Terms of reference

Terms of reference for an environmental impact statement

Final terms of reference for the Eagle Downs Coal Mine Project EIS

Queensland Government
Environmental Protection Agency

Background

The proponent for the Eagle Downs Coal Mine Project is the Bowen Central Coal Joint Venture Parties, consisting of Bowen Central Coal Pty Ltd (50%) and Aquila Coal Pty Ltd (50%). The project would involve the development of a greenfield underground coal mine producing up to seven million tonnes per year of coking coal for export. The project site (Mining Lease Application 70389) is located 20 km south-east of Moranbah in Central Queensland and is approximately 2 km east of Peak Downs open cut mine. The proposed Eagle Downs Mine will use the longwall method to mine the coal. An overland conveyor would transport coal from the conveyor drift portal to a coal handling and preparation plant (CHPP) on site where it would be crushed, sized and washed. Coarse reject and dewatered fine rejects would be hauled by truck from the CHPP to dry rejects emplacement areas on site. A rail loop and train loading facilities would be located adjacent to the CHPP and connected to the existing Norwich Park Branch railway. Product coal would be transported to port via rail for export. The mine is expected to operate for more than 30 years.

The project is a controlled action under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The State's EIS process has been accredited for the assessment under Part 8 of the EPBC Act in accordance with the Bilateral Agreement between the Commonwealth of Australia and the State of Queensland (2004). The controlling provisions are sections 18 and 18A (Listed threatened species and communities).

CONTENT OF THE EIS

Executive summary

The function of the executive summary is to convey the most important aspects and options relating to the project to the reader in a concise and readable form. It should use plain English and avoid the use of jargon and esoteric terms. The structure of the executive summary should follow that of the EIS, and focus on key issues.

Glossary of terms

A glossary of technical terms, acronyms and abbreviations shall be provided before the main text of the EIS.

1 Introduction

The function of the introduction is to explain why the EIS has been prepared and what it sets out to achieve. In particular, the introduction should address the level of detail of information required to meet the level of approval being sought. It will also define the audience to whom it is directed, and contain an overview of the structure of the document.

1.1 Project proponent

Details of the Project proponent will be provided, including details of any joint venture partners.

1.2 Project description

A brief description of the key elements of the project should be provided and illustrated. Any major associated infrastructure requirements should also be summarised. Detailed descriptions of the project should follow in Section 3.

1.3 Project objectives and scope

A statement of the objectives which have led to the development of the proposal and a brief outline of the events leading up to the proposal's formulation, including alternatives, envisaged time scale for implementation and project life, anticipated establishment costs and actions already undertaken within the project area should be provided.

Describe the current status of the project and outline the relationship of the project to other related developments or actions whether or not they have been approved. The consequences of not proceeding with the project should also be discussed.

1.4 The environmental impact statement (EIS) process

The purpose of this section is to make clear the methodology and objectives of the environmental impact statement under the relevant legislation.

1.4.1 Methodology of the EIS

This section should provide a description of the EIS process steps, timing and decisions to be made for relevant stages of the project. This section should also indicate how the consultation process (which will be described in detail in section 1.5) would integrate with the other components of the impact assessment, including the stages, timing and mechanisms for public input and participation. The information in this section is required to ensure:

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

1.4.2 Objectives of the EIS

Having described the methodology of the EIS, a succinct statement should be made of the EIS objectives. The structure of the EIS can then be outlined as an explanation of how the EIS will meet its objectives. The reader should be able to distinguish the EIS as the key environmental document providing advice to decision makers considering approvals for the project.

While the terms of reference provide guidance on the scope of the EIS studies, they should not be seen as exhaustive or limiting. It is important for proponents and their consultants to recognise that there cannot be perfect knowledge in advance of undertaking an EIS of what the EIS studies may find.

If it transpires during the preparation of the EIS that previously unforeseen matters not addressed in the terms of reference are found to be relevant to the assessment of impacts of the proposal, those matters should be included in the EIS.

In addition, it is essential that the main text of the EIS should address all relevant matters concerning environmental values, impacts on those values and proposed mitigation measures. No relevant matter should be raised for the first time in an appendix or the draft environmental management plan (EM plan).

When considering whether an impact is or is not significant, the proponent should take account of both the intensity of the impact and the context in which it would occur.

The EIS is a public document. Its purpose is not only to provide information to regulatory agencies, but also to inform the public of the scope, impacts and mitigation measures of the proposal. As such, the main text should be written in plain English avoiding jargon as much as possible. Additional technical detail may be provided in appendices. The main text should not assume that a reader would have a prior knowledge of the project site. It should not be necessary for the reader to have visited the site to understand the issues involved in the proposal.

The EIS objectives should be to provide public information on the need for and likely effects of the project, to set out acceptable standards and levels of impacts (both beneficial and adverse) on environmental values, and demonstrate how environmental impacts can be managed through the protection and enhancement of the environmental values. Discussion of options and alternatives and their likely relative environmental management outcomes is a key aspect of the EIS.

The role of the EIS in providing the project's draft EM plan should also be discussed, with particular reference to the EM plan's role in providing management measures that can be carried over into conditions that would attach to any approval(s), environmental authorities and permits for the project.

1.4.3 Submissions

The reader should be informed as to how and when public submissions on the draft EIS can be made, and how they will be addressed and taken into account in the decision-making process.

1.5 Public consultation process

An appropriate public consultation program, developed to the satisfaction of the EPA, is essential to the impact assessment. This section should outline the methodology that will be adopted to identify and mitigate socio-economic impacts of the project. Information about the consultation that has already taken place and the results of such consultation should be provided.

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*.

The public consultation program should provide opportunities for community involvement and education. It may include interviews with individuals, public meetings, interest group meetings, production of regular summary information and updates, and other consultation mechanisms to encourage and facilitate active public consultation.

The public consultation process should identify broad issues of concern to local community and interest groups and should continue from project planning through commissioning, project operations and final decommissioning.

1.6 Project approvals

1.6.1 Relevant legislation and policy requirements

This section should explain the legislation and policies controlling the approvals process. Reference should be made to the Queensland *Environmental Protection Act 1994*, *Integrated Planning Act 1997, Water Act 2000* 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.

This information is required to assess how the legislation applies to the proposal, which agencies have jurisdiction, and whether the proposed impact assessment process is appropriate.

1.6.2 Planning processes and standards

This section should discuss the project's consistency with existing land uses or long-term policy framework for the area (e.g. as reflected in local and regional plans such as the Central Queensland Strategy for Sustainability – 2004 and Beyond (CQSS2), Fitzroy Basin Association Resource Operations Plan (FBA ROP), the Whitsunday, Hinterland and Mackay Regional Plan (HHAM)) and other applicable 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. This information is required to demonstrate how the proposal conforms to State, regional and local plans for the area.

1.7 Accredited process for controlled actions under Commonwealth legislation

As the Project is a 'controlled action' under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC), approval from the Federal Minister for the Environment, Heritage and Arts is required. The controlling provisions are listed threatened species and communities (section 18 and 18A EPBC). The proposed action may impact on the listed endangered Brigalow (Acacia harpophylla dominant and co-dominant) ecological community. The Commonwealth Department of the Environment, Water, Heritage and Arts (DEWHA) has determined the EPA EIS process to be an accredited assessment process under Section 87(4) of the EPBC Act.

The TOR will 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.

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.

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 which 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 Project need and alternatives

2.1 Project justification

The justification for the project should be described, with particular reference made to the economic and social benefits, including employment and spin-off business development, which the project may provide. The status of the project should be discussed in a regional, State and national context.

2.2 Alternatives to the project

This section should describe feasible alternatives, including conceptual, technological and locality alternatives to the project, and discussion of the consequences of not proceeding with the project. Alternatives should be discussed in sufficient detail to enable an understanding of the reasons for preferring certain options and courses of action and rejecting others. Comparative environmental impacts of each alternative should be summarised.

The interdependencies of the proposal components should be explained, particularly in regard to how each of any industrial developments, or various combinations of industrial developments, and any infrastructure requirements relate to the viability of the proposal. Should water supply, power, transport and/or storage infrastructure be included as an element of the proposal, this section should include a description of and rationale for such infrastructure.

Reasons for selecting the preferred options should include technical, commercial, social and natural environment aspects. In particular, the principals of ESD and sustainable development should be included. The relationship of options chosen for waste management and any emissions produced should be detailed.

This information is required to assess why the scope of the proposal is as it is and to ensure that the ESD principles and sustainable development aspects have been considered and incorporated during the scoping and planning of the proposal.

3 Description of the project

The objective of this section is to describe the project through its lifetime of construction and operation and decommissioning. This information is required to allow assessment of all aspects of a proposal including all phases of the proposal from planning, construction and operation through to decommissioning. It also allows further assessment of which approvals may be required and how they may be managed through the life of the proposal.

3.1 Location

3.1.1 Regional context

The regional context of the proposal should be described and illustrated on maps at suitable scales. Where relevant in any section of the EIS, maps must be provided in GDA94, and include contours wherever feasible at a scale suitable to allow contributed catchments for rainfall runoff to be determined. Additionally, when specifying locations in the EIS such as discharge points, all coordinates will be in GDA94 format.

3.1.2 Local context

The local context of the proposal should be described and include real property descriptions of the project site and adjacent properties. Maps at suitable scales should be provided 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;
- the location and name of transport infrastructure including state and local road networks in relation to the project site. Maps also include the location of construction activities, access locations (existing and proposed), as well as construction compounds and accommodation camps. The maps should be at appropriate scales and level of detail; and
- the location of any proposed buffers surrounding the working areas.

Provide a rectified air photo enlargement (preferably A3 size) to illustrate components of the project in relation to the land and mining tenures and natural and built features of the area.

3.2 Construction

The extent and nature of the project's construction phase should be described. The description should include the type and methods of construction, the construction equipment to be used and the items of plant to be transported onto the construction site. Any staging of the proposal should be described and illustrated showing site boundaries, development sequencing and timeframes. The estimated numbers of people to be employed in the project construction phase should also be provided with a brief description of where those people may be accommodated such as in a workers' camp and/or how they will be transported to the site.

3.3 Operations

The location and nature of the processes to be used should be described in the text and illustrated with maps, diagrams and artist's impressions as required. Operational issues to be addressed should include, but may not be limited to:

- 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 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 processing plant, and the anticipated rates of inputs, along with similar data on products, wastes and recycle streams.

3.3.1 Tenements and tenures

Describe and illustrate any existing mining tenements and petroleum tenures overlying and adjacent to the project site, and any to be applied for this project.

3.3.2 Coal resource base and mine life

Summarise the results of studies and surveys undertaken to identify the mineral and natural resources required to implement the proposal. The location, volume, tonnage and quality of natural resources required should be described (e.g. land, water, timber, energy, etc.). Specific details should be provided of the following:

- the proposed mine life and an outline of the coal resource (further detail should be provided in section 4.2.1.2, Geology);
- 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

Specific details should be provided of the following:

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

The description should refer to, and be complemented by, the figures previously presented in section 3.3.1 showing the locations of key aspects of the project. Additional figures should be provided if required.

3.3.4 Mine sequencing

Specific details should be provided of the following:

- the proposed sequence and timing of mining of each seam within the mining lease should be described. The likely timing and affects of any surface subsidence that may result, should be described.
- 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 area disturbed at each major stage of the project.

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, part-time etc).

3.3.5 Processing and products

This section 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 Ongoing evaluation and exploration activities

This section should describe the extent and nature of any proposed ongoing exploration or geological/geo-technical evaluation within the project area that may be required over the life of the project.

3.4 Coal handling

Describe and show on plans at an appropriate scale the proposed methods and facilities to be used for product storage and for transferring product from the processing plant to the storage facilities and from the storage facilities to the transport facilities and the dust minimisation measures that will be used when moving and transporting the coal. Include discussion of any environmental design features of these facilities including bunding of storage facilities.

3.5 Infrastructure requirements

This section should provide descriptions, with concept and layout plans, of requirements for constructing, upgrading or relocating all infrastructure in the vicinity of the project area. The matters to be considered include such infrastructure as roads, rail, rail loops, bridges, conveyor, jetties, ferries, tracks and pathways, dams and weirs, bore fields, power lines and other cables, wireless technology (e.g. microwave telecommunications), and pipelines for any services (whether underground or above).

3.5.1 Transport

Describe 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.

Provide details of proposed use of rail for transport of materials and products or wastes to or from the project site. Provide details on the number of trains and rail movements expected per day, that the project will generate and which port the coal will be exported through. Also detail the impacts that the projected volume of coal will have on current rail and port system capacities and storage at the port.

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 and dangerous materials, finished products;
- the volume of traffic generated by workforce personnel, visitors and service vehicles (including numbers of private vehicles moving to and from the mine site per shift);
- 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);
- the proposed transport routes; and
- need for increased road maintenance and upgrading such as at the mine entrance, and road/rail intersections.

3.5.2 Energy

The EIS should describe all energy requirements, including electricity, natural gas, and/or solid and liquid fuel requirements for the construction and operation of the proposal. 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.

3.5.3 Water supply and storage

The EIS should provide information on water usage by the project, including the quality and quantity of all water supplied to the site. In particular, the proposed and optional sources of water supply should be described (e.g. 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.

Determination of potable water demand should be made for the project, including the temporary demands during the construction period. Details should be provided of any existing town water supply to meet such

requirements. If water storage and treatment is proposed on site, for use by the site workforce, then this should be described. Also provide details on quality control of the potable water that is treated and stored on site.

3.5.4 Stormwater drainage

An illustrated description should be provided of the proposed stormwater drainage system and the proposed disposal arrangements, including any off-site services. Also provide details on any water storages, diversions and their impacts on stormwater drainage.

3.5.5 Sewerage

This section should describe, in general terms, the sewerage infrastructure required by the project. If it is intended that industrial effluent or relatively large amounts of domestic effluent are to be discharged into an existing sewerage system, an assessment of the capacity of the existing system to accept the effluent should be provided in Section 4.3 'Waste'. For industrial effluent, this should include detail of the physical and chemical characteristics of the effluent(s).

3.5.6 Telecommunications

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

3.5.7 Accommodation and other infrastructure

A description should be provided of any other developments directly related to the project not described in other sections, such as:

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

The EIS should provide an accommodation strategy for both construction and operational components of the workforce...This strategy should cover the life of the project and include the proposed location of any new accommodation.

3.6 Waste management

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

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

Schematic diagrams should be provided for each distinct stage of the project (e.g. construction/site preparation, commissioning, operation and decommissioning) indicating the processes to be used and highlighting their associated waste streams (i.e. 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.

Cleaner production waste management planning should be detailed especially as to how these concepts have been applied to preventing or minimising environmental impacts at each stage of the proposal. Details on

natural resource use efficiency (e.g. energy and water), integrated processing design, co-generation of power and by-product reuse as shown in a material/energy flow analysis should be presented.

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

3.6.1 Air emissions

Describe in detail the quantity and quality of all air emissions (including particulates, fumes and odours) from the project during construction and operation. Particulate emissions include those that would be produced by any industrial process, or disturbed by wind action on stockpiles and conveyors, or by transportation equipment (e.g. trucks and trains, either by entrainment from the load or by passage on unsealed roads).

The methods to be employed in the mitigation of impacts from air emissions should be described in section 4.5.

3.6.2 Excavated waste

This section should describe and show the location, design and methods for constructing dumps for waste rock and subsoil. The location of the dumps should be shown on a map relative to topography and other natural features of the area. The following should be detailed and discussed:

- An estimated tonnage and/or volume of waste rock and subsoil to be produced annually.
- Results of waste rock and subsoil characterisation that includes the net acid producing potential of the mined waste rock (metals analysis, sulfides, pH, conductivity, Net Acid Generation (NAG) and Acid Neutralising Capacity (ANC)).
- Characterisation should also address the properties of waste rock and subsoil that affect their erosion potential. Sampling should be representative with profiles of all geological units included and based on accepted statistical procedures and be in accordance with recognised guidelines.
- Details of any likely leachate quality expected under field conditions, including contaminants such as sulfate, pH, chloride, iron, major cations and anions, and any chemical species in sufficient quantity that is likely to be reactive and/or toxic.
- Measures to ensure stability of the waste dumps, particularly the management of drainage.
- Slope profiles that are consistent with intended land use and acceptable post-mining land management and maintenance.
- Alternatives for excavated waste disposal, including in-filling of voids, off-site options and treatment of any contaminated soil.

3.6.3 Processing waste

This section should address the processing waste (fines and coarse rejects) to be produced by preparation and/or processing plants and the proposed methods for its disposal. Describe alternative options for waste disposal including the proposed location, site suitability and volume of any waste storage and/or disposal site(s), including the method of construction.

Describe the approximate quantity of waste to be produced by the project annually for the life of the mine. Characterisation of CHPP waste should also be presented in this section, including:

- physical properties of the tailings solids;
- geochemical properties of the tailings solids using static testing (CAN, Net Acid Production Potential (NAPP), NAG etc); and
- chemical properties of tailings pore-water including pH, conductivity, major cations and anions, and any chemical species in sufficient quantity that is likely to be reactive and/or toxic.

The construction of the tailings storage facility should be described with regards to construction material and design. The EIS should address how the tailings storage facility complies with relevant codes for the construction of such containment systems.

Describe the strategies to monitor and manage seepage into ground and surface waters. The location of the storage and/or disposal site with regard to adjacent creeks and rivers should be described.

3.6.4 Solid waste disposal

Describe the quantity and quality of solid wastes (other than waste rock, subsoil and tailings addressed in other sections) and the proposed methods of their disposal. The proposed location, site suitability, dimensions and volume of any landfill, including its method of construction, should be shown.

3.6.5 Liquid waste

A description should be presented of the origin, quality and quantity of wastewater and any immiscible liquid waste originating from the project other than that addressed in previous sections. Particular attention should be given to the capacity of wastes to generate acid, and saline or sodic wastewater. A water balance for the proposal and processing plant is required to account for the estimated usage of water.

The EIS may need to consider the following effects:

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

3.7 Rehabilitation and decommissioning

This section should describe the options, strategies and methods for progressive and final rehabilitation of the environment disturbed by the proposal. The strategic approach to progressive and final rehabilitation should be described and consideration should be given to section 3.4.9 of the CQSS2 called the Regional Aspirations, Targets and On-Ground Actions for Land. A strategic mine closure plan should be described that addresses the life-of-the mine planning. A preferred rehabilitation strategy should be developed with a view to minimising the amount of land disturbed at any one time. The final topography of any excavations, waste areas and dam sites should be shown on maps at a suitable scale.

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, and the EPA's (2004) *A Policy Framework to Encourage Progressive Rehabilitation of Large Mines*, 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 prior to disturbance unless other beneficial land uses are pre-determined and agreed.
- Mine wastes and disturbed land should be rehabilitated to a condition that is self-sustaining or to a condition where the maintenance requirements are consistent with an agreed post-mining land use.
- Surface and ground waters that leave the lease should not be degraded to a significant extent. Current and future water quality should be maintained at levels that are acceptable for users downstream of the site.

The rehabilitation of subsidence effects should be addressed in detail in this section. This should include strategies to address:

- Remedial surface drainage works to subsidence impacts on surface drainages and overland flow including formation of ponded areas, steepened surface gradients and altered drainage patterns; and
- Rehabilitation of surface cracking.

The means of decommissioning the proposal, in terms of the removal of plant, equipment, structures and buildings should be described, and the methods proposed for the stabilisation of the affected areas should be given. Information should be provided regarding decommissioning and rehabilitation of the plant site, removal of processing plant, rehabilitation of concrete footings and foundations, hardstand areas and storage tanks (including any potential for reuse of these facilities). Options and methods for the disposal of wastes from the demolition of plant and buildings should be discussed in sufficient detail for their feasibility and suitability to be established.

Describe any proposals to divert creeks during operations, and, if applicable, the reinstatement of the creeks after operations have ceased. Where dams are to be constructed, proposals for the management of these structures after the completion of the project should be given. Also, the final drainage and seepage control systems and long-term monitoring plans should be described.

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

Detail of the impacts of the preferred rehabilitation strategy should be discussed in the appropriate subsections of Section 4 particularly with regard to such issues as final landform stability, revegetation and the long-term water quality. 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 Environmental values and management of impacts

The functions of this section are:

- To describe the existing environmental values of the area which may be affected by the proposal. 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.
- To describe the potential adverse and beneficial impacts of the proposal on the identified 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.
- To present environmental protection objectives and the standards and measurable indicators to be achieved.
- 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 prevent, or where prevention is not possible, 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 proposal 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 land care 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 (e.g. 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 proposal 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 the Great Barrier Reef Marine Park Authority, 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 water sheds.
- Where impacts from the proposal 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.
- Environmental Management System 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.
- Environmental Management System 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 (e.g. intensity of field work sampling), how the reliability of the information was tested, and what uncertainties (if any) are in the information.

The following targets of CQSS2 should be addressed through the EIS:

Mining

- **Target**: R6 – Reduce off-site and on-site impacts of mining operations within 10 years.
- **Target**: R7 – No net decrease in water quality as a result of mining activity ongoing.
- **Targets**: M14 and A165 – Full implementation of Environmental Management Overview System (EMOS) and Environmental Authority conditions for whole of mine life (ongoing) including cultural heritage management, biodiversity, landform stability and cover retention now and ongoing.

Land

- **Target**: Aspirational target – Reduce unsustainable land management practices impacting on the region's water quality, biodiversity, soils and enterprises viability within 15 years.
- **Target**: R1 – Retain a minimum of 30% cover on 95% of all land in the region within 15 years (minimum 30% cover on 50% of all land within 5 years, 75% of all land within 10 years and 95% of all land within 15 years.

Water Quality

- **Target**: RA11 – Cumulatively reduce sediment delivered to in-stream aquatic habitats by 4,100,000 tonnes over 10 years.

Climate Change

- **Target**: M9 – Practices and technology developed and implemented to minimise net greenhouse gas emissions within 10 years.

Economy

- **Target**: A261 – All industries in the region to have a clear natural resource management policy incorporating commitment to continuous improvement and/or best management practices for local conditions within 5 years.

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 (see section 5).

4.1 Climate

This section should describe the rainfall patterns (including magnitude and seasonal variability of rainfall), air temperatures, humidity, wind (direction and speed) and any other special factors (e.g. temperature inversions) that may affect management of the proposal including 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 and magnitude of these events should be considered together with the risk they pose to management of the project.

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 in Section 4.2. The impacts of storm events on the capacity of waste containment systems (e.g. site bunding/stormwater management and tailings dams) should be addressed in Section 4.4 with regard to contamination of waterways and in Section 4.3 with regard to the design of the waste containment systems. The impacts of winds, rain, humidity, and temperature inversions on air quality should be addressed in Section 4.6.

4.2 Land

4.2.1 Description of environmental values

This section describes the existing environment values of the land area that may be affected by the proposal. 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.

4.2.1.1 Topography

Maps should be provided locating the project in both regional and local contexts. The topography of the proposal site and any other potentially impacted area should be detailed with contours at suitable increments, shown with respect to Australian Height Datum (AHD) and drafted to the GDA 94 datum. 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 4.2. Commentary on the maps should be provided highlighting the significant topographical features.

4.2.1.2 Geology

The EIS should provide a description, map and a series of cross-sections of the geology of the project area, with particular reference to the physical and chemical properties of surface and sub-surface materials and geological structures within the proposed areas of disturbance. 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.

4.2.1.3 Mineral resources

The EIS 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. Where possible it should be presented 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 other features that will result from the proposed mining including waste/spoil dumps, water storage facilities and other infrastructure within the project area;
- 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.

4.2.1.4 Soils

A soil survey of the sites affected by the proposal should be conducted at a suitable scale, with particular reference to the physical and chemical properties of the materials that will influence erosion potential, storm water run-off quality, rehabilitation and agricultural productivity of the land. Information should also be provided on soil stability and suitability for construction of proposal facilities.

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). An appraisal of the depth and quality of useable soil should be undertaken. 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*.

4.2.1.5 Land use

The EIS should provide a description of current land tenures and land uses, including native title issues, in the proposal 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 proposal 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 and marine areas in any locality that may be impacted by the proposal. The location of existing dwellings and the zoning of all affected lands according to any existing town or strategic plan should be included.

Describe the land use suitabilities of the affected area in terms of the physical and economic attributes. 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 to use is that in Attachment 2 of Land Suitability Assessment Techniques in the Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland (1995).

Provide a land suitability map of the proposed and adjacent area, and setting out land suitability and current land uses, e.g. for grazing of native and improved pastures and horticulture. Land classified as Good Quality Agricultural Land in the Department of Natural Resources and Water's 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.

4.2.1.6 Infrastructure

The location and owner/custodians of all tenures, reserves, roads and road reserves, railways and rail reserves, stock routes and the like, covering the affected project area should be shown on maps of a suitable scale. Indicate locations of water and gas pipelines including the Central Queensland Gas Pipeline, power lines and any other easements adjacent to and within the proposed mining lease. Describe the environmental values affected by this infrastructure. The methods to be employed to avoid and mitigate any project impacts on existing infrastructure should be described in this section, particularly water pipelines.

4.2.1.7 Sensitive environmental areas

The proximity of the proposal to any environmentally sensitive areas should be shown on a map of suitable scale. This section of the EIS should then identify whether any of those environmentally sensitive areas could be affected, directly and indirectly, by the proposal.

In particular, the EIS should indicate if the land affected by the proposal is, or is likely, to become part of the protected area estate, or is subject to any treaty. Consideration should be given to national parks, conservation parks, declared fish habitat areas, wilderness areas, aquatic reserves, heritage/historic areas or items, national estates, world heritage listings and sites covered by international treaties or agreements (e.g. Ramsar, JAMBA, CAMBA), areas of cultural significance and scientific reserves (see section 4.8 for further guidance on sensitive areas).

In addition, the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* should be addressed and a determination should be made whether there are national environmentally significant matters relevant to this section that should be described.

4.2.1.8 Landscape character

This section should describe in general terms the existing character of the landscape that will be affected by the proposal. 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 (e.g. from constructed lookouts, designated scenic routes, etc.) that have amenity value.

4.2.1.9 Visual amenity

This section 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:

- 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.

4.2.2 Potential impacts and mitigation measures

This section defines and describes the objectives and practical measures for protecting or enhancing the land-based environmental values identified through the studies outlined in the previous section. It should describe how nominated quantitative standards and indicators may be achieved, and how the achievement of the objectives will be monitored, audited and managed.

4.2.2.1 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.

4.2.2.2 Land use suitability

The potential for the construction and operation of the project to change existing and potential land uses of the proposal site and adjacent areas should be detailed. Post operations land use options should be detailed including suitability of the 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 potential environmental harm caused by the proposal on the adjacent areas currently used for agriculture, urban development, recreation, tourism, other business and the implications of the proposal for future developments in the impact area including constraints on surrounding land uses should be described. 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.

Outline incompatible land uses, whether existing or potential, adjacent to all aspects of the project, including essential and proposed ancillary developments or activities and areas directly or indirectly affected by the construction and operation of these activities should be identified and measures to avoid unacceptable impacts defined.

4.2.2.3 Land disturbance

This section will provide comprehensive surface subsidence predictions taking into account factors such as topographic variations and geological complexities, with a full description of the methodology and including an assessment of the reliability of the predictions. The results of the predictions will be shown on maps with 1m contour increments and a scale appropriate for assessment of surface subsidence impacts. The assessment of impacts due to subsidence will address not only the impacts on land but also on existing infrastructure, such as railways and pipelines that cross and adjoin the project site, and also on the proposed Central Queensland Gas Pipeline. Mitigation measures will be proposed to deal with any significant impacts that would result from subsidence. Mitigation measures to address impacts on infrastructure such as pipelines and powerlines will be developed in consultation with the owners of this infrastructure and will address the specific issues (including any safety issues) raised by those infrastructure holders. This consultation will be described in the EIS.

A strategy should be developed that will minimise the amount of land disturbed at any one time. The strategic approach to progressive rehabilitation of landforms and final decommissioning should be described with particular regard to the impacts in the short, medium and long timeframes. The methods to be used for the proposal, including remediation of subsidence effects, topsoil handling and revegetation, should be described. Any proposals to disturb land that would impede or divert overland flow or waterways, and any subsequent reinstatement, during construction or operations should be first described in this section. However, the potential impacts of interfering with flow on the quantity and quality of water resources should be assessed in section 4.4. Also, the final drainage and seepage control systems and any long-term monitoring plans should be described.

In addition to assessing the operational phase of land disturbance, the EIS should address the ultimate changes following implementation of the decommissioning and rehabilitation plan described in section 3.7. The EIS should detail the proposed long-term changes that will occur to the land after mining ceases compared to the situation before mining commences. Those changes should be illustrated on maps at a suitable scale and with contours at intervals sufficient to assess the likely drainage pattern for ground and surface waters (though the assessment of the impacts on drainage and water quality should be provided in the water resources section of the EIS). The mitigation measures for land disturbance to be used on decommissioning the site should be assessed in sufficient detail to decide their feasibility. In particular, the EIS should address the long-term stability of final voids and spoil dumps, safety of access to the site after surrender of the lease, and the residual risks that will be transferred to the subsequent landholder.

Rehabilitation success criteria for land disturbance should be proposed in this section while rehabilitation success criteria for revegetation should be proposed in the section on nature conservation.

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

4.2.2.4 Land contamination

The EIS should describe the possible contamination of land from aspects of the proposals including mining waste disposal, reject product, acid generation from exposed sulfidic material and spills at chemical and fuel storage areas.

The means of preventing land contamination (within the meaning of the Queensland *Environmental Protection Act 1994*) should be addressed. Methods proposed for preventing, recording, containing and remediating any contaminated land should be outlined. Intentions should be stated concerning the classification (in terms of the Queensland Contaminated Land Register) of land contamination on the land, processing plant site and product storage areas after proposal completion.

A preliminary site investigation (PSI) of the site consistent with the EPA's *Draft guidelines for the assessment and management of contaminated land in Queensland* should be undertaken to determine background contamination levels. The results of the PSI should be summarised in the EIS and provided in detail in an appendix.

If the results of the preliminary site investigation indicate potential or actual contamination, a detailed site investigation progressively managed in accordance with the stages outlined in Appendix 5 of the *Draft guidelines for the assessment and management of contaminated land in Queensland* should be undertaken.

In short, the following information may be required in the EIS:

- mapping of any areas 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 need remediation; and
- a description of the nature and extent of contamination at each site and a remediation plan and validation sampling.

The EIS should address management of any existing or potentially contaminated land in addition to preventing and managing land contamination resulting from project activities. The Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland can be downloaded from the EPA website at: www.epa.qld.gov.au/ecoaccess/contaminated_land/guidelines_and_information_sheets/. Proponents should refer study proposals to the EPA for review prior to commencement (Consult with the Contaminated Land Section in the Queensland EPA).

4.2.2.5 Erosion and stability

The EIS should consider a range of infrequent rainfall events at a range of expected probabilities sufficient to reveal all potential hazards associated with erosion and stability of drainage systems and watercourses. For all permanent and temporary landforms, possible erosion rates and management techniques should be described. For each waste rock and soil type identified, erosion potential (wind and water) and erosion management techniques should be outlined. An erosion-monitoring program, including rehabilitation measures for erosion problems identified during monitoring, should also be outlined. Mitigation strategies should be developed to achieve acceptable soil loss rates, levels of sediment in rainfall runoff and wind-generated dust concentrations.

The report should include an assessment of likely erosion and stability effects for all disturbed areas such as:

- areas cleared of vegetation;
- waste dumps;
- stockpiles;
- dams, banks and creek crossings;
- the plant site, including buildings;
- access roads or other transport corridors; and
- stream diversions.

Methods proposed to prevent or control erosion should be specified and should be developed with regard to (a) the long-term stability of waste dumps and voids; (b) preventing soil loss in order to maintain land capability/suitability, and (c) preventing significant degradation of local waterways by suspended solids. The mitigation measures should address the selective handling of waste rock and capping material to maximise long-term stability of final landforms in regard to slumping and erosion both on and below the surface. Erosion control measures should be developed into an erosion and sediment control plan for inclusion in the EM plan.

4.2.2.6 Landscape character

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.

Details should be provided of measures to be undertaken to mitigate or avoid the identified impacts.

4.2.2.7 Visual amenity

This section should analyse and discuss the visual impact of the proposal on the landscape character of the project site and surrounding areas from sensitive viewing locations. It should address changes to the topography and vegetation on the site due to the project. 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 illustration. 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 will mitigate or avoid the identified impacts.

4.2.2.8 Lighting

Management of the lighting of the project, during all stages, is to be provided, with particular reference to objectives to be achieved and management methods to be implemented to mitigate or avoid:

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

4.2.2.9 Transport

The EIS should provide sufficient information to make an independent assessment of how the State-controlled and local government road networks will be affected. Sufficient information should also be provided to enable an independent assessment of how the rail network (including infrastructure) will be affected. In both cases the impacts along the whole route should be discussed and how any impacts will be managed.

Details should be provided of the impacts on environmental values of any new roads or road realignments. The EIS should include detailed analysis of probable impact of identified construction and operational traffic generated by the project with particular concern to impacts on road infrastructure, road users and road safety.

The EIS needs to identify impacts on the State-controlled and local government road networks and to indicate clearly any management measures necessary to address adverse road impacts and the costs involved. This will require the proponent to compare the traffic situation and road conditions with, and without, the project. A traffic and transport assessment should be done to address safety issues, emergency access and provide information on altered conditions. The EIS should also detail any proposed new road works, for example access from the Project to State-controlled roads. These need to be undertaken in accordance with Main Roads' standard and requirements (ref. MR Road Planning and Design Manual) and will require the approval from Main Roads. In assessing project impacts on the road network (detailed in a Road Impact Assessment Report), the EIS shall address road safety and efficiency, including accelerated reduction in pavement life and warrants for road upgrades as a result of each stage of the project. In addition to the assessment of impacts, required mitigation strategies should be detailed. In presenting impact assessment findings in the Road Impact Assessment Report, the EIS should clearly and logically detail all base data assumptions and methodology used. If mitigation strategies are required, these are to be comprehensively tabled together in a road-use management plan.

Information about the impacts and proposed measures for dealing with those impacts should be prepared by the proponent in close consultation with the local District Office of the Department of Main Roads. To ensure key agreements and decisions are documented, the EIS should provide a summary of consultation discussions and outcomes with relevant transport authorities regarding the assessment of potential impacts and mitigation requirements. This should be included as part of the introductory text to the Road Impact Assessment Report and Road-use Management Plan. Reference should be made to the Main Road's *Guidelines for Assessment of Road Impacts of Development*, available on the Main Roads website: http://www.mainroads.qld.gov.au.

The EIS should provide details of the impact on any current or proposed rail infrastructure other than by subsidence, which is addressed in section 4.2.2.3.

Provide 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. Indicate whether there is a need to update the plans based on increase in frequency of traffic and volumes to be transported.

The EIS should also address the potential impacts on privately owned or port authority operated ports and State-controlled, Commonwealth-controlled or privately owned airports.

Additional water transport issues that should be considered include the potential of the proposal to impact on recreational crafts in rivers and dams.

The EIS should outline details of any potential impacts on existing or proposed pedestrian and cycle networks.

4.3 Waste

This section should complement other sections of part 4 of the EIS by providing technical details of waste treatment and minimisation, with proposed emission, discharge and disposal criteria, while other sections describe how those emissions, discharges and disposals would impact on the relevant environmental values. The purpose of this format is to concentrate the technical information on waste management into one section in order to facilitate its transfer into the EM plan.

4.3.1 Description of environmental values

This section should introduce and briefly describe the existing environment values that may be affected by the project's wastes. Refer to each of the waste streams described in section 3.7 and provide references to more detailed descriptions of the relevant environmental values in other sections of part 4 of the EIS.

4.3.2 Potential impacts and mitigation measures

The purpose of this section is to bring together a description of the preferred methods (and discuss any alternatives) to be used to deal with waste streams and outline their impacts. The full description of the magnitude and nature of impacts on particular environmental values due to the management of waste should be provided in the relevant sections of part 4 of the EIS.

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

Provide an inventory of all wastes to be generated by the Project during the construction and operational phases of the Project. Waste management practices proposed for each waste should be specified including any recycling.

Having regard for best practice waste management strategies, the principles of cleaner production and the Environmental Protection (Waste) Policy (EPP Waste), the proposals for waste avoidance, reuse, recycling, treatment and disposal should be described.

This section should provide details of each waste associated with the project in terms of:

- operational handling and fate of all wastes including storage;
- on-site treatment methods proposed for the wastes;
- methods of disposal (including the need to transport wastes off-site for disposal) proposed to be used for any trade wastes, liquid wastes and solid wastes;
- the potential level of impact on environmental values;
- proposed discharge/disposal criteria for liquid and solid wastes;
- measures to ensure stability of the dumps and impoundments should be described;
- methods to prevent, seepage and contamination of groundwater should be given;
- market demand for recyclable waste (where appropriate) should be addressed;
- waste minimisation techniques processes proposed; and
- decommissioning of the site.

4.4 Water resources

4.4.1 Description of environmental values

This section describes the existing environment for water resources that may be affected by the proposal in the context of environmental values as defined or considered in such documents as the Environmental Protection Act 1994, Environmental Protection (Water) Policy 1997 (EPP(Water)), the Integrated Planning Act 1997, ANZECC 2000, the National Water Quality Management Strategy (NWQMS), the EPA Guideline: Establishing draft environmental values and water quality objectives and the Queensland Water Quality Guidelines 2006. The impact on surface water flow should be considered with reference to the Environmental Protection (Water) Policy, *Water Act 2000*, Water Resource (Fitzroy Basin) Plan 1999 (WRP) and the Fitzroy Basin Resource Operations Plan (ROP).

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

4.4.1.1 Surface drainages

A description should be given of the surface watercourses and their quality and quantity in the area affected by the proposal with an outline of the significance of these waters to the river catchment system in which they occur. Details provided should include a description of existing surface drainage patterns, and flows in major streams. Also provide details of the likelihood of flooding, history of flooding including extent, levels and frequency, and a description of present and potential water uses downstream of the areas affected by the proposal. Flood studies should include a range of annual exceedance probabilities for affected waterways, based on observed data if available or use appropriate modelling techniques and conservative assumptions if there are no suitable observations. The flood modelling assessment should include local flooding due to short duration events from contributing catchments on site, as well as larger scale regional flooding including waterways downstream. Also, the probable maximum flood (PMF) level should be calculated and shown on a map in relation to the project site. The range of rainfall events to be considered should be sufficient to reveal all potential hazards associated with dams, waste storage, drainage systems and watercourses.

The EIS should provide a description, with photographic evidence, of the geomorphic condition of any watercourses likely to be affected by disturbance, stream diversion or subsidence. The results of this description should form the basis for the planning and subsequent monitoring of rehabilitation of the surface drainages/watercourses during or after the operation of the project.

An assessment is required of existing water quality in surface waters and wetlands likely to be affected by the proposal. The basis for this assessment should be a monitoring program, with sampling stations located upstream and downstream of the proposal. Complementary stream-flow data should also be obtained from historical records (if available) to aid in interpretation.

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 any affected surface drainages.

Describe the environmental values of the surface waterways of the affected area 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, land and water management plans relevant to the affected catchment.

4.4.1.2 Groundwater

The EIS should review the quality, quantity and significance of groundwater in the proposal area, together with groundwater use in neighbouring areas.

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

- location;

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

A network of observation points that would satisfactorily monitor groundwater resources both before and after commencement of operations should be developed and described in the EIS.

This section of the EIS should address the nature and hydrology of the aquifers and provide a description of the:

- geology/stratigraphy - such as alluvium, volcanic, metamorphic;
- aquifer type - such as confined, unconfined; and
- depth to and thickness of the aquifers.
- the significance of the resource at a local and regional scale;
- 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 data obtained from the groundwater survey should be sufficient to enable specification of the major ionic species present in the groundwater, pH, electrical conductivity and total dissolved solids.

Describe the environmental values of the underground waters of the affected area 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.

4.4.2 Potential impacts and mitigation measures

This section is to assess potential impacts on water resource environmental values identified in the previous section. It will also define and describe the objectives and practical measures for protecting or enhancing water resource environmental values, to describe how nominated quantitative standards and indicators may be achieved, and how the achievement of the objectives will be monitored, audited and managed.

The EIS should describe the possible environmental harm caused by the project to environmental values for water as expressed in the Environmental Protection (Water) Policy.

Water management controls should be described, addressing surface and groundwater quality, quantity, drainage patterns and sediment movements. The beneficial (environmental, production and recreational) use of nearby marine, surface and groundwater should be discussed, along with the proposal for the diversion of affected creeks during mining, and the stabilisation of those works. Monitoring programs should be described which will assess the effectiveness of management strategies for protecting water quality during the construction, operation and decommissioning of the proposal.

Key water management strategy objectives include:

- protection of important local aquifers and protection of their waters. The establishment of a qualitative and quantitative analysis is required to manage and protect aquifers in the area;
- maintenance of sufficient quantity and quality of surface waters to protect existing beneficial downstream uses of those waters (including maintenance of in-stream biota and the littoral zone); and
- minimisation of impacts on flooding levels and frequencies both upstream and downstream of the project.

4.4.2.1 Surface water and water courses

This section will provide conceptual surface and stormwater drainage maps relative to project activities and infrastructure. This will demonstrate planned stormwater paths and potential water contamination sources to

provide for management and mitigation identification. The potential environmental harm to the flow and the quality of surface waters from all phases of the proposal should be discussed, with particular reference to their suitability for the current and potential downstream uses, including the requirements of any affected riparian area, wetland, estuary, littoral zone, and any marine and in-stream biological uses. The impacts of surface water flow on existing infrastructure should be considered with reference to the Environmental Protection (Water) Policy 1997 and *Water Act 2000*.

The hydrological impacts of the proposal should be assessed, particularly with regard to: stream diversions (whether temporary or permanent); scouring and erosion; the consequent impacts of subsidence; and changes to flooding levels and frequencies both upstream and downstream of the project. When flooding levels will be affected, modelling of afflux should be provided and illustrated with maps.

The EIS must address the effects of subsidence on surface water resources including the impacts on the physical condition of surface drainages and impacts on overland flow and surface drainages both in regard to the flow and quality of water. Where subsidence will occur in a surface drainage, the appropriate section of the EIS should detail how subsidence will affect the ecological condition of the surface drainage's bed and banks and fish passage where relevant.

When flooding levels will be affected, modelling of flood inundation area changes should be provided and illustrated with maps. The flood modelling assessment should include the effects of subsidence on local flooding and the ponding of water in affected areas due to short duration events, as well as any larger scale regional flooding effects on surface drainages downstream. The EIS should propose mitigation measures to address the effects of subsidence on the flow and ponding of water, and on the quality of water.

Quality characteristics discussed should be those appropriate to the downstream and upstream water uses that may be affected. Chemical and physical properties of any waste water (including concentrations of constituents) at the point of entering natural surface waters should be discussed along with toxicity of effluent constituents to flora and fauna

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

In relation to water supply and usage, and wastewater disposal, the EIS should discuss anticipated flows of water to and from the proposal area. Where dams, weirs, ponds are proposed, the EIS should investigate the effects of predictable climatic extremes (storm events, floods and droughts) on: the capacity of the dams to retain contaminants; the structural integrity of the containing walls; and the quality of water contained, and flows and quality of water discharged. The design of all water storage facilities should follow the current technical guidelines on site water management.

Assess the need or otherwise for licensing of any dams (including referable dams) or creek diversions, under the *Water Act 2000* should be discussed. Also consideration should be given for authorisation of regulated dams pursuant to the *Environmental Protection Act 1994*. Assess the impacts on water resources of any dams and roads and other infrastructure related to the project and propose management measures for identified impacts. Having regard for the requirements of the Environmental Protection (Water) Policy, the EIS should present the methods to avoid stormwater contamination by raw materials, wastes or products and present the means of containing, recycling, reusing, treating and disposing of stormwater. Where no-release water systems are to be used, the fate of salts and particulates derived from intake water should be discussed. Water allocation and water sources should be established in consultation with Department of Natural Resources and Water.

The impacts on water resources of any dams and roads and other infrastructure related to the Project and propose management measures for identified impacts should be discussed.

The Australian and New Zealand Environment and Conservation Council (ANZECC, 2000) *National Water Quality Management Strategy, Australian Water Quality Guidelines for Fresh and Marine Waters* and the Environmental Protection (Water) Policy 1997 should be used as a reference for evaluating the effects of various levels of contamination.

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. Information should be provided on meeting CQSS2 Target R7 – No net decrease in water quality as a result of mining activity ongoing.

The EIS should describe the monitoring that will be undertaken after decommissioning, and who will have responsibility for management measures and corrective action, to ensure that rehabilitated creeks within the project area do not degrade.

4.4.2.2 Groundwater

The EIS should include an assessment of the potential environmental harm caused by the proposal to local groundwater resources. It must specifically address the impacts of subsidence on alluvial and deeper aquifers.

The impact assessment should define the extent of the area within which groundwater resources are likely to be affected by the project operations and the significance of the proposal to groundwater depletion or recharge, and the potential interconnection of aquifers due to subsidence. A groundwater model may be required if a significant groundwater resource is encountered at the project site and will be disrupted or utilised by mining activities. The EIS should propose management options available to monitor and mitigate identified impacts. The response of the groundwater resource to the progression and finally cessation of the proposal should be described.

An assessment should be undertaken of the impact of the proposal on the local ground water regime caused by the altered porosity and permeability of any land disturbance.

An assessment of the potential to contaminate groundwater resources and measures to prevent, mitigate and remediate such contamination should be discussed.

4.5 Air

4.5.1 Description of environmental values

This section describes the existing air environment that may be affected by the project.

A description of the existing air quality in the vicinity of the project site should be provided. The background levels and sources of relevant air quality parameters should be discussed including suspended particulates and any other relevant constituent of the air environment that may be affected by the proposal.

Sufficient data on local meteorology and ambient levels of pollutants should be gathered to provide a baseline for the assessment of air quality impacts of the project. Parameters should include air temperature, wind speed and direction, atmospheric stability, mixing depth and other parameters necessary for input to the air quality assessment.

4.5.1.1 Greenhouse gas emissions

This section of the EIS should:

- provide an inventory of projected annual emissions for each relevant greenhouse gas, with total emissions expressed in 'CO2 equivalent' terms;
- estimate emissions from upstream activities associated with the proposed project, including fossil fuel based electricity consumed; and
- briefly describe method(s) by which estimates were made.

An estimate of coal seam methane likely to be released or flared should also be provided.

The Australian Greenhouse Office Factors and Methods Workbook (available via the internet) can be used as a reference source for emission estimates and supplemented by other sources where practicable and appropriate. Coal mining projects should include estimates of coal seam methane to be released as well as emissions resulting from such activities as transportation of products and consumables, and energy use by the project.

4.5.2 Potential impacts and mitigation measures

This section defines and describes the objectives and practical measures for protecting or enhancing environmental values for air, to describe how nominated quantitative standards and indicators 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, and the emissions modelled using a recognised atmospheric dispersion model.

The proposed levels of emissions should be compared with the national environmental protection measures (NEPM) for ambient air quality (1998) and the relevant goals specified in the Environmental Protection (Air) Policy (1998). The potential for interaction between the emissions from the processing plant, and emissions in the air shed, and the likely environmental harm from any such interaction, should also be detailed.

Where appropriate, the predicted average ground level concentrations in nearby areas should be provided. These predictions should be made for both normal and expected maximum emission conditions and the worst case meteorological conditions should be identified and modelled where necessary. Ground level predictions should be made at any sensitive neighbouring receptors including private residences. The techniques used to obtain the predictions should be referenced, and key assumptions and data sets explained. The assessment of the Project's impact on air quality should identify levels of emissions of dust and odours during both normal and upset conditions.

The features of the Project designed to suppress or minimise emissions, including dusts and odours should be provided. The limitations and accuracy of the applied atmospheric dispersion models should be discussed. The air quality modelling results should be discussed in light of the limitations and accuracy of the applied models.

Measures to prevent escape of coal dust from rail transport should be addressed. On-ground action could be related to CQSS2, 3.4.6 – Air Quality Action AA8 Plans to reduce fugitive emissions.

4.5.2.1 Greenhouse gas abatement

This section of the EIS should propose and assess greenhouse gas abatement measures. It should include a description of the proposed measures (alternatives and preferred) to avoid and/or minimise greenhouse gas emissions directly resulting from activities of the project, including such activities as transportation of products and consumables, and energy use by the project. This section should also provide:

- an assessment of how the preferred measures minimise emissions and achieve energy efficiency,
- an indication of how the preferred measures for emission controls and energy consumption compare with practice in the relevant sector of industry with a view to achieving best practice environmental management;
- a description of any opportunities for further offsetting greenhouse gas emissions through indirect means.

Direct means of reducing greenhouse gas emissions could include such measures as:

- minimising clearing at the site (which also has imperatives besides reducing greenhouse gas emissions);
- integrating transport for the project with other local industries such that greenhouse gas emissions from the construction and running of transport infrastructure are minimised;
- maximising the use of renewable energy sources; and
- co-locating coal seam methane use for energy production with coal extraction.
- Indirect means of reducing greenhouse gas emissions could include such measures as:
- carbon sequestration at nearby or remote locations, either:
  - above ground by such means as planting trees and other vegetation to achieve greater biomass than that cleared for the project; or
  - below ground by geosequestration.
- carbon trading through recognised markets.

The environmental management plan in the EIS should include a specific module to address greenhouse abatement. That module should include:

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

4.6 Noise and vibration

4.6.1 Description of environmental values

This section describes the existing environment values that may be affected by noise and vibration from the project.

If the proposed activity could adversely impact on the noise environment, baseline monitoring should be undertaken at a selection of sensitive sites affected by the proposal. Noise sensitive places are defined in the Environmental Protection (Noise) Policy 1997. Long-term measured background noise levels that take into account seasonal variations are required. The locations of sensitive sites should be identified on a map at a suitable scale. The results of any baseline monitoring of noise and vibration in the proposed vicinity of the project should be described.

Sufficient data should be gathered to provide a baseline for later studies. 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.).

4.6.2 Potential impacts and mitigation measures

This section defines and describes the objectives and practical measures for protecting or enhancing environmental values from impacts by noise and vibration, describes how nominated quantitative standards and indicators may be achieved for noise and vibration management, and how the achievement of the objectives will be monitored, audited and managed. The assessment of noise impacts should include matters raised in the document *The health effects of environmental noise – other than hearing loss* published by the enHealth Council, 2004 (or later editions), ISNB 0 642 82304 9.

Information, including mapped noise contours from a suitable acoustic model, should be submitted based on the proposed generation of noise and vibration from the project site. The potential environmental harm of noise and vibration at all potentially sensitive places, in particular, any place of work or residence should be quantified in terms of objectives, standards and indicators to be achieved. Particular consideration should be given to emissions of low-frequency noise; that is, noise with components below 200Hz. The assessment should also include environmental impacts on terrestrial and marine animals and avifauna, particularly migratory species. Proposed measures for the minimisation or elimination of impacts should be provided, including details and illustrations of any screening, lining, enclosing or bunding. A discussion should be provided of timing schedules for construction and operations with respect to minimising environmental nuisance and harm from noise.

Information should be supplied on blasting which might cause ground vibration or fly rock on, or adjacent to, the site with particular attention given to places of work, residence, recreation, worship and general amenity. The magnitude, duration and frequency of any vibration should be discussed.

The assessment should also address off-site noise and vibration impacts that could arise due to increased road or rail transportation directly resulting from the project.

A discussion should be provided of measures to prevent or minimise environmental nuisance and harm. Also the impact of blasting operations on infrastructure such as the water pipeline needs to be assessed and advised to stakeholders. Blasting noise and vibration limits are provided in section 61 of the *Environmental Protection Regulation 1998*. Reference should also be made to the EPA Guideline: Noise and vibration from blasting.

4.7 Nature conservation

4.7.1 Description of environmental values

This section describes the existing environment values for nature conservation that may be affected by the project.

It should describe the environmental values of nature conservation for the affected area in terms of:

- integrity of ecological processes, including habitats of rare and threatened species;
- conservation of resources;
- biological diversity, including habitats of rare and threatened species;
- integrity of landscapes and places including wilderness and similar natural places; and
- aquatic and terrestrial ecosystems.

A discussion should be presented on the nature conservation values of the areas likely to be affected by the proposal. The flora and fauna communities which are rare or threatened, environmentally sensitive localities including the marine environment, waterways, riparian zone, and littoral zone, rainforest remnants, old growth indigenous forests, 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 and 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.

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

The EIS should identify issues relevant to sensitive areas, or areas, which may have, low resilience to environmental change. Areas of special sensitivity include the marine environment and wetlands, wildlife breeding or roosting areas, any significant habitat or relevant bird flight paths for migratory species, bat roosting and breeding caves including existing structures such as adits and shafts, and habitat of threatened plants, animals and communities. The capacity of the environment to assimilate discharges/emissions should be assessed. Proposal proximity to any biologically sensitive areas should be described.

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

- important habitats of species listed under the *Nature Conservation Act 1992* and/or Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* as 'extinct in the wild', 'critically endangered' or 'vulnerable';
- regional ecosystems listed as 'endangered' or 'of concern' under State legislation, and/or ecosystems listed as 'critically endangered', 'endangered' or 'vulnerable' under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*;
- good representative examples of remnant regional ecosystems or those regional ecosystems described as having 'medium' or 'low' representation in the protected area estate as defined in the Regional Ecosystem Description Database (REDD) available at the EPA website;
- sites listed under international treaties such as Ramsar wetlands and World Heritage areas;
- sites containing near threatened or bio-regionally significant species or essential, viable habitat for near threatened or bio-regionally significant species;
- sites in, or adjacent to, areas containing important resting, feeding or breeding sites for migratory species of conservation concern listed under the Convention of Migratory Species of Wild Animals, and/or bilateral agreements between Australia and 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, platypus and other species of special cultural significance;
- sites containing high biodiversity that are of a suitable size or with connectivity to corridors/protected areas to ensure survival in the longer term; such land may contain:
  - natural vegetation in good condition or other habitat in good condition (e.g. wetlands); and/or
  - degraded vegetation or other habitats that still supports high levels of biodiversity or acts as an important corridor for maintaining high levels of biodiversity in the area;
- a site containing other special ecological values, for example, high habitat diversity and areas of high endemism;

- ecosystems which provide important ecological functions such as: wetlands of national, state and regional significance; particularly those listed in the Directory of Important Wetlands in Australia (DIWA); 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/ or
- 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*.

Reference should be made to both State and Commonwealth endangered species legislation and the proximity of the area to any World Heritage property. Reference should be made to Cook et al (2006) "Biodiversity values of coal mining areas in the Bowen Basin" and CQSSII 3.5 Ecosystem Health and Biodiversity.

The Queensland *Vegetation Management Act 1999* and the findings of any regional vegetation management plan should also be referenced.

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.

4.7.1.1 Terrestrial flora

For terrestrial vegetation a map at a suitable scale should be provided, with descriptions of the units mapped. Sensitive or important vegetation types should be highlighted, including any riparian vegetation, and their value as habitat for fauna and conservation of specific rare floral and faunal assemblages or community types. The existence of rare or threatened species should be specifically addressed. The surveys should review species structure, assemblage, diversity and abundance. The description should contain a review of published information regarding the assessment of the significance of the vegetation to conservation, recreation, scientific, educational and historical interests.

The existence of important local and regional weed species should also be discussed.

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

- location and extent of vegetation types using the EPA's regional ecosystem type descriptions in accordance with the Regional Ecosystem Description Database (REDD) available at the EPA's website;
- 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 should be identified; and
- location and abundance of any exotic or weed species.

Adjacent areas should also be mapped to illustrate interconnectivity and the edge effects of impacts on vegetation. Mapping should also illustrate any larger scale interconnections between areas of remnant or regrowth vegetation where the project site includes a corridor connecting those other areas. The EIS should address the loss and disturbance of terrestrial habitat and the wider environmental consequences of cumulative habitat disturbance and fragmentation.

Flora surveys are to be conducted in accordance with the Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (EPA, 2005). Methodology used for flora surveys should be specified in the appendices to the report. Within each defined (standard system) vegetation community, a minimum of three sites (numbers should be discussed with the EPA) should be surveyed for plant species, preferably in both summer and winter, as follows:

- site data should be recorded in a form compatible with the Queensland Herbarium CORVEG database.

- the minimum site size should be 10 by 50 metres;
- a complete list of species present at each site should be recorded;
- the relative abundance of plant species present should be recorded;
- any plant species of conservation, cultural, commercial or recreational significance should be identified; and
- specimens of species listed as protected plants under the Nature Conservation (Wildlife) Regulation 1994, other than common species, are to be submitted to the Queensland Herbarium for identification and entry into the HERBRECS database.

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

4.7.1.2 Terrestrial fauna

The terrestrial and riparian fauna occurring in the areas affected by the proposal 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:

- species diversity (i.e. a species list) and abundance of animals, including amphibians, birds, reptiles, mammals and bats;
- any species that are poorly known but suspected of being rare or threatened;
- habitat requirements and sensitivity to changes; including movement corridors and barriers to movement;
- the existence of feral or exotic animals;
- 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 (e.g. any requirements of protected area management plans); and
- use of the area by migratory birds, nomadic birds, fish and terrestrial fauna.

A comprehensive vertebrate fauna survey should be undertaken of the project area at a sampling intensity that supports the scale of vegetation mapping (i.e. 1:10 000 or better). The EPA's local District Office should be consulted when developing the fauna survey methodology. Apart from the species recorded in the survey, an indicative list of all known and potential species and threatened species in the project area should be provided, by reference to the regional ecosystems within the project area and a 100km buffer, and knowledge of species present in the local bioregion. The occurrence of fauna of conservation significance should be geocoded to mapped vegetation units or habitats, which can then be used in section 4.8.2 to propose areas to be protected.

The EIS should indicate how well any affected communities are represented and protected elsewhere in the province where the site of the proposal occurs.

4.7.1.3 Aquatic biology

The aquatic flora and fauna occurring in the areas affected by the Project should be described, noting the patterns and distribution in the surface drainages and any associated wetlands and aquatic environments within or upstream and downstream of any impacted areas. The description of the fauna 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/or those in any associated lacustrine and marine environment;
- aquatic plants;
- aquatic and benthic substrate; and
- habitat downstream of the area impacted by the project.

The following points should be considered when assessing the presence of fish species in the project area:

- A description of fish communities up and downstream of the site;
- A description of fish and crustacean species upstream of the proposed impoundment, within the impounded area and downstream as far as the effect of the proposal will extend. This should include distribution,

diversity, some population descriptors (e.g. size classes/length frequency) and relative abundance. Historical information (e.g. former distribution, diversities etc.) should be included where available;

- Discussion of fish habitat requirements and usage at the site and up and downstream of the site including life cycle, seasonal or flow related variations in those requirements; and
- Fish movement requirements through the site need to be determined (including any seasonal changes to those requirements). This may be determined from existing biological studies, historical or anecdotal evidence and results from the fisheries survey.

4.7.2 Potential impacts and mitigation measures

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

The EIS should address any actions of the project or likely impacts that require an authority under the *Nature Conservation Act 1992*, and/or would be assessable development for the purposes of the *Vegetation Management Act 1999*.

The discussion should cover all likely direct and indirect environmental harm due to the Project on flora and fauna, particularly sensitive areas. Terrestrial and aquatic environments should also be covered. Also include human impacts and the control of any domestic animals introduced to the area. The impacts of any potential barriers (dams, weirs, road crossings, stream diversions) should be considered for fish communities living in the vicinity of the Project area. These impacts will include disturbances to fish movement which may affect feeding, life cycles and breeding of certain fish species. The loss or alteration of fish habitat should also be considered, with changes to both in stream habitat and riparian zones of creeks having impacts on the fisheries productivity of a creek.

Strategies for protecting any rare or threatened species should be described, and any obligations imposed by State or Commonwealth legislation or policy or international treaty obligations (i.e. JAMBA, CAMBA) should be discussed. Emphasis should be given to potential environmental harm to riparian communities.

The potential environmental harm to the ecological values of the area arising from the construction, operation and decommissioning of the project including clearing, salvaging or removal of vegetation should be described, and the indirect effects on remaining vegetation should be discussed. Short-term and long-term effects should be considered with comment on whether the impacts are reversible or irreversible. Mitigation measures and/or offsets should be proposed for adverse impacts. Any departure from no net loss of ecological values should be described.

The potential environmental harm on flora and fauna due to any alterations to the local surface water and groundwater environment should be discussed with specific reference to environmental impacts on riparian vegetation or other sensitive vegetation communities. The EIS must specifically address the impacts of subsidence on the ecological condition of vegetation, particularly in riparian areas and where the ponding of water will be increased. Measures to mitigate the environmental harm to habitat or the inhibition of normal movement, propagation or feeding patterns, and change to food chains should be described.

The provision of buffer zones and movement corridors, and strategies to minimise environmental harm on migratory, nomadic and aquatic animals should be discussed.

Weed management strategies are required for containing existing weed species (e.g. parthenium and other declared plants) and ensuring no new declared plants are introduced to the area. Feral animal management strategies and practices should also be addressed. The study should develop strategies to ensure that the project does not contribute to increased encroachment of a feral animal species.

Reference should be made to the local government authority's pest management plan when determining control strategies. The strategies for both flora and fauna should be discussed in the main body of the EIS and provided in a working form in a Pest Management Plan as part of the overall EM plan for the project.

Rehabilitation of disturbed areas should incorporate, where appropriate, provision of nest hollows and ground litter.

4.8 Cultural heritage

4.8.1 Description of environmental values

This section will describe the existing cultural heritage values that may be affected by the proposal. Describe the environmental values of the cultural landscapes of the affected area in terms of the physical and cultural integrity of the landforms.

A cultural heritage study may be required that will describe indigenous and non-indigenous cultural heritage sites and places, and their values. Any such study must be conducted by an appropriately qualified cultural heritage practitioner and must include the following:

- liaison with the relevant indigenous community or communities concerning:
  - places of significance to that community (including archaeological sites, natural sites, story sites etc;
  - appropriate community involvement in field surveys;
- liaison with local people and interest groups about sites of non-indigenous cultural heritage;
- any requirements by communities and/or informants relating to confidentiality of site data must be highlighted;
- a systematic survey of the proposed development area to locate and record indigenous and non-indigenous cultural heritage places;
- significant assessment of any cultural heritage sites/places located;
- the impact of the proposed development on cultural heritage values;
- a report of work done which includes background research, relevant environmental data and methodology, as well as results of field surveys, significance assessment and recommendations; and
- a permit to conduct the research and survey will be required under the provisions of the Aboriginal Cultural Heritage Act 2003 and/or the Queensland Heritage Act 1992.

4.8.2 Potential impacts and mitigation measures

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 achieved for cultural heritage management, and how the achievement of the objectives will be monitored, audited and managed.

Under the Aboriginal Cultural Heritage Act 2003 a cultural heritage management plan (CHMP) is needed when an EIS is required for a project. Consequently, the environmental harm to cultural heritage values in the vicinity of the Eagle Downs Project must be managed under a CHMP developed specifically for the project. The CHMP will provide a process for the management of cultural heritage places both identified and sub-surface at the project sites. It is usual practice for the CHMP to be based on information contained in archaeological and/or anthropological reports on the survey area and cultural reports and/or information from affiliated traditional owners. The CHMP should address and include the following:

- a process for including Aboriginal/Torres Strait islander people (and their legal representatives) associated with the development areas in protection and management of indigenous cultural heritage;
- processes for mitigation, management and protection of identified cultural heritage places and material in the project areas, including associated infrastructure developments, both during the construction and operational phases of the project;
- provisions for the management of the accidental discovery of cultural material, including burials;
- the monitoring of foundation excavations and other associated earthwork activities for possible sub-surface cultural material;
- cultural awareness training or programs for project staff; and
- a conflict resolution process.

The development of the CHMP should be negotiated with the lead agencies (the Department of Natural Resources and Water for indigenous cultural heritage and EPA for non- indigenous cultural heritage) and all stakeholder representatives. The EPA's EIS Coordinator should be party to, or at least made aware of, the discussions so that related issues can be addressed in the EIS assessment report.

The EPA's and DNRW's regional managers should be consulted for the provision of general advice including the appropriate conduct of cultural heritage surveys and the necessary permits.

Where required by either the Queensland Heritage Act 1992 or the Aboriginal Cultural Heritage Act 2003, the EPA's and DNRW's regional managers should be consulted for the provision of general advice including the appropriate conduct of cultural heritage surveys and the necessary permits.

4.9 Social

4.9.1 Description of environmental values

This section describes the existing social values that may be affected by the proposal.

The social amenity and use of the proposal area and adjacent areas and communities for rural, agricultural, forestry, fishing, recreational, industrial, educational or residential purposes should be described.

Consideration should be given 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 activities;
- current property values;
- number of properties directly affected by the project; and
- number of families directly affected by the project, this should include not only property owners but also families of workers either living on the property or workers where the property is their primary employment.

Describe the social values for the affected area in terms of the integrity of social conditions, including amenity and liveability, harmony and well being, sense of community, access to recreation, and access to social and community services and infrastructure.

4.9.2 Potential impacts and mitigation measures

This section defines and describes the objectives and practical measures for protecting or enhancing social 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 social impact assessment of the Project is to be carried out in consultation with affected local authorities and relevant State authorities, such as the Department of Communities, DLGPSR, Queensland Health and Education Queensland. The social impact assessment will consider CQSS3 3.9 – Social and discuss social impacts in the context of CQSS2 3.9.

The assessment of the impacts should describe the likely response of affected communities and identify possible beneficial and adverse impacts (both immediate and cumulative). These impacts should be considered both at the regional and local level. The social impact assessment of the Project should consider the information gathered in the community consultation program and the analysis of the existing socio-economic environment, and describe the Project's impact, both beneficial and adverse, on the local community. 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 development. The nature and extent of the community consultation program are to be described and a summary of the results incorporated in the EIS.

The social impact assessment should include sufficient data to enable affected local and State authorities to plan for the continuing provision of public services in the region of the Project. Proponents of projects that are likely to result in a significant increase in population of an area should consult the relevant management units of the State authorities, and summarise the results of the consultations in the EIS. The summary should discuss how the impacts of population increase on public services, particularly health and education, would be mitigated.

The EIS should address the following matters:

- assessment of impacts on local residents, current land uses and existing lifestyles and enterprises.
- assessment of impacts on local and state labour markets, with regard to the source of the workforce. This information is to be presented according to occupational groupings of the workforce. In relation to the source of the workforce, information is required as to whether the proponent, and/or contractors, are likely to employ locally or through other means and whether there are initiatives for local employment opportunities.
- The EIS should address impacts of both construction and operational workforces and associated contractors on housing demand, community services and community cohesion. The capability of the existing housing stock, including rental accommodation, to meet any additional demands created by the Project is to be discussed.
- The assessment of impacts should take account of relevant demographic, social, cultural and economic profiles.
- Identify any new skills and training to be introduced in relation to the Project. Adequate provision should be made for apprenticeship and worker training schemes. If possible, the required occupational skill groups and anticipated potential skill shortages should be indicated.
- Provide comment on how much service revenue and work from the Project (e.g. provisioning, catering and site maintenance) would be likely to flow to existing communities in the area of the Project, particularly if a fly-in, fly-out workforce is proposed.
- Include an assessment of impacts on existing local residents' values and aspirations.
- In regard to affected indigenous and non-indigenous communities respectively, particular attention should be paid to the effects on:
  - the ability of both indigenous and non-indigenous people, to live in accordance with their own values and priorities;
  - the use of and access to culturally important areas and landscapes;
  - the access to existing services and housing;
  - the ability to participate in regional and local employment and training opportunities; and
  - the new project workforce and their families.
- The proponent should address the issue of contract and permanent mine employees during the construction and operation phases commuting to and from major regional centres before and after work periods. The EIS should examine demographic aspects of the workforce that determine the travel patterns as part of the overall transport tasks. This should include the location of camp sites, information on numbers and timing of travel from larger urban centres. Measures to address fatigue should be detailed.

For the construction and operational phases of the development, describe the effects of the proposal on local and regional residents, including land acquisition and relocation issues and property valuation and marketability, community services and recreational activities.

Discuss the potential environmental harm on the amenity of adjacent areas used for cropping, grazing, forestry, recreation, industry, education, aesthetics, or scientific or residential purposes. Describe the implications of the proposal for future developments in the local area including constraints on surrounding land uses.

The educational impacts of the proposed development are to be analysed and described, particularly in regard to primary, secondary and tertiary educational sectors.

For identified impacts to social values, suggest mitigation and enhancement strategies and facilitate initial negotiations towards acceptance of these strategies. Practical monitoring regimes should also be recommended. The social impact mitigation strategies to be described in this section should pay particular attention to:

- the sourcing of the construction and operational workforce and the social and cultural implications this may have for the host community particularly if any part of the workforce is sources from overseas;
- the availability of accommodation for the project's workforce and the possible cumulative impact on the housing and rental market;
- an accommodation strategy, where necessary, in consultation with relevant State government agencies, which will detail proposals that avoid, mitigate or offset any short and medium term adverse effects on the local housing market.
- documenting the demographic changes in the profile of the region and the associated sufficiency of current infrastructure and services; and
- developing a community consultation management plan that promotes an active role for impacted communities.

The strategy for addressing the accommodation shortfall should be addressed in detail in this section. This strategy should cover the life of the project and include the proposed location of any new accommodation.

4.10 Health and safety

4.10.1 Description of environmental values

This section describes the existing community values for public health and safety that may be affected by the proposal. For projects proposing air emissions, and/or those with the potential to emit odours, nearby and other potentially affected populations should be identified and described. 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.

4.10.2 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 health 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 necessarily limited to, kindergartens, schools, hospitals, aged care facilities, residential areas, and centres of work (e.g. 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 (e.g. 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.

4.11 Economy

4.11.1 Description of environmental values

This section describes the existing economic environment that may be affected by the proposal. 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 impact statement should include estimates of the opportunity cost of the project and the value of ecosystem services provided by natural or modified ecosystems to be disturbed or removed during development.

4.11.2 Potential impacts and mitigation measures

The function of this section is to define and describe the objectives and practical measures for protecting or enhancing economic values, to describe how nominated quantitative standards and indicators may be achieved for economic management, and how the achievement of the objectives will be monitored, audited and managed.

An economic analysis, including a cost-benefit analysis, should be presented from national, state, regional and local perspectives as appropriate to the scale of the project. The general economic benefits from the project should be described. The economic impact assessment will consider CQSS2 3.8 – Economic and discuss economic impacts in the context of CQSS2 3.8.

At a level of detail appropriate to the scale of the project, the analysis is to consider:

- the significance of this proposal on the local and regional economic context;
- the long and short-term beneficial (e.g. job creation) and adverse (e.g. competition with local small business) impacts that are likely to result from the development;
- the potential, if any, for direct equity investment in the project by local businesses or communities;
- the cost to all levels of government of any additional infrastructure provision;
- implications for future development in the locality (including constraints on surrounding land uses and existing industry);
- the distributional effects of the proposal including proposals to mitigate any negative impact on disadvantaged groups;
- the value of lost opportunities or gained opportunities for other economic activities anticipated in the future (such as the impacts on the grazing industry due to land changes);
- impacts on local property values; and
- the potential economic impact of any major hazard identified in the section on hazard and risk.

Consideration of the impacts of the project in relation to energy self-sufficiency, security of supply and balance of payments benefits may be discussed. Attention should be directed to the long and short-term effects of the project on the land-use of the surrounding area and existing industries, regional income and employment and the state economy.

For identified impacts to economic values, suggest mitigation and enhancement strategies and facilitate initial negotiations towards acceptance of these strategies. Practical monitoring regimes should also be recommended.

4.12 Hazard and risk

4.12.1 Description of environmental values

This section describes the potential hazards and risk to people and property that may be associated with the proposal as distinct from hazards and risk to the natural environment, which should be addressed in other sections of the TOR.

Detail the values related to people and property that could be affected by any hazardous materials and actions incorporated in the project. The degree and sensitivity of risk should be detailed.

4.12.2 Potential impacts and mitigation measures

This section defines and describes the objectives and practical measures for protecting people and places from hazards and risk, describes 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.

An analysis is to be conducted into the potential impacts of both natural and induced emergency situations and counter disaster and rescue procedures as a result of the proposal on sensitive areas and resources such as forests, water reserves, State and local Government controlled roads, places of residence and work, and recreational areas.

The EIS should provide a listing of substances listed in the Australian Dangerous Goods Codes to be held on-site and maximum volumes held. This information should be presented by classes and should contain:

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

Details should be provided of:

- 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.

The proponent should develop an integrated risk management plan for the whole of the life of the project including construction, operation and decommissioning phases. The plan should include a preliminary hazard analysis (PHA), conducted in accordance with appropriate guidelines for hazard analysis (e.g. HAZOP Guidelines, NSW Department of Urban Affairs and Planning (DUAP)). The assessment should outline the implications for and the impact on the surrounding land uses, and should involve consultation with Department of Emergency Services, including three regional/local representatives from the Queensland Fire and Rescue Service, Emergency Management Queensland and Queensland Ambulance Service. The preliminary hazard analysis should incorporate:

- all relevant majors hazards both technological and natural;
- the possible frequency of potential hazards, accidents, spillages and abnormal events occurring;
- indication of cumulative risk levels to surrounding land uses;
- life of any identified hazards;
- a list of all hazardous substances to be used, stored, processed, produced or transported;
- the rate of usage; and
- description of processes, type of the machinery and equipment used; and
- potential wildlife hazards such as crocodiles, snakes, and disease vectors.

The integrated risk management plan should include the following components:

- operational hazard analysis;
- regular hazard audits;
- fire safety, emergency;
- response plans;
- qualitative risk assessment; and
- construction safety.

Where relevant, each of these components should be prepared in accordance with the relevant NSW DUAP Hazardous Industry Planning Advisory Paper (HIPAP).

The EIS should indicate whether the project will include matters of interest for the Chemical hazards and Emergency Management Services with regards to the *Dangerous Goods Safety Management Act 2001*.

5 Environmental management plan

The environmental management plan (EM plan) will be developed from the mitigation measures detailed in part 4 of the EIS. Its purpose is to set out the proponents' commitments to environmental management. That is, how environmental values will be protected and enhanced.

The EM plan is an integral part of the EIS, but should be capable of being read as a stand-alone document without reference to other parts of the EIS. For a mining project the EM plan must meet the content requirements of section 203 of the *Environmental Protection Act 1994*.

The EM plan will include, but not necessarily be limited to:

- the environmental values likely to be impacted by the mining activities;
- the proponents' commitments to acceptable levels of environmental performance, i.e. levels of expected environmental harm, performance standards and associated measurable indicators, performance monitoring and reporting;
- impact prevention or mitigation actions to implement the commitments; and
- corrective actions to rectify any deviation from performance standards.

The EM Plan may propose conditions for inclusion in the draft environmental authority for the project.

6 References

The EIS should provide in a recognised format of all references consulted.

7 Recommended appendices

A1. 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.

A2. Development approvals

A list of the development approvals required by the project should be presented.

A3. EIS study team

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

A4. The standard criteria

A brief summary of the Project's compatibility with the ESD policy and other relevant policy instruments such as the standard criteria as defined by the *Environmental Protection Act 1994* should be presented. With regard to the principles of ESD, as listed in The National Strategy for Ecologically Sustainable Development, published by the Commonwealth Government in December 1992 (available from the Australian Government Publishing Service), each principle should be discussed and conclusions drawn as to how the proposal conforms. A life-of-project perspective should be shown.

A5. Consultation report

The summary Consultation Report appendix for an EIS under the EP Act should commence by including the details of affected and interested persons, and the statement of planned consultation with those persons, originally provided with the draft terms of reference. It should describe how 'interested' and 'affected persons,' and any 'affected parties' as defined in the EPBC Act, were identified.

A further list should be provided that includes the Commonwealth, state and local government agencies consulted, and the individuals and groups of stakeholders consulted.

The Consultation Report appendix should summarise the results of the community consultation program, providing a summary of the groups and individuals consulted, the issues raised, and the means by which the issues were addressed. The discussion should include the methodology used in the community consultation program including criteria for identifying stakeholders and the communication methods used.

A6. Specialist studies

All reports generated on specialist studies undertaken as part of the EIS are to be included as appendices.

A7. Research

Any proposals for researching alternative environmental management strategies or for obtaining any further necessary information should be outlined in an appendix.

Approved By

SIGNED	23 JULY 2008
Signature	Date

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