Range Crossing. The impacts of additional project traffic, especially from road haulage, on the community residing along the haul route should be investigated. The Proponent should use the Main Roads' "Guidelines for Assessment of Road Impacts of Development Proposals" and the "Road Planning and Design Manual" in their assessment and should liaise closely with the relevant Main Roads district office during the assessment process;
- the results of a traffic study involving a comparison of traffic and road conditions with and without the project;
- an outline of the corrective measures necessary to address adverse road impacts (including damage to pavements) and the costs involved; and
- need for increased road maintenance and upgrading.

Effects of increased traffic at the intersection of the Jondaryan-Muldu Road and the Warrego Highway (and associated railway crossing) should be assessed.

The timing of road haulage operations, including the current 'truck-free day each week' strategy should be discussed.

4.1.2.6.2 Rail transport

Section 4.1.2.6.2 should provide sufficient information to enable Queensland Rail to make an independent assessment of how the rail network (including infrastructure) will be affected.

Investigations should include:

- details of the impact on any current or proposed rail infrastructure;
- information on product spill contingency plans and the adequacy of equipment and facilities to deal with possible spills for the transport nodes of the proposal; and
- discussions on the adequacy of existing infrastructure based on the increase in frequency of traffic and volumes to be transported.

4.2 Water resources

4.2.1 Environmental values affected

Section 4.2.1 should describe the existing environmental values of water (surface water and groundwater) that may be affected by the project in the context of environmental values as defined in such documents as the *Environmental Protection Act 1994*, *Environmental Protection (Water) Policy 1997*, ANZECC 2000 and the South East Queensland Water Quality Management Strategy.

Where a licence or permit will be required under the *Water Act 2000* to take or interfere with the flow of water, this section of the EIS should provide sufficient information for a decision to be made on the application.

4.2.1.1 Surface waterways

Section 4.2.1.1 should provide a description of the surface water environment in relation to the project area, including a description of:

- the current drainage pattern within the project area and its significance within the Condamine River catchment;
- how the mining sequence will affect drainage on the site. Particular emphasis on maintaining drainage across the site, including sequencing of constructed drainage measures through backfilled areas is required;
- the extent to which surface water resources are ephemeral;
- the existing surface drainage patterns and flows into major streams and wetlands;

- the flood regime including the likelihood of flooding, history of flooding (extent, levels and frequency) and a range of annual exceedance probabilities for affected waterways where data permits. The flooding section should also discuss potential off-site impacts cause by infrastructure such as levees; and
- present and potential water uses downstream of the areas affected by the project.

The results of an assessment of the existing water quality in surface waters likely to be affected by the proposal should be provided. The basis for this assessment should involve a monitoring program, with sampling stations located upstream and downstream of the project, and any complementary stream-flow data available from historical records. The purpose and methodology of any existing or proposed monitoring program should be described.

The water quality should be described, including seasonal variations or variations with flow where applicable. A relevant range of physical, chemical and biological parameters should be measured to gauge the environmental harm on the downstream environment.

The environmental values of the surface waterways of the affected area should be described in terms of:

- values identified in the *Environmental Protection (Water) Policy*;
- sustainability, including both quality and quantity;
- physical integrity, fluvial processes and morphology of watercourses, including riparian zone vegetation and form; and
- any water resource plans or land and water management plans relevant to the Condamine catchment.

4.2.1.2 Groundwater

Section 4.2.1.2 should review the quality, quantity, use and significance of groundwater within an established radius (possible extent of any environmental harm) around the project area. The review should include a survey of existing groundwater supply facilities (bores, wells, or excavations) and analyse information on:

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

The current network of groundwater monitoring bores should be expanded to monitor groundwater resources both before and after commencement of the project. Details should be provided on the methodology behind the monitoring regime.

The project's groundwater investigations should include reference to:

1. Nature of the aquifer/s:
    - geology/stratigraphy - such as alluvium, volcanic, metamorphic;
    - aquifer type - such as confined, unconfined;
    - depth to and thickness of the aquifers; and
    - chemistry of the various aquifers (e.g. major ionic species present in the groundwater, pH, electrical conductivity and total dissolved solids).
2. Hydrology of the aquifer/s
    - 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 area should be described in terms of:

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

If increased groundwater is to be used, the project's groundwater investigations should state clearly the impacts, if any, on existing groundwater users.

4.2.2 Management of impacts on environmental values

Section 4.2.2 should define and describe the objectives for protecting or enhancing the identified environmental values of water, to describe how nominated quantitative standards and indicators for protecting or enhancing the identified environmental values of water may be achieved, and how the achievement of the objectives will be monitored, audited and managed.

4.2.2.1 General

Section 4.2.2.1 should describe the possible environmental harm caused by the project to environmental values for water as expressed in the *Environmental Protection (Water) Policy 1997*.

Water management controls should be described, addressing surface water and groundwater quality, quantity, drainage patterns and sediment movements. The beneficial (environmental, production and recreational) use of nearby surface and groundwater should be discussed. Monitoring programs should be described which will assess the effectiveness of management strategies for protecting water quality during the project's construction, operation and decommissioning phases.

The project's key water management strategy objectives should include:

- protection of important local aquifers and protection of their waters;
- protection of vegetation communities that are dependent on intermittent flooding; and
- maintenance of sufficient quantity and quality of surface waters to protect existing beneficial downstream uses of those waters (including maintenance of in-stream biota).

A risk assessment of the potential for uncontrolled emissions to water due to system or catastrophic failure should be conducted, and should include discussions on the implications of such emissions for human health and natural ecosystems, and possible strategies to prevent, minimise and contain impacts from an uncontrolled emission to water.

4.2.2.2 Surface water and water courses

4.2.2.2.1 Downstream impacts

Section 4.2.2.2.1 should discuss the potential environmental harm (impacts) to the flow and the quality of surface waters from all phases of the project and include discussion on the:

- current and potential downstream water user requirements;
- downstream biological requirements (for example, flow regime changes on riparian zone and in-stream biological uses); and
- specific requirements of the *Environmental Protection (Water) Policy 1997* and *Water Act 2000*.

4.2.2.2.2 Water usage

Section 4.2.2.2.2 should discuss the impacts of the project's projected water supply and usage and wastewater disposal requirements. The project's water requirements should be discussed with reference to the effects of predictable climatic extremes (droughts, floods), the integrity and design of containment structures, the quality of

water contained, and the proposed discharge regime, including discharge points, likely parameters for discharge events and the chemical and physical limits for discharge water.

The need for licensing of any dams (including referable dams) under the *Water Act 2000* or *Environmental Protection Act 1994* should be discussed. Water allocation and water source issues should be discussed.

4.2.2.2.3 Mitigation strategies

Section 4.2.2.2.3 should discuss the proposed surface water management strategies to minimise and prevent impacts from the project on the downstream environment in detail. Options for mitigation and the effectiveness of mitigation measures should be discussed with particular reference to sediment, acidity, salinity and other emissions of a hazardous or toxic nature to human health, flora or fauna.

4.2.2.3 Groundwater

Section 4.2.2.3 should discuss the results of an assessment of the potential environmental harm (impacts) caused by the project to local groundwater resources.

The impact assessment process should:

- discuss existing groundwater use by the project;
- define the potential extent of the impact of the project on the local groundwater resource;
- define the significance of the project to groundwater depletion or recharge;
- discuss the response of the groundwater resource to the progression and, finally, cessation of the project;
- discuss impact of the project in terms of disturbance to the continuity of aquifers within local ground water environment;
- evaluate the project's potential to contaminate groundwater resources; and
- outline the propose management options available to monitor, mitigate and remediate groundwater impacts.

4.3 Air

4.3.1 Environmental values affected

Section 4.3.1 should describe the existing environmental values for air that may be affected by the project.

A description of the existing air-shed environment should be provided having regard for particulates, gaseous and odorous compounds. The background levels and sources of suspended particulates and any other major constituent of the air environment, including greenhouse gases, which may be affected by the project should be discussed.

The potential emissions from the project's operation and the likely impacts on environmental values from any such emissions should be detailed. All potential sources of pollutants from any such emissions should be detailed. All potential sources of pollutants and fugitive emissions and the respective emission rates should be estimated. Additional information such as the mass fraction and density of particles in relevant size ranges, diurnal variation or episodic levels of emission rates, wind speed and rainfall should be gathered for modelling the impacts of dust emissions, both as concentrations and deposition. At least a one-year file of hourly meteorological data should be compiled as modelling input.

Estimates of fugitive methane released from additional development of the coal reserve should be included in this section.

Dust effects on crops, livestock and human health should be discussed.

The air studies should consider existing modelling data, local climatic data, local topographic data, different atmospheric dispersion characteristics, the various equipment scenarios for the relevant phases of the project and the air quality indicators and goals provided by the *Environmental Protection (Air) Policy 1997*.

4.3.2 Management of impacts on environmental values

Section 4.3.2 should define and describe the impacts on environmental values due to air emissions and objectives for protecting or enhancing the identified environmental values, to describe how nominated quantitative standards and indicators for protecting or enhancing the identified environmental values may be achieved, and how the achievement of the objectives will be monitored, audited and managed.

The objectives for air emissions should be stated in respect of relevant standards (ambient and ground level concentrations), relevant emission guidelines, and any relevant legislation. For example, the predicted ambient dust levels resulting from the proposed levels of emissions should be compared with the guidelines of the *Environmental Protection (Air) Policy 1997*.

The potential emissions from the project's operation and the likely environmental harm (impacts) from any such emissions should be detailed.

The proposed air quality modelling should:

- be conducted using a recognised atmospheric dispersion model;
- provide an assessment of predicted average ground level concentrations of the selected air quality parameters and dust deposition at nearby sensitive receptors (residences) and agricultural developments;
- detail the potential impacts on air quality from the project's operations;
- describe the limitations and accuracy of the model used; and
- allow development of mitigation methods to reduce and prevent impacts on air quality.

In relation to the project's air quality issues, a brief assessment and discussion of the following matters should also be provided:

- the human health risk associated with any hazardous or toxic emissions from the project;
- the likelihood of odour emissions from the project and proposed odour control strategies for possible odour emissions; and
- the status of greenhouse gas emissions from the project and proposed measures to avoid, minimise or offset greenhouse emissions, including fugitive methane released from additional development of the mine.

Dust management at the Jondaryan rail siding should be addressed, including dust produced from loading operations and trucks manoeuvring on unsealed areas.

4.4 Waste

4.4.1 Environmental values affected

Section 4.4.1 should describe the existing environmental values that may be affected by wastes generated by the project.

Discussions should focus on the information provided in Section 3.7 Waste Management and describe which environmental values may be affected by the project's waste management activities.

4.4.2 Management of impacts on environmental values

Section 4.4.2 should define and describe the objectives for protecting or enhancing the identified environmental values that may be impacted by waste, to describe how nominated quantitative standards and indicators for protecting or enhancing the identified environmental values that may be impacted by waste, and how the achievement of the objectives will be monitored, audited and managed.

An assessment of the potential impact of all wastes to be generated by the project should be provided and should include details on:

- the project's proposed waste management options;

- any possible on-site treatment and storage methods for waste;
- measures to ensure stability of the dumps and impoundments should be described;
- methods to prevent, seepage and contamination of groundwater from stockpiles and/or dumps should be given;
- level of impact on environmental values;
- market demand for recyclable waste (where appropriate);
- the project's proposed waste minimisation techniques; and
- decommissioning of the site.

The project's waste management options should be discussed in terms of the 'waste management hierarchy' and the *Environmental Protection (Waste) Policy 2000*, and should investigate the feasibility of using waste minimisation and cleaner technology options during the construction and operating phases of the project.

Discussion on the management of waste should outline methods to avoid and manage stormwater contamination by waste.

Measures to maximise the project's energy and natural resource use efficiency should also be investigated.

4.5 Noise and vibration

4.5.1 Environmental values affected

Section 4.5.1 should describe and qualify the existing environmental values for the noise and vibration environment that may be affected by the project.

The existing environmental values which may be affected by the works associated with the proposal should be discussed in the context of the *Environmental Protection (Noise) Policy 1997* and New Acland Coal Pty Ltd's current Environmental Authority limits for noise.

This section should describe the existing acoustic environment of the project area, should identify the location of nearest sensitive places and should review available noise monitoring and modelling investigations undertaken for the existing site operations. If the proposed activity would adversely impact the noise environment at sensitive places not currently influenced by the existing development, additional information on the noise environment at such locations should be gathered in the form of baseline monitoring.

The daily variation of background 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 night. Monitoring methods should adhere to accepted best practice methodologies, relevant Environmental Protection Agency guidelines and Australian Standards, and any relevant requirements of the *Environmental Protection (Noise) Policy 1997*.

Comment should be provided on any current activities near the proposal area that may cause a background level of ground vibration (for example, major roads, quarrying activities etc.).

4.5.2 Management of impacts on environmental values

Section 4.5.2 should define and describe the objectives and practical measures for protecting or enhancing the identified environmental values of noise and vibration, to describe how nominated quantitative standards and indicators for protecting or enhancing the identified environmental values of noise and vibration may be achieved, and how the achievement of the objectives will be monitored, audited and managed.

4.5.2.1 Construction noise

The potential noise issues associated with construction works should be discussed. The expected noise levels of equipment used for construction of the project should be considered and compared with those for operational activities. If noise levels at sensitive places resulting from the construction activities is likely to exceed the 'worst-case' mine operational activities, the potential environmental harm of construction noise at all sensitive places should be quantified in terms of the objectives, standards and indicators to be achieved. The proposed construction timeframe for the project should be discussed in relation to noise and vibration. Off-site transport noise factors due to road or rail should be described.

Construction noise control strategies for the project should be outlined.

4.5.2.2 Operational noise

Predictive modelling, using a suitable noise model, of the expected noise levels generated for a snapshot of typical mining operations and a 'worst-case' mining operation, in terms of the expected impacts on adjacent sensitive places, should be conducted, including increased traffic noise. The potential environmental harm of noise at all sensitive places should be quantified in terms of the objectives, standards and indicators to be achieved and with reference to the existing Environmental Authority limits. The proposed operational times for the project should be discussed in relation to noise. Off-site transport noise issues due to road or rail transport should be discussed.

Proposed noise control strategies for the project should be outlined, where relevant.

4.5.2.3 Blasting

This section should describe the likely blasting requirements of the project, New Acland Coal Mine's current blasting activities and blast monitoring regime, New Acland Coal Pty Ltd's current Environmental Authority limits for vibration and air blast overpressure and the requirements of the *Environmental Protection (Noise) Policy 1997* and *Environmental Protection Regulation 1998*.

A description of the likely ground vibration and airblast overpressure impacts from blasting should be described based on the current and proposed blasting regime. The potential environmental harm of vibration and air blast overpressure at all sensitive places should be quantified in terms of the objectives, standards and indicators to be achieved. The magnitude, duration and frequency of any vibration and air blast overpressure should be discussed. Potential effects on nearby buildings and foundations should be discussed.

Proposed vibration control strategies for the project should be outlined.

4.6 Nature conservation

4.6.1 Environmental values affected

Section 4.6.1 should describe the existing environmental values for nature conservation that may be affected by the project.

The environmental values of nature conservation for the affected area should be described in terms of:

- integrity of ecological processes;
- potential loss of habitat;
- conservation of resources;
- biological diversity;
- rare and threatened species;
- endangered regional ecosystems; and
- aquatic and terrestrial ecosystems.

Discussion should be presented on the nature conservation values of the areas likely to be affected by the project. The flora and fauna communities which are rare or threatened and environmentally sensitive locations including waterways, riparian zone, remnant vegetation, wilderness and habitat corridors should be described. The description should include a plant species list, a vegetation map at appropriate scale and an assessment of the significance of native vegetation, from a local, regional and State perspective. The description should indicate any areas of State or regional significance identified in an approved biodiversity planning assessment (BPA) produced by the EPA (for example, the draft Regional Nature Conservation Strategy for South East Queensland 2001-06). The section should also discuss impacts of the project in terms of the performance requirements of the Regional Vegetation Management Code for Ongoing Clearing Purposes, Southern Brigalow Region (Brigalow Belt Bioregion).

Issues relevant to sensitive areas, or areas which may have low resilience to environmental change should be identified. Areas of special sensitivity include perennial and ephemeral wetlands, wildlife breeding or roosting

areas, any significant habitat or relevant bird flight paths for migratory species, and habitat of threatened plants, animals and communities. The capacity of the environment to assimilate discharges/emissions should be assessed. The project's proximity to any biologically sensitive areas should be described.

Reference should be made to both State and Commonwealth endangered species legislation. The Queensland *Vegetation Management Act 1999* and the findings of any Regional Vegetation Management Plan should also be referenced.

Proposed measures and sequencing of potential compensatory offsets should be described.

The occurrence of pest plants and animals in the project area should be described.

Key flora and fauna indicators should be identified for future ongoing monitoring.

4.6.1.1 Terrestrial flora

Section 4.6.1.1 should summarise the findings of all botanical surveys within the project and adjacent areas (including methodologies) and literature reviews. Discussion should focus on:

- sensitive or important vegetation types;
- conservation of specific rare floral assemblages or community types (for example, endangered regional ecosystems);
- rare or threatened species;
- important local and regional weed species; and
- habitat value for fauna.

The terrestrial vegetation communities within the affected area should be described at an appropriate scale (i.e. 1:10,000) with mapping produced from aerial photographs and ground truthing, and should show the following:

- location and extent of vegetation types, including advanced regrowth, using the EPA's regional ecosystem type descriptions in accordance with the Regional Ecosystem Description Database (REDD), available at the EPA's website. http://www.epa.qld.gov.au/nature_conservation/biodiversity/regional_ecosystems/ ;
- location of vegetation types of conservation significance based on EPA's regional ecosystem types and occurrence of species listed as protected plants under the *Nature Conservation (Wildlife) Regulation 1994* and subsequent amendments, as well as areas subject to the *Vegetation Management Act 1999*;
- the current extent (bioregional and catchment) of protected vegetation types of conservation significance within the protected area estate (national parks, conservation parks, resource reserves, nature refuges);
- any plant communities of cultural, commercial or recreational significance; and
- location and abundance of any exotic or weed species.

4.6.1.2 Terrestrial fauna

The terrestrial and riparian fauna occurring in the areas affected by the project should be 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 area should include considerations of:

- species diversity (that is, a species list) and abundance of animals, including amphibians, fish, birds, reptiles, mammals and bats;
- seasonal influences on diversity, abundance and detectability of fauna species;
- any species which are poorly known but suspected of being rare or threatened;
- habitat requirements and sensitivity to changes; including movement corridors and barriers to movement;

- the existence of feral or exotic animals;
- the existence of any rare, threatened or otherwise noteworthy species/communities in the study area, including discussion of range, habitat, breeding, recruitment, feeding and movement requirements, and current level of protection (for example, any requirements of Protected Area Management Plans);
- the use of the area by migratory birds, nomadic birds, fish and terrestrial fauna; and
- how well any affected communities are represented and protected elsewhere in the province of the project.

4.6.1.3 Aquatic biology

The aquatic flora and fauna occurring in the areas affected by the proposal should be described, noting the patterns and distribution in the waterways. The description of the fauna and flora present or likely to be present in the area should include:

- fish species, mammals, reptiles, amphibians, crustaceans and aquatic invertebrates occurring in the waterways within the affected area, and downstream;
- assessment of the ecological significance of ephemeral wetlands;
- any rare or threatened species;
- aquatic plants;
- aquatic and benthic substrate; and
- potentially impacted habitat downstream of the project.

4.6.2 Management of impacts on environmental values

Section 4.6.2 should define and describe the objectives for protecting or enhancing the identified environmental values for nature conservation, describing how nominated quantitative standards and indicators for protecting or enhancing the identified environmental values of nature conservation may be achieved and how the achievement of the objectives will be monitored, audited and managed.

The discussion should cover all possible direct and indirect environmental harm (impacts) on flora and fauna that may by caused by the project.

Strategies for protecting any rare or threatened species and any obligations imposed by State or Commonwealth endangered species legislation or policy or international treaty obligations (for example, JAMBA, CAMBA) should be described.

The potential environmental harm (impacts) to the ecological values of the area affected arising from the construction, operation and decommissioning of the project should be discussed with reference to:

- the clearing, salvaging or removal of vegetation;
- the indirect effects on vegetation not cleared;
- whether the effects are reversible or irreversible; and
- the effects of altering the local surface and ground water environment.

Measures to mitigate the environmental harm (impacts) to habitat or the inhibition of normal animal behaviour (for example, feeding, reproducing, etc.) should be described. The possible provision of buffer zones and movement corridors and strategies to minimise environmental harm on migratory and nomadic fauna should be discussed. Details should be provided of any proposed plantings, including their purpose, locations and species to be used.

Weed control strategies and feral animal management strategies should be addressed. Reference should be made to the local government's pest management plan when determining control strategies.

Areas defined as sensitive with regard to flora and fauna by the project's investigations should have one or more of the following features:

- important habitats of species listed under the *Nature Conservation Act 1992* and/or Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* as presumed extinct, endangered, vulnerable or rare;
- regional ecosystems recognised by the Environmental Protection Agency as 'endangered' or 'of concern' and/or ecosystems listed as presumed extinct, endangered or vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*;
- good representative examples of remnant regional ecosystems or regional ecosystems that are poorly represented in protected areas;
- sites containing near threatened or bioregionally significant species or essential, viable habitat for near threatened or bioregionally significant species;
- sites in or adjacent to areas containing important resting, feeding or breeding sites for migratory species of conservation concern listed under the Convention of Migratory Species of Wild Animals, and/or bilateral agreements between Australia and Japan (JAMBA) and between Australia and China (CAMBA);
- sites containing common species which represent a distributional limit and are of scientific value or which contains feeding, breeding, resting areas for populations of echidna, koala and platypus (species of special cultural significance);
- sites containing high biodiversity which are of a suitable size or with connectivity to corridors/ protected areas to ensure survival in the longer term. This land:
    - may contain natural vegetation in good condition or other habitat in good condition (for example, wetlands); and/or
    - may contain degraded vegetation or other habitats but still supports high levels of biodiversity or acts as an important corridor for maintaining high levels of biodiversity in the area.
- sites containing other special ecological values, for example, high habitat diversity and areas of high endemism;
- ecosystems which provide important ecological functions such as wetlands of national, state and regional significance, coral reefs, riparian vegetation, important buffer to a protected area or important habitat corridor between areas;
- sites of palaeontologic significance such as fossil sites;
- protected areas which have been proclaimed under the *Nature Conservation Act 1992* or are under consideration for proclamation; and
- areas of major interest, or critical habitat declared under the *Nature Conservation Act 1992* or high nature conservation value areas or areas vulnerable to land degradation under the *Vegetation Management Act 1999*.

4.7 Cultural heritage

This section defines and describes the objectives and practical measures for protecting or enhancing cultural heritage environmental values, describes how nominated quantitative standards and indicators may be achieved for cultural heritage management, and how the achievement of the objectives will be monitored, audited and managed.

The environmental harm to cultural heritage values in the vicinity of the project should be managed under a cultural heritage management plan (CHMP) developed specifically for the project.

Cultural heritage management for this project should be discussed in terms of the Agreements that exist between New Acland Coal Pty Ltd and the native title claimant groups (traditional owners) for the project area, that is, the Western Wakka Wakka people (current claimants) and the Jarowair people (withdrawn claimants). These Agreements were in existence before the *Aboriginal Cultural Heritage Act 2003* that came into force in April 2004.

The consent of the traditional owners should be sought to allow an outline of the intention of the agreements and accompanying cultural heritage management plans. However, it is envisaged that specific details about the agreements and accompanying cultural heritage managementplans will remain confidential.

The traditional owners should be properly consulted in relation to the project using the consultation mechanisms provided in the agreements.

4.8 Social

4.8.1 Social values affected

Section 4.8.1 should describe the existing social values that may be affected by the project.

The amenity and use of the project area and adjacent areas for rural, agricultural, forestry, recreational, industrial, educational or residential purposes should be described with reference to:

- community infrastructure and services, access and mobility;
- population and demographics of the affected community;
- local community values, vitality and lifestyles;
- recreational, cultural, leisure and sporting facilities and activities in relation to the affected area;
- health and educational facilities;
- on-farm activities near the proposed mining activities;
- current property values;
- number of properties directly affected by the project; and
- number of families directly affected by the project.

The environmental values of social attributes for the affected area should be described in terms of:

- the integrity of social conditions, including amenity and livability, harmony and well being, sense of community, access to recreation, and access to social and community services and infrastructure; and
- public health and safety.

Consideration of the private housing market should be given, such as:

- the size of the private rental market in the catchment area, including boarding houses, caravan parks, backpacker hostels, hotel and motel accommodation;
- the vacancy rate of rental accommodation, including and assessment of seasonal fluctuations;
- the availability and median cost housing for purchase in the catchment area;
- the level of social housing in the catchment area, including rental housing administered by community housing organisations and public housing; and
- identified constraints and opportunities for new housing construction in the catchment area, including the capacity of the local land development and housing construction industries to provide new housing.

4.8.2 Management of impacts on social values

Section 4.8.2 should identify any potential impacts on social values and social infrastructure in Acland (as the nearest town), Oakey (as the district centre) and Toowoomba (as the regional centre).

Social impact assessment should draw on information gathered in the community consultation program and the analysis of the existing socio-economic environment. The nature, extent and results of the community consultation program should be described and summarised. The impacts of the project on local and regional residents, community services and recreational activities are to be analysed and discussed for all stages of the project development. Potential (direct, indirect and cumulative) impacts and benefits should be considered in respect to:

- changes to the size, nature of composition of the demographic profile;
- impacts on local uses, amenity, lifestyles and community cohesion;
- demand for social, recreational and cultural infrastructure;
- impacts on housing demand; and
- impacts on local and state labour markets and local ability to access employment.

The impact on rural industries from potential labour shortages that may be caused by the movement of the rural workforce to expanding mining industries should be addressed.

Potential cumulative impacts on the local and regional housing market due to the presence of other existing or proposed major projects in the area, as well as possible cumulative impacts on housing demand due to seasonal employment factors (such as maintenance and shutdowns) should be considered. Details should be provided of the company's policies regarding provision of rent subsidies to workers, or other forms of assistance given to purchase local accommodation.

Social impact assessment should make reference to cultural heritage studies and Indigenous community consultation undertaken for this EIS. The effects of the project on local and regional residents, including land acquisition and relocation issues and property valuation and marketability, should be described for the construction and operational phases of the development.

The potential environmental harm on the amenity of adjacent areas used for cropping, grazing, forestry, recreation, industry, education, aesthetics, scientific or residential purposes should be discussed.

Proposed impact mitigation, enhancement strategies and monitoring regimes for social values should be described.

4.9 Health and safety

4.9.1 Description of environmental values

This section describes the existing community values for public health and safety that may be affected by the proposal. Particular attention should be paid to those sections of the population, such as children and the elderly, that are especially sensitive to environmental health factors.

4.9.2 Potential impacts and mitigation measures

This section defines and describes the objectives and practical measures for protecting or enhancing health and safety community values, describes how nominated quantitative standards and indicators may be achieved for social impacts management, and how the achievement of the objectives will be monitored, audited and managed.

The EIS should assess the effects on the project workforce of occupational health and safety risks and the impacts on the community in terms of health, safety, and quality of life from project operations and emissions. Any impacts on the health and safety of the community, workforce, suppliers and other stakeholders should be detailed in terms of health, safety, quality of life from factors such as air emissions, odour, dust and noise.

Map(s) should be provided showing the locations of sensitive receptors, such as, but not limited to, kindergartens, schools, hospitals, aged care facilities, residential areas, and centres of work (for example, office buildings, factories and workshops). The EIS, illustrated by the maps, should discuss how planned discharges from the project could impact on public health in the short and long term, and should include an assessment of the cumulative impacts on public health values caused by the proposal, either in isolation or by combination with other known existing or planned sources of contamination.

The EIS should address the project's potential for providing disease vectors. Measures to control mosquito and biting midge breeding should be described. Any use of recycled water should be assessed for its potential to cause infection by the transmission of bacteria and/or viruses by contact, dispersion of aerosols, and ingestion (for example, via use on food crops). Similarly, the use of recycled water should be assessed for its potential to cause harm to health via the food chain due to contaminants such as heavy metals and persistent organic chemicals.

Practical monitoring regimes should also be recommended in this section.

4.10 Economy

4.10.1 Economic values affected

Section 4.9.1 should describe the existing economic values that may be affected by the project.

The character and basis of the local and regional economies should be described including:

- economic viability (including economic base and economic activity, future economic opportunities, current local and regional economic trends); and
- historical descriptions of large-scale resource developments and their effects in the region.

The economic attributes for the affected area should be discussed in terms of the integrity of economic conditions and the economic benefits to the affected communities.

An analysis should be provided of the types and numbers of businesses that make up economy of the impacted areas.

4.10.2 Management of impacts on economic values

Section 4.10.2 should discuss the effect on local and State labour markets with regard to the source of the workforce and should be presented according to occupational groupings of the workforce. In relation to the source of the workforce, clarification should be provided as to whether the project is likely to employ locally or through other means and whether there are initiatives for local employment opportunities.

An economic analysis, including a cost-benefit analysis, should be presented. The analysis should include:

- a description of the general economic benefits from the project;
- the significance of the project on the local and regional economic context;
- comment on the implications for future development in the locality (including constraints on surrounding land uses and existing industry); and
- comments on the impacts of balance of payments benefits and national impact.

4.11 Hazard and risk

4.11.1 Environmental values affected

Section 4.11.1 should describe the existing environmental values that may be affected by hazard and risk associated with the project. Specific reference should be made to the environmental values, including public amenity or safety, at risk as a result of the existing and proposed tailings dams above the Central Pit.

The environmental values likely to be affected by any hazardous materials and actions associated with the project should be discussed. The degree of risk and sensitivity of the environmental values at risk should be detailed.

An analysis should be conducted into natural and induced emergency situations and counter disaster and rescue circumstances involving the project that may impact on sensitive areas and resources such as forests, water reserves, State and local government-controlled roads, places of residence and work, and recreational areas.

A risk assessment should be conducted for the project using AS/NZS 4360 Risk Management, HB436 Risk Management Guidelines, HB203 Environmental Risk Management and the ANCOLD Guidelines on Assessment of the Consequences of Dam Failure. The assessment should outline the implications for and the impacts on surrounding land uses. The risk assessment should incorporate considerations of:

- all relevant hazards (minor and major);
- the possible frequency of potential hazards, accidents, spillages and abnormal events occurring during all stages of the project;
- an assessment of the implications for and the impact on the surrounding land uses;

- indication of cumulative risk levels to surrounding land uses;
- life of any identified hazards;
- all hazardous substances to be used, stored, processed or produced and the rate of usage;
- potential wildlife hazards such as snakes, and disease vectors; and
- description of processes, type of the machinery and equipment used.

The section should describe the existing community values for health and safety that may be affected by the project.

Any impacts on the health and safety of the community, workforce, suppliers and other stakeholders should be discussed in terms of health, safety, quality of life from factors, such as air emissions, odour, dust and noise.

4.11.2 Management of impacts on environmental values

Section 4.11.2 should define and describe the objectives for protecting or enhancing the identified environmental values from hazard and risk associated with the project, to describe how nominated quantitative standards and indicators may be achieved for hazard and risk management, and how the achievement of the objectives will be monitored, audited and managed. The existing and proposed tailings dams should be designed, constructed and operated according to the requirements of the ANCOLD Guidelines on Tailings Dam Design, Construction and Operation.

An inventory for each class of substances listed in the Australian Dangerous Goods Codes expected to be held on-site should be outlined. This information should be presented by classes and should contain the:

- chemical name;
- concentration in raw material chemicals;
- concentration in operation storage tank;
- UN number;
- packaging group;
- correct shipping name; and
- maximum inventory of each substance.

In addition, details should be provided on:

- safeguards proposed on the transport, storage, use, handling and on-site movement of the materials to be stored on-site;
- the capacity and standard of bunds to be provided around the storage tanks for classified dangerous goods and other goods likely to adversely impact upon the environment in the event of an accident; and
- the procedures to prevent spillages, and the emergency plans to manage hazardous situations.

An integrated risk management plan for the whole of the life of the project (that is, the construction, operation and decommissioning phases) based on the results of the risk assessment should be developed.

The plan should include the following components: operational hazard analysis, regular hazard audits, fire safety, emergency response plans, qualitative risk assessment, and construction safety.

The section should define and describe the objectives for protecting or enhancing the identified community values for health and safety, to describe how nominated quantitative standards and indicators for protecting or enhancing the identified community values for health and safety may be achieved, and how the achievement of the objectives will be monitored, audited and managed.

The effects on the project's workforce in terms of occupational risks and impacts on the community in terms of health, safety, and quality of life from the project's operations and emissions should be assessed.

Proposed impact mitigation and monitoring regimes for health and safety impacts values should be recommended.

5.0 Environmental management plan

Section 5.0 should provide the environmental management plan (EM Plan) for the project. The EM Plan is an environmental planning document required under the *Environmental Protection Act 1994* for non-standard mining activities on mining leases.

The project EM Plan should be developed directly from the EIS using the information, data, results, conclusions, commitments etc. collated as part of the detailed assessment process.

If the project is approved, the EPA will use the EM Plan and the EIS to develop an appropriate set of environmental conditions for the project.

The project EM Plan should specifically outline for the project the:

- environmental values to be protected;
- expected impacts to the environmental values
- environmental objective(s) for each environmental value;
- measurable indicators and performance standards to be used to delineate the level of environmental protection;
- control strategies proposed to protect each environmental value and achieve the environmental objectives (for example, progressive and final rehabilitation, performance monitoring and reporting, etc.); and
- proposed environmental authority conditions (that is, using the EPA's 'streamline' licensing conditions and any additional conditions developed as part of the assessment process).

The EM Plan should provide details of the existing and proposed monitoring program. Details should be provided of any reference sites for rehabilitation success such as vegetation communities.

6.0 References

Section 6.0 should present all references used in the development of the EIS in a recognised format.

7.0 Recommended appendices

Appendix 1 Final Terms of Reference for this EIS

A copy of the final ToR should be included in the EIS. Where it is intended to bind appendices in a separate volume from the main body of the EIS, the ToR at least should be bound with the main body of the EIS for ease of cross-referencing. A summary, cross-referencing specific items of the ToR to the relevant section of the EIS, should also be provided in Section 4.14 of the EIS. For this purpose the ToR should be line numbered.

Appendix 2 Development approvals

Appendix 2 should list any development approvals required by the project.

Appendix 3 The Standard Criteria

Appendix 3 should provide a brief summary of the project's compatibility with ESD policy and other relevant policy instruments, such as the 'Standard Criteria' defined by the *Environmental Protection Act 1994*. Consideration should focus on the National Strategy for ESD, published by the Commonwealth Government in December 1992. Each principle should be discussed and conclusions should be drawn as to how the project conforms. A life-of-project perspective should also be shown.

Appendix 4 Research

Appendix 4 should outline any proposals for researching alternative environmental management strategies or for obtaining any further necessary information.

Appendix 5 Consultation report

Appendix 5 should provide a consultation report, which should summarise:

- the results of the community consultation program;
- the referral agencies, groups and individuals consulted;
- the issues raised; and
- how the issues raised were addressed.

The discussion should include the methodology used in the community consultation program including criteria for identifying stakeholders (for example, 'affected persons') and the communication methods used.

Appendix 6 Study team

Appendix 6 should provide the qualifications and experience of the study team, specialist sub-consultants and expert reviewers used during the EIS process.

Appendix 7 Specialist studies

Appendix 7 should include all reports generated on specialist studies undertaken as part of the EIS.

8.0 Approved by

	8 July 2005
Signature	Date

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