

# **Wiggins Island Coal Terminal Project**

## **Terms of Reference for an Environmental Impact Statement**

**The Coordinator-General**  
March 2006

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## PREFACE

The project was declared to be a “significant project” under Section 26 of the Queensland *State Development and Public Works Organisation Act 1971* (SDPWOA) by the Coordinator-General (CG) on 29 September 2005. Matters considered by the CG in making this declaration included information in an Initial Advice Statement prepared by the Proponents, the level of investment necessary for the project, employment opportunities provided by the project, potential impact on the environment, potential effects on relevant infrastructure and the significance of the project to the region and State. The declaration initiates the statutory environmental impact assessment procedure of Part 4 of this Act, which requires the Proponents to prepare an Environmental Impact Statement (EIS) for the project.

The CG is responsible for managing the environmental impact assessment process. The CG has invited relevant Commonwealth, State and Local Government representatives and authorities to participate in the process as Advisory Agencies.

The first step in the impact assessment procedure is the development of a Terms of Reference (ToR) for the preparation of an EIS. The process involves the formulation of a draft ToR which is made available for public and government agency comment. The CG has regard to all comments received on the draft ToR in finalising the ToR, which will be presented to the Proponents. This document represents the draft ToR for public comment.

The statutory impact assessment process under the SDPWOA is also the subject of a bilateral agreement between the Queensland and the Commonwealth Governments in relation to environmental assessment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The Proponents referred the proposal to the Commonwealth Minister for the Environment and Heritage in accordance with the provisions of the EPBC Act. The Commonwealth Minister decided, on 25 November 2005, that the proposal did constitute a controlled action under Section 75 of the EPBC Act, with the controlling provisions being sections 12 and 15A (World Heritage), sections 18 and 18A (Listed threatened species and communities) and sections 20 and 20A (Listed migratory species).

However, it should be noted that the Commonwealth Minister will undertake a separate approval process following release of the CG’s report. The Minister will then grant, or withhold, approval for the controlled action under section 133 of the EPBC Act. The Minister may attach conditions to the approval, in addition to those set by the CG, to mitigate impacts on matters of National Environmental Significance (NES).

The Proponents will prepare an EIS to address the ToR. Once the EIS has been prepared to the satisfaction of the CG, a public notice is advertised in relevant newspapers. The notice will state where copies of the EIS are available for inspection and how it can be purchased; that submissions may be made to the CG about the EIS; and the submission period. The Proponents may be required to prepare a Supplementary Report to the EIS to address specific matters raised in submissions on the EIS.

At the completion of the EIS phase, the CG will prepare a report evaluating the EIS and other related material, pursuant to Section 35 of SDPWOA. The CG report will include an evaluation of the environmental effects of the proposed project and any related matters. The CG report will reach a conclusion about the environmental effects and any associated mitigation measures, taking into account all of the relevant material including the EIS; all properly made submissions and other submissions accepted by the CG; and any other material the CG considers is relevant to the project, such as a Supplementary Report to the EIS, comments and advice from Advisory Agencies, technical reports on specific components of the project and legal advice.

The project involves development that would require an application for development approval for material change of use and/or impact assessment under the *Integrated Planning Act 1997* (IPA).

Consequently, the CG report may, under s.39 of SDPWOA, state for the assessment manager one or more of the following:

- the conditions that must attach to the development approval;
- that the development approval must be for part only of the development;
- that the approval must be preliminary approval only.

Alternatively the CG report must state for the assessment manager:

- that there are no conditions or requirements for the project; or
- that the application for development approval be refused.

Further, the CG report must:

- give reasons for the statements (above); and
- be given to the assessment manager by the CG.

Further to the above *IPA* approvals, other approvals under a range of legislation including, but not limited to *Integrated Planning Act 1997*, *Environmental Protection Act 1994*, the *Coastal Protection and Management Act 1995*, *Fisheries Act 1994*, are likely to be required.

These ToR provides information in two broad categories:

- Part A – Information and advice on the preparation of the EIS.
- Part B – Content of the EIS.

For further inquiries about the EIS process for the project, please contact:

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\* ***The term environment refers to:***

- a) ecosystems and their constituent parts, including people and communities;***
- b) all natural and physical resources;***
- c) the qualities and characteristics of locations, places and areas, regardless of size, that stimulate biological diversity and integrity, intrinsic or attributed scientific value or interest, amenity, harmony and sense of community;***
- d) the social, economic, aesthetic and cultural conditions which influence, or are affected by, the entities and attributes mentioned in paragraphs (a) to (c); and***
- e) the local, regional, Queensland and Australian populations and labour markets.***

## **PART A - INFORMATION AND ADVICE ON PREPARATION OF THE EIS**

### **Project Proponents**

The Proponents for the project are the Central Queensland Ports Authority (CQPA) and Queensland Rail (QR).

### **Project Description**

The proposal is to develop a new coal terminal in the Port of Gladstone to the immediate north of the entrance of the Calliope River. The proposed coal terminal would have an initial capacity of 25Mtpa and the capability to upgrade it to 70Mtpa in later stages. Also part of the proposal is the construction and operation of electrified rail access to and from the new terminal both from the north and from the west, together with supporting infrastructure, including holding yards and rolling stock maintenance facilities. This rail access will have an ultimate capacity to transport 70Mtpa to the terminal, with the first stage having sufficient tracks for 25Mtpa and be able to be expanded to second and third rail receipt and ship loader streams. The project includes substantial modifications to the Gladstone – Mt Larcom State-controlled road to provide rail access from the North Coast rail line and the Moura Short rail line to Wiggins Island.

### **Purpose of the Terms of Reference**

These ToR essentially outline the issues that should be considered in preparing the EIS. Furthermore, the ToR provides the framework for the EIS, including information on the purpose and role of the EIS and the factors considered to be most significant for the proposal. It indicates the types of studies and the data that should be provided in the EIS. All potentially significant impacts of the proposed development on the environment are to be investigated, and requirements for the mitigation of any adverse impacts are to be detailed in the EIS. Any prudent and feasible alternatives should be discussed and treated in sufficient detail. The reasons for selection of the preferred option should be clearly identified. The nature and level of investigations should be relative to the likely extent and gravity of impacts. These guidelines should, however, not be interpreted as excluding from consideration any matters which are currently unforeseen, which may arise during ongoing scientific studies or which may arise from any changes in the nature of the proposal during the preparation of the EIS, the community consultation process and associated documentation.

The EIS should address at least the requirements as set out in these ToR.

### **EIS Guidelines**

The objective of the EIS is to identify potential environmental impacts, both negative and positive, and to ensure that those negative impacts are avoided where possible. Where unavoidable, impacts must be examined fully and addressed so that the development is based on sound environmental protection and management criteria.

The EIS process followed will be as specified in the *State Development and Public Works Organisation Act 1971* and meet Commonwealth regulations as specified in the *Environment Protection and Biodiversity Conservation Act 1999*.

An EIS should provide:

- a description of the relevant aspects of the existing social, economic, natural and built environment;
- a description of the development proposal and means of achieving the development objectives;
- definition and analysis of the likely impacts of the development on the environment;
- a framework against which Government decision-makers can consider the environmental aspects of the proposal and set conditions for approval to ensure environmentally sound development;

- a definition of all significant impacts and a consolidated list of measures proposed to mitigate adverse effects; and
- recommendations on the need for and contents of any environmental management plans and/or operational plans to mitigate adverse effects.

## **EIS Objectives and Key Issues**

### ***Objectives***

The objectives of the EIS are as follows:

- to provide information on the proposal and development process to the community and decision makers;
- to comprehensively identify and evaluate all relevant issues associated with the proposal;
- to identify all potential environmental, cultural, social, transport and land use planning impacts of the preferred concept, and recommend infrastructure and facilities needs together with other design and operational measures required to minimise or compensate for adverse impacts and enhanced benefits;
- to consult with the community and relevant stakeholders in the process of identifying, assessing and responding to the impacts of the proposal;
- to identify all necessary licences, planning and environmental approvals including approval requirements pursuant to the *Environment Protection and Biodiversity Conservation Act 1999*, *Integrated Planning Act 1997*, *Environmental Protection Act 1994*, *Coastal Protection and Management Act 1995*, *Fisheries Act 1994*, *Nature Conservation Act 1992*, *Vegetation Management Act 1999* and other legislation and the Calliope Shire Council Planning Scheme;
- to provide an input to the decision-making process, assisting with the determination of whether to accept or modify the proposal, approve it with conditions or carry out further studies; and
- to ensure that the proposal considers the effects of and impacts on other proposed developments nearby and within the Central Qld Port Authority and Gladstone State Development Areas on the transport infrastructure.

### ***Key Issues***

The issues to be addressed as part of the EIS can be divided into the following categories:

- detailed project description;
- project justification and alternatives;
- impacts on the terrestrial environment;
- impacts on the coastal environment;
- impacts on water quality;
- impacts on areas of cultural heritage value or Indigenous significance;
- air emissions and impacts;
- impacts of noise and vibration;
- impacts on surrounding land uses and land use planning;
- impacts on transport infrastructure and road use;
- economic issues, including impacts on local and regional businesses;
- social issues;
- safety and emergency; and
- waste management.

The EIS will be required to consider in detail relevant issues under each of these categories and all other impacts on the physical and social environment. The information required is described in the following sections.

## **Public Consultation on Terms of Reference**

The draft ToR was publicly advertised in *The Australian*, *The Courier-Mail* and *The Gladstone Observer* newspapers and on the CG website ([www.coordinatorgeneral.qld.gov.au](http://www.coordinatorgeneral.qld.gov.au)) inviting comment on the draft ToR for the project. The closing date for submissions was 14 February 2006.

## **PART B - CONTENT OF THE EIS**

**It is strongly recommended that the environmental impact statement (EIS) follows the heading structure of these terms of reference (ToR) to facilitate cross-referencing. This structure has been found through long experience to be the best option.**

### **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 strongly on the key issues and conclusions.

### **Glossary of Terms**

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

## **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 (for example, whether the Proponents are seeking only a preliminary approval through the Integrated Development Assessment System (IDAS) or a full approval with all permits). It should also define the audience to whom it is directed, and contain an overview of the structure of the document. Throughout the EIS, factual information contained in the document should be referenced.

### **1.1 Project Proponents**

Provide details of the project Proponents, 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.

A brief description should be provided of studies or surveys that have been undertaken for the purposes of developing the project and preparing the EIS. This should include reference to relevant baseline studies or investigations undertaken previously.

### **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.

Describe the current status of the project and outline the relationship of the project to the adjoining Gladstone Pacific Nickel Limited development and other existing and proposed developments or

actions that may relate whether or not they have been approved. The consequences of not proceeding with the project should also be discussed.

## **1.4 The 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:

- that relevant legislation is addressed;
- readers are informed of the process to be followed; and
- that 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 the 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 Proponents 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.

In brief, 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 will be addressed and taken into account in the decision-making process.

## 1.5 Public consultation process

To facilitate the assessment process, the Proponents are strongly encouraged to regularly consult with Advisory Agencies and other appropriate stakeholders throughout the EIS process. This should include consultation with relevant Indigenous traditional owner groups and the Indigenous community.

It is the responsibility of the Proponents, in consultation with Advisory Agencies, to identify legislation, policies and methodologies relevant to the EIS process, and to determine appropriate parts of the community which should be consulted during the EIS preparation stage. It is recommended that an open community consultation process be carried out in addition to the legislated environmental impact assessment process. Copies of the draft EIS will be provided to all Advisory Agencies and on request to relevant individuals and peak groups with an interest in the project.

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. Refer to the Environmental Protection Agency (EPA) guideline “**Issue Identification and Community Consultation**”.

## 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*, *Fisheries Act 1994* and other relevant Queensland laws. Any requirements of the Commonwealth EPBC Act should also be included.

The *Transport Infrastructure Act of 1994*, the *Transport Planning and Coordination Act of 1994*, the *Transport Operations (Road Use Management) Act of 1995* and the Main Roads 'Guidelines for Assessment of Road Impacts of Development Proposals' will guide the Proponents when considering the impacts or mitigation measures for transport infrastructure and operations.

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), 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 and would include:

- any planning controls, by-laws and policies relating to the study area and adjacent lands;
- details of all licences, planning and environmental approvals required;
- regional strategies or plans that relate to the study area or proposal (existing or in preparation); and

- relationship to other significant developments (existing or proposed) in the study area or surrounding areas.

This should include an assessment of the project's consistency with the Gladstone Port Authority Land Use Plan, Calliope Shire Planning Scheme, Gladstone City Planning Scheme and the Great Barrier Reef Marine Park (GBRMP) zoning of any offshore areas potentially impacted by the project. This information is required to demonstrate how the proposal conforms with State, regional and local plans for the area.

### **1.7 Accredited process for controlled actions under Commonwealth legislation**

Projects that are undergoing an EIS under a State statutory process may also be controlled actions under the Commonwealth's EPBC Act. In which case, the Commonwealth may accredit the State's EIS process for the purposes of the Commonwealth's assessment under Part 8 of the EPBC Act.

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

- sections 12 and 15A (World Heritage),
- sections 18 and 18A (Listed threatened species and communities) and
- sections 20 and 20A (Listed migratory species).

A stand-alone report addressing the matters of NES must be provided as an appendix to the EIS that exclusively and fully addresses the issues relevant to the controlling provisions. This stand alone section should include:

#### ***A Description of the Affected Environment Relevant to the Matters Protected***

It is important that the current status of the matters protected under the EPBC Act be described in sufficient detail, to inform the analysis of the proposal's impact on these matters. While some aspects may only need a brief paragraph, others will require a greater level of detail to provide background for the discussion of the impacts.

For example, if the matter protected is a listed threatened species, the description of the environment might include:

- the species' current distribution,
- relevant information about the ecology of the species (habitat, feeding and breeding behaviour etc),
- information about any populations of the species or habitat for the species in the area affected by the proposed proposal,
- current pressures on the species, especially those in the area to be affected by the proposal,
- any relevant controls or planning regimes already in place.

If the matter protected is the World Heritage values of a World Heritage property, the report should set out the World Heritage values that are potentially affected by the proposal within the wider context of the values of the property as a whole. Similarly, if the matter protected is the ecological character of a Ramsar wetland, this section should set out the relevant ecological characters of the Ramsar wetland.

#### ***Assessment of Relevant Impacts and Mitigation Measures***

In this section, the impacts and potential impacts on the matters protected are described, and the possible mitigation measures for each impact analysed. If alternative ways of taking the action have been identified, the relative impacts of these alternatives should also be considered.

When effective mitigation measures are not available, the discussion should be broadened to include compensatory measures to offset unavoidable impacts.

It is useful to link the discussion of impacts to the relevant matters protected, address all relevant impacts, and provide sufficient justification for all conclusions reached on specific impacts. In some cases impacts may be relevant to more than one matter protected e.g. when the species is listed as both a migratory and threatened species under the EPBC Act. In such cases the impacts may be addressed together, clearly stating the relevance of the impact to the different matters protected.

### **Potential significant impacts on matter of NES**

The following potential impacts may need to be addressed in the EIS. The impacts are provided as a guide for specific matters of NES. Not all of these headings will apply to all proposals.

#### Impact on the values of a declared World Heritage property:

- one or more of the World Heritage values being lost;
- one or more of the World Heritage values being degraded or damaged;
- consistency with any management plan; and
- consistency with any regulations under the EPBC Act prescribing Australian World Heritage management principles for the management of natural and cultural heritage as defined by the World Heritage Convention.

#### Impact on a listed threatened species:

Potential impacts vary depending on whether the species is extinct in the wild, endangered or vulnerable but are generally as follows:

- lead to long term decrease in the size of a population;
- reduce the area of occupancy of the species;
- fragment an existing population into two or more populations;
- adversely affect habitat critical to the survival of the species;
- disrupt the breeding cycle of a population;
- modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;
- result in invasive species that are harmful to the species becoming established;
- interfere with the recovery of the species
- consistency with any recovery plan.

#### Impact on a listed migratory species:

- loss or modification of habitat important for migratory species (including fragmentation, altered land use, fire regimes, altered nutrient cycle etc);
- introduction of invasive species; and
- disruption to lifecycle (breeding, feeding, migration, roosting etc).

## **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.

This discussion of alternatives is to particularly include a review of onshore and offshore alternative locations for disposal and other options for disposal of the dredge spoil including reuse (as per the requirements of the National Ocean Disposal Guidelines for Dredged Material (NODGDM- DEH 2002). A discussion on alternative locations for the new berths is also to be provided.

### **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 Overview of Project**

An overview of the project should be provided to put the project into context. Provide the current plant capacity and the increase in throughput planned from the project. The key components of the Wiggins Island Coal Terminal Project should be described. Provide the expected project cost and overall expected project duration and timing.

Summarise the employment benefits from the project from the construction and operations phases. Provide a summary of any environmental design features of the project.

#### **3.2 Location**

##### **3.2.1 Regional context**

The regional context of the proposal should be described and illustrated on maps at suitable scales.

##### **3.2.2 Local context**

The project location should be described in detail in the local, regional and national context. The location of the Port, areas within the Port where construction is to take place, the area to be dredged, potential spoil disposal sites and surrounding areas should be illustrated in maps at suitable scales.

Local descriptions of the project site should include real property descriptions. Maps should show 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; and
- the location of any proposed buffer areas or buffer zones surrounding the Wiggins Island Coal Terminal working areas.

These features should be overlain on a rectified air photo enlargement to illustrate components of the project in relation to the natural and built features of the area.

#### **3.3 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 and/or how they will be transported to the site.

### **3.3.1 Onshore Construction**

The extent and nature of the project's onshore construction phase should be described. The description should include:

- type and methods of construction for:
  - the rail loop, railway connections to North Coast and Moura rail lines, coal dump station and inloading conveyor;
  - installation of the bunds and stockyard rows; and
  - installation of new stacking/reclaiming machines in the stockyard, with conveyors and transfer stations;
- the equipment to be used for the construction of the above;
- the items of plant to be transported to the site for construction;
- the volume of materials to be transported to the site, the location of the supply, method of and route for transport;
- the expected length of the onshore construction phase, and staging of the proposal, with illustration showing site boundaries, development sequencing and timeframes; and
- accommodation proposed for the construction workforce.

A development permit will be required for works which are located on State coastal land within the Curtis Coast Coastal Management District. Accordingly, detailed concept plans, consistent with the EPA's guideline 'Operational work on State coastal land' are required for the onshore works.

### **3.3.2 Road Infrastructure Works**

The extent and nature of the road works on or impacting upon Hanson Road resulting from the project should be described. The description should include:

- the type, scale and method of construction of the bridge works over the rail lines and the Calliope River Anabranch;
- provision for four lanes on Hanson Road;
- provision for permanent road access to the port and related stockpiles and rail facilities;
- the management of the traffic during the construction phase of the road rail and port;
- the co-ordination of the rail infrastructure works with the road works; and
- the location for temporary access to the site from the road during the onshore and offshore construction phase.

### **3.3.3 Offshore Construction**

The description of the project's offshore construction including:

- the type and methods of construction for the offshore works;
- the equipment to be used for the construction of the above and the method of construction;
- the launching area for offshore equipment;
- the volume of materials to be transported to the site;
- the items of plant to be transported to the site for construction; and
- the expected length of the offshore construction phase, and staging of the project.

Drawings indicating the type, location and extent of the tidal works proposed (eg. areas to be dredged, the jetty and wharf structures, and any works proposed to be attached to the jetty and wharf) are required.

### **3.3.4 Dredging and Dredged Material Disposal**

The methods proposed for the dredging of the new berth pockets, swing basin, apron and channel should be described including:

- the type and method of dredging proposed;

- the dredge equipment, including any marine flora and fauna protection measures proposed;
- the expected length and timing of the dredging campaign; and
- the amount of dredged material to be relocated.
- A plan of the land to be reclaimed drawn to a scale of not less than 1:1500, showing the following information:
  - the boundary of the land to be reclaimed defined by metes and bounds, tied to real property boundaries;
  - the location of the line of mean high water spring tide and highest astronomical tide in relation to the area of reclamation;
  - existing levels of the land and proposed final levels of reclamation in relation to LAT or Australian Height Datum;
  - location of marine plants and existing and proposed bunds; and
  - typical cross section across the land to be reclaimed showing the proposed finished levels and method of protecting the seaward boundary of the reclamation from erosion.

The method, location and issues associated with the disposal of dredged material should be described including:

- the characteristics of the dredged material disposal area(s) proposed;
- quality of dredged material;
- future use of the dredged material disposal area(s), including the proposed rehabilitation measures or strategy; and
- management of the dredged material disposal area(s) during disposal operations.
- for land based dredge spoil disposal, a detailed assessment, with appropriate staging plans, to demonstrate that the quality of the water discharged from dredge spoil disposal areas will meet standards necessary to achieve water quality objectives and therefore maintain receiving water environmental values throughout the period of dredge spoil disposal on land. Consideration should be given to:
  - quantities of tailwater likely to be generated from dredging activities;
  - the settling rate of fine sediments from all dredge material types;
  - the residence time within settling ponds prior to discharge (related to dredge pumping rate, ratio of solids to water in spoil, settling rates, available capacity of the disposal and settling areas, potential bulking factor, intensity and duration of rainfall events with consideration given to the worst case scenario for these factors);
  - source of material for bunds and bund wall stability;
  - measures to limit channelling and sediment resuspension in settling ponds;
  - measures to limit erosion and sediment resuspension in discharge channels;
  - contingency measures in the event that discharge limits are exceeded.

Note: Dredging with disposal of spoil on land (above MHWS) requires an allocation of quarry material or dredge management plan, under the provisions of the Coastal Protection and Management Act 1995, prior to application for tidal works approval under the Integrated Planning Act 1997. Detailed information on dredge management could be supplied subsequent to the EIS but only if all material is to be disposed of on land.

### 3.4 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;
- chemicals to be used;
- the progressive increase and final capacity of stockpiling, inloading and outloading;

- increase in shipping frequency and intensity;
- increases in tug operation;
- maintenance dredging and dredge material disposal including frequency, estimated volumes and locations of dredged material disposal area(s);
- hours of operation; and
- estimated number of people to be employed following expansion.

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.

### **3.5 Product handling**

The proposed methods and facilities to be used for coal storage and for transferring product from rail unloading to ship should be described and shown on plans at an appropriate scale. Include discussion of any environmental design features of these facilities including bunding of storage facilities, methods of dust suppression and collection and recycling of spillage.

### **3.6 Infrastructure Requirements**

Arrangements for the transport and temporary storage areas of plant, equipment, products, wastes and personnel during both the construction and operational phases of the project should be described. The description should address the use of existing infrastructure facilities and all requirements for the construction, upgrading or relocation of any transport, energy or services related infrastructure.

#### **3.6.1 Railway Operations**

The location of the rail facilities of the train operations associated with delivering coal and other bulk materials to the Wiggins Island rail loop should be described including:

- a general description of the rail facilities and nature of the train operations at the railway loop and in the railway connections to the North Coast and Moura lines;
- the progressive increase in the capacity of the rail loop to meet progressive increases and final capacity of inloading to the terminal;
- increases in the level of rail traffic on the North Coast and Moura railway lines;
- requirements for rolling stock maintenance and train provisioning in the Wiggins Island area;
- hours of operation;
- estimated number of extra people to be employed in railway operations and maintenance as a result of the development; and
- any other issues relevant to the provision of railway facilities for the Wiggins Island Coal Terminal development.

Concept and layout plans should be provided showing details of the proposed rail facilities and track alignments, and of the rolling stock maintenance and train provisioning facilities. The nature, sources and quantities of materials to be transported should be described.

#### **3.6.2 Shipping**

In relation to shipping of coal products, details of the increased number of ships utilising CQPA port facilities and their size should be documented. In particular, changes to the following items are to be described:

- anchorage arrangements;
- access and departure to and from the port;
- any other navigational arrangements; and
- any additional servicing of vessels.

### **3.6.3 Road**

Details should be provided on road transportation requirements on public roads for both construction and operational phases including:

- the volume, composition (types and quantities), origin and destination of goods to be moved including construction materials, plant, raw materials, wastes, hazardous materials, finished products;
- the volume of traffic generated by workforce personnel, visitors and service vehicles;
- details of vehicle traffic and transport of heavy and oversize indivisible loads (including types and composition); and
- the proposed transport routes.

### **3.6.4 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.

### **3.6.5 Water supply and storage**

The EIS should provide information on the proposed water usage by the project, including the quality and quantity of all water supplied to the site during the construction and operational phases. In particular, the proposed sources of water supply should be described (eg bores, any surface storages) and any approvals required under the *Water Act 2000*.

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.

### **3.6.6 Stormwater drainage**

A description should be provided of the proposed stormwater drainage system, notably from the stockyard area and the proposed disposal arrangements.

If stormwater drainage systems will discharge or allow discharge across State coastal land within the Curtis Coast Coastal Management District, or propose to discharge to tidal waters, a development permit to undertake operational work within the coastal management district and/or tidal work will be required. If a development permit is required information will need to be provided in accordance with EPA's guidelines 'Operational work on State coastal land' and 'Constructing tidal works'. It will be necessary to demonstrate that any changes to the natural wetland hydrology will not result in significant adverse impacts on the adjacent coastal wetlands.

### **3.6.7 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 4.7 (Waste). For industrial effluent, this should include detail of the physical and chemical characteristics of the effluent(s). Refer to the EPA website for guidelines on the detailed information requirements for the licensing of sewage treatment plants.

### **3.6.8 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.

### **3.6.9 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:

- site offices and construction camps;
- new permanent or temporary fuel storage areas (eg diesel, petrol, oil, etc);
- new permanent or temporary chemical storage areas;
- equipment hardstand and maintenance areas; and
- technical workshops or laboratories.

The method of operation of these areas should also be addressed.

### **3.7 Rehabilitation and Decommissioning**

The means of decommissioning the site, both from the construction and operational phases, in terms of the removal of plant, equipment, structures and buildings should be described, and the methods proposed for the rehabilitation of the affected areas should be given. Final rehabilitation of the site should be discussed in terms of ongoing land use suitability, management of any residual contaminated land and any other land management issues.

### **3.8 Waste management**

#### **3.8.1 Character and quantities of waste materials**

Provide an inventory of all wastes to be generated by the proposal during the construction, operational and decommissioning phases of the project.

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 (eg 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.

##### **3.8.1.1 Air emissions**

Describe the current (pre-existing) dust levels at Wiggins Island and at other areas likely to be affected by the project. Where possible, this description should be based on field measurements. Projected changes in dust levels during construction and operation should be fully described.

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

disturbed by wind action on stockpiles and conveyors or by transportation equipment (e.g. trucks, either by entrainment from the load or by passage on unsealed roads).

The methods to be employed in the mitigation of impacts from air emissions should be described in section 4.6.

### **3.8.1.2 Solid waste disposal**

The proposed location, site suitability, dimensions and volume of any landfill, including its method of construction, should be shown.

### **3.8.1.3 Liquid waste**

A description should be presented of the origin, quality and quantity of wastewater and any immiscible liquid waste originating from the project. A water balance for the proposal 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;
- drainage (i.e. run-off plus any seepage or leakage);
- seepage from other waste storages;
- water usage for:
  - dust suppression, and
  - domestic purposes; and
- evaporation.

## **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. 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. and
- to examine viable alternative strategies for managing impacts. These alternatives should be presented and compared in view of the stated objectives and standards to be achieved. Available techniques, including best practice, to control and manage impacts to the nominated objectives should be discussed. This section should detail the environmental protection measures incorporated in the planning, construction, operations, decommissioning, rehabilitation and associated works for the proposal. Measures should minimise environmental harm and maximise socio-economic and environmental benefits of the proposal. Preferred measures should be identified and described in more detail than other alternatives.

Environmental protection objectives may be derived from legislative and planning requirements which apply to the 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 relevant 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). 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 Proponents develop consultative arrangements with other industries in the proposal's area to undertake cooperative monitoring and/or management of environmental parameters. Such arrangements should be described in the EIS.

- Environmental protection objectives: describe qualitatively and quantitatively the proposed objectives for enhancing or protecting each environmental value. Include proposed indicators to be monitored to demonstrate the extent of achievement of the objective as well as the numerical standard that defines the achievement of the objective (this standard must be auditable). The measurable indicators and standards can be determined from legislation, support policies and government policies as well as the expected performance of control strategies. Objectives for progressive and final rehabilitation and management of contaminated land should be included.
- Control strategies to achieve the objectives: describe the control principals, proposed actions and technologies to be implemented that are likely to achieve the environmental protection objectives; include designs, relevant performance specifications of plant. Details are required to show that the expected performance is achievable and realistic.
- Monitoring programs: describe the monitoring parameters, monitoring points, frequency, data interpretation and reporting proposals.
- Auditing programs: describe how progress towards achievement of the objectives will be measured, reported and whether external auditors will be employed. Include scope, methods and frequency of auditing proposed.
- Management strategies: describe the strategies to be used to ensure the environmental protection objectives are achieved and control strategies implemented eg. 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 (eg intensity of field work sampling), how the reliability of the information was tested, and what uncertainties (if any) are in the information.

It is recommended that the final ToR and the EIS follow the heading structure shown below. The mitigation measures, monitoring programs, etc., identified in this section of the EIS should be used to develop the environmental monitoring program for the project (see section 5).

## **4.1 Land**

### **4.1.1 Description of environmental values**

This section describes the existing environment values of the land area that may be affected by the proposal including areas disturbed by infrastructure associated with the project. It should also define and describe the objectives and practical measures for protecting or enhancing land-based environmental values, describe how nominated quantitative standards and indicators may be achieved, and how the achievement of the objectives will be monitored, audited and managed.

#### **4.1.1.1 Topography/geomorphology**

Maps should be provided locating the project in both regional and local contexts. The topography of the project site should be detailed with contours at suitable increments and the locations of the Highest Astronomical Tide (HAT), Lowest Astronomical Tide (LAT) and Mean High Water Springs clearly shown with respect to Australian Height Datum (AHD). Significant features of the locality should be included on the maps. Such features would include any locations subsequently referred to in the EIS (e.g. the nearest noise sensitive locations) that are not included on other maps in Section 4.1. Commentary on the maps should be provided highlighting the significant topographical features.

#### **4.1.1.2 Geology**

The EIS should provide a description, map and a series of cross-sections of the geology of the proposal 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.

#### **4.1.1.3 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.

An assessment of acid sulphate soils in accordance with the Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils (ASS) in Queensland 1998 (Revision 4.0) should be carried out for all areas subject to excavation or filling below the level of 5 metres AHD where the Department of Natural Resources, Mines and Water (NRM&W) cannot provide adequate mapping at a sampling frequency to be determined in consultation with NRM&W and EPA, and for wetland areas where the natural hydrology (surface or groundwater) may be affected by the proposal such that oxidation of potential ASS may occur. An Acid Sulfate Soil Management Plan must be prepared in consultation with officers of NRM&W and EPA. The State Planning Policy SPP 2/02, Planning and Managing Development Involving Acid Sulfate Soils, should also be addressed.

The acid sulfate soil investigation and management plan should place particular emphasis on filling activities as outlined in the SPP2/02 Guideline. Medium intensity acid sulfate soil mapping is available from NRM&W for much of the proposed development area.

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.

#### **4.1.1.4 Land use**

The EIS should provide a description of current land tenures and land uses in the proposal area, with particular mention of land with special purposes.

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 planning scheme should be included.

Port uses need to be placed into context of Gladstone Port Authority Land Use Plan (GPA 1995), or any subsequent revision of this version.

Recreational and commercial fishing activities undertaken in proximity to the site and offshore area should be described.

#### **4.1.1.5 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 land should be shown on maps of a suitable scale. Indicate locations of gas and water pipelines, power lines and any other easements. Describe the environmental values affected by this infrastructure.

#### **4.1.1.6 Sensitive environmental areas**

The EIS should identify whether areas that are environmentally sensitive could be affected, directly and indirectly, by the proposal. Areas sensitive to environmental harm caused by the proposal can be determined through site-specific environmental impact assessment.

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 4.7 for further guidance on sensitive areas).

To obtain copies of plans of declared fish habitat areas contact Queensland Fisheries Service of the DPI at the call center 13 25 23.

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 that should be described.

The proximity of the proposal elements to any of these areas should be identified. Attachment 3 is a listing of some sensitive areas that may be encountered.

#### **4.1.1.7 Visual amenity and landscape character**

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;
- focal points, landmarks (built form or topography), gateways associated with project site and immediate surrounding areas, waterways, and other features contributing to the visual quality of the area and the project site;
- character of the local and surrounding areas including character of built form (scale, form, materials and colours) and vegetation (natural and cultural vegetation) directional signage and land use;
- identification of the areas of the proposal that have the capacity to absorb land use changes without detriment to the existing visual quality and landscape character; and
- the value of existing vegetation as a visual screen.

#### **4.1.1.8 Native Title**

The location and owner/custodians of native title in the area and details of native title claims should be provided. Discuss the tenure history of the site, whether there have been any native title extinguishing events and if native title may continue to exist.

#### **4.1.2 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.

##### **4.1.2.1 Land use suitability**

The potential for the construction and operation of the proposal 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.

The following issues should be addressed:

- compatibility of the proposal with surrounding land uses;
- possible impacts on surrounding land uses and human activities;
- relationship to existing planning objectives and controls for study area including CQPA land use strategy and the Gladstone City and Calliope Shire Council planning scheme as appropriate; and
- consistency of the project with GBRMPA zoning of any affected areas.

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.

#### **4.1.2.2 Land disturbance**

A strategy should be developed with a view to minimising the amount of land disturbed at any one time. The strategic approach to progressive and final decommissioning should be described.

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

Proposals should be provided to divert creeks during construction or operations, and, if applicable, for the reinstatement of the creeks. Where dams and roads and other infrastructure are to be constructed, proposals for the management of these structures after the completion of the proposal should be given. A contour map of the area should be provided (if relevant). Also, the final drainage and seepage control systems and any long-term monitoring plans should be described.

Proposed decommissioning should be described in detail, including consolidation, revegetation, fencing, and monitoring.

A description of topsoil management should consider transport, storage and replacement of topsoil to disturbed areas. The minimisation of topsoil storage times (to reduce fertility degradation) should also be addressed. Erosion and sediment control should be described (also see section 4.1.2.4).

Information should be provided regarding decommissioning of any plant site, removal of processing plant, rehabilitation of concrete footings and foundations, hard stand areas, storage tanks and wharfage (including any potential for reuse of these facilities).

If geological conditions are conducive, the Proponents 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.

#### **4.1.2.3 Land contamination**

The EIS should describe the possible contamination of land from aspects of the proposals including coal spillage, waste, 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" (Refer to References section – Queensland EPA, 1998) 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/environment/business/contaminated](http://www.epa.qld.gov.au/environment/business/contaminated). Proponents should refer study proposals to the EPA for review prior to commencement (Consult with the Contaminated Land Section in the Queensland EPA).

#### **4.1.2.4 Soil erosion**

For all permanent and temporary landforms, possible erosion rates and management techniques should be described. For each 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 effects, especially those resulting from the removal of vegetation, both on-site and off-site for all disturbed areas such as:

- the coal terminal, the stockyard and associated buildings;
- access roads and other rail/transport corridors;
- the dredge material disposal area and any waste dumps; and
- dams, banks and creek crossings.

Methods proposed to prevent or control erosion should be specified and should be developed with regard to (a) preventing soil loss in order to maintain land capability/suitability, and (b) preventing significant degradation of local waterways by suspended solids.

Management of acid sulfate soils should be based on assessment in accordance with the *Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils (ASS) in Queensland 1998 (Revision 4.0)* and management and monitoring plans prepared in consultation with officers of NRM&W.

Identify and assess the impact of exposure of sodic soils and the subsequent potential for gully erosion.

Identify remediation measures to limit the impact of gully erosion on surrounding landscapes.

#### **4.1.2.5 Visual Amenity and Landscape Character**

This section should analyse and discuss the visual impact of the proposal on particular panoramas and outlooks. This is to be placed into context of the existing views of the terminal facilities. It should be written in terms of the extent and significance of the changed skyline as viewed from places of residence, work, and recreation, from road, cycle and walkways, from the air and other known vantage points day and night, during all stages of the project as it relates to the surrounding landscape.

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

Detail should be provided of all management options to be implemented and how these will mitigate or avoid the identified impacts.

#### **4.1.2.6 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 including adverse light intrusion onto the State-controlled road;
- 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 Transport**

#### **4.2.1 Description of Existing Values**

##### **4.2.1.1 Shipping**

Describe current vessels utilising the port, their size, shipping movements, anchorages, access to/from the port and navigational arrangements.

##### **4.2.1.2 Road and Rail**

Describe the current road and rail networks and intersections of the surrounding region and specify current traffic volumes.

#### **4.2.2 Potential Impacts and Mitigation Measures**

##### **4.2.2.1 Shipping**

In regard to increased shipping volumes, the following should be addressed:

- potential for introduction of exotic organisms from increased shipping rates;
- ballast water management arrangements - including AQIS mandatory arrangements and agency contingency planning;
- management of ship waste, in particular quarantine waste, garbage, oil and sewage; and
- impact of extra tug voyages.

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

##### **4.2.2.2 Road and Rail**

The EIS should provide sufficient information and analysis 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 impact on stakeholders should be detailed and how any impacts will be managed.

The alternative options for road over rail should be investigated in sufficient detail to clearly identify whether a new bridge over the Calliope River anabranch will be required. A range of alternatives with respect to road infrastructure to serve the port construction and operation as well as the required changes to road infrastructure to facilitate rail lines and rail operations at the port.

The EIS needs to identify impacts on the State-controlled and local government road networks and to indicate clearly the corrective measures necessary to address adverse road impacts, including the need for increased road maintenance and upgrading, and the costs involved. This will require the Proponents to compare the traffic situation and road conditions with, and without, the project.

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, road safety and rail/road intersections.

Details should be provided on the potential impacts during construction of alterations to the existing road network and possible interruptions to traffic as a result of these alterations.

Details should be provided on the impacts on environmental values of any new roads or road realignments.

Information about road impacts and proposed measures for dealing with those impacts should be prepared by the Proponents in close consultation with the local Regional and District Office of the Department of Main Roads (DMR) and Gladstone City and Calliope Shire Councils.

The Proponents are to consider DMR's current plans for future upgrades for the road network which may impact the study area. The EIS is to consider how local access is to be provided to the relocated Mt Miller yard from the DMR current and future road network.

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

### **4.3 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 (eg temperature inversions) that may affect air quality within the region of the proposal. Extremes of climate (droughts, floods, cyclones, etc) should also be discussed with particular reference to water management at the proposal site. The vulnerability of the area to natural or induced hazards, such as floods and bushfires, should also be addressed. The relative frequency, magnitude and risk of these events should be considered.

The potential impacts due to climatic factors should be addressed in the relevant sections of the EIS. The project should also be evaluated for flooding impacts against SPP 1/03 - Mitigating the Impacts of Flood, Bushfire and Landslide and section 2.2.4 Coastal Hazards in the State Coastal Management Plan. The impacts of rainfall on soil erosion should be addressed in Section 4.1. The impacts of storm events, including storm tides, on the capacity of waste containment systems (e.g. site bunding/ stormwater management) should be addressed in Section 4.4 with regard to contamination of waterways and in Section 4.7 with regard to the design of waste containment systems. The impacts of winds, rain, and humidity and temperature inversions on air quality should be addressed in Section 4.6.

### **4.4 Water resources**

#### **4.4.1 Description of Environmental Values**

A description should be given of the surface watercourses, lakes, springs and bioregional, regional and other significant wetlands and their quality and quantity in the area potentially affected by the proposal, with an outline of the significance of these waters to the estuarine system in which they occur. Details provided should include a description of existing surface drainage patterns and flows (fresh and sea water) in streams and wetlands. Also, details should be provided on the likelihood and history of flooding including extent, levels and frequency. Present and potential water uses downstream of the areas affected by the proposal should be described.

An assessment is required of existing water quality in surface waters and wetlands likely to be affected by the proposal including seasonal variations. Existing monitoring data collected within the area should be presented.

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

- values identified in the *Environmental Protection (Water) Policy 1997*;

- sustainability, including both quality and quantity;
- physical integrity, fluvial processes and morphology of watercourses, including riparian zone;
- vegetation and form; and
- any water resource plans or land and water management plans relevant to the affected water body.

The location and quality of any groundwater aquifers potentially impacted should be discussed. The extent of the area within which groundwater resources are likely should be defined. The assessment should include the sites for the existing and proposed sources of water for the expanded project during both construction and operational phases.

The review should include a survey of the existing groundwater supply facilities to the extent of any environmental harm likely to be associated with increased demands from this resource. The information to be gathered for analysis should include:

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

This section should include reference to:

- nature of the aquifer/s;
- geology/stratigraphy - such as alluvium, volcanic, metamorphic;
- aquifer type - such as confined, unconfined; and depth to and thickness of the aquifers;
- hydrology of the aquifer/s;
- depth to water level and seasonal changes in levels;
- ground water flow directions (defined from water level contours);
- interaction with surface water;
- interaction with sea/salt water;
- possible sources of recharge; and
- vulnerability to pollution.

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

Details should be provided on any requirements under the Water Act 2000 for a Riverine Protection Permit. A Riverine Protection Permit may be required if it is proposed to destroy vegetation, excavate or place fill in a watercourse, lake or spring.

#### **4.4.2 Potential Impacts and Mitigation Measures**

The EIS should describe the possible environmental impacts of the proposal to environmental values for water as expressed in the *Environmental Protection (Water) Policy 1997* including:

- identify bioregional; regional and other significant wetlands as described in the dictionary of the Regional Vegetation Management Codes;
- identify lakes as described in the dictionary of the Regional Vegetation Management Codes;
- identify springs as described in the dictionary of the Regional Vegetation Management Codes; and
- maintenance of ecological processes associated with the identified Wetlands, Lakes and Springs.

##### **4.4.2.1 Drainage and Seepage from the Dredge Material Disposal Area**

If land disposal of the dredged material is proposed, the potential impacts of the saline water drainage or seepage from the disposal area on the wetlands should be studied.

##### **4.4.2.2 Water Management Controls and Monitoring**

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 surface and groundwater should be discussed. Monitoring programs should be described

which will assess the effectiveness of management strategies for protecting water quality during the construction, operation and decommissioning of the operation. Quality characteristics discussed should be those appropriate to the downstream and upstream water uses and environmental values that may be affected. Chemical and physical properties of any wastewater (including concentrations of constituents) at the point of entering natural surface waters should be discussed along with adverse effects to flora and fauna.

#### **4.4.2.3 Water Supply Usage, Storage and Discharge**

In relation to water supply and usage, and wastewater disposal (including from the on-shore spoil disposal area), the EIS should discuss anticipated flows of water to and from the proposal area.

The EIS should investigate;

- the effects of predictable climatic extremes (droughts, floods) upon the structural integrity of the containing walls; and the quality of water contained;
- flows and quality of water discharged; and
- the need or otherwise for licensing of any storage under the *Water Act 2000* should be discussed. Options for mitigation and the effectiveness of mitigation measures should be discussed with particular reference to sediment, acidity, salinity and other emissions of a hazardous or toxic nature to human health, flora or fauna.

#### **4.4.2.4 Ground Water**

The EIS should include an assessment of the potential environmental harm caused by the proposal to local groundwater resources, including supply sources. The impact assessment should;

- define the extent of the area within which groundwater resources are likely to be affected by any increased water demands;
- address the significance of the proposal to groundwater depletion or recharge; and
- propose management options available to monitor and mitigate these effects.

An assessment should be undertaken of the impact of the proposal on the local groundwater regime. An assessment of the potential to contaminate groundwater resources and measures to prevent, mitigate and remediate such contamination should be discussed.

### **4.5 Coastal environment**

#### **4.5.1 Description of environmental values**

This section describes the existing coastal environment, which may be affected by the proposal in the context of coastal values identified in State of the Coastal Zone Reports and environmental values as defined by the *Environmental Protection Act 1994* and environmental protection policies. The Environmental Protection (Water) Policy has a set of default environmental values for waterways that include aquatic ecosystem protection.

This section should also identify actions associated with the project that are assessable development within the coastal zone and will require assessment under the provisions of the *Coastal Protection and Management Act 1995*.

##### **4.5.1.1 Marine water and sediments**

Provide baseline information on water quality in the sea and in estuaries below the limit of tidal influence, including heavy metals, acidity, turbidity and oil in water. Discuss the interaction of freshwater flows with marine waters its significance in relation to marine flora and fauna adjacent to the proposal area.

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

- pH, suspended solids, nitrogen and phosphorous;
- values identified in the *Environmental Protection (Water) Policy 1997*; and

- the State Coastal Management Plan and the Curtis Coast Regional Coastal Management Plan.

An assessment of physical and chemical characteristics of sediments should be provided in:

- the areas to be dredged within the full extent of development; and
- if offshore disposal is proposed, the disposal location for dredged material. Information provided should be consistent with EPA requirements (as outlined on the EPA website) for the disposal of dredge spoil.

Any contaminants and implications for management of the dredged material should be described. The description of sediment characteristics should be based on the results of sediment sampling and analysis conducted as per a Sampling and Analysis Plan (SAP) approved under the *Environment Protection (Sea Dumping) Act 1981*. The chemical and physical characteristics of the material to be dredged, the spoil ground and control sites should be summarised. If the material is to be disposed in an offshore area, a statement as to the suitability of the sediment for unconfined ocean disposal should be made using the framework within the National Ocean Disposal Guidelines for Dredged Material (DEH 2002).

Provide testing of marine sediments near the offshore facilities for coal or other operational contaminants from past operation and examine any environmental impacts that have occurred.

#### **4.5.1.2 Coastal processes**

Describe the physical processes of the adjacent marine environment, including but not limited to currents, tides, wave action and storm surges. Describe the environmental values of the coastal resources of the affected area in terms of the physical integrity and morphology of landforms created or modified by coastal processes. Assessment should be based on hydrodynamic investigations and include a description of:

- the physical properties of the sediments likely to be dredged;
- sediment dynamics and pathways around the mouth of the Calliope River;
- existing siltation that has occurred within the existing RG Tanna berths and implications for the establishment of new berths at Wiggins Island;
- sediment dynamics at the offshore disposal ground based (if proposed) on the influence of tides, waves, currents and turbidity ; and
- assessment of processes that have occurred at the original spoil ground.

The relationship of these processes to marine flora and fauna, biological processes, recreational and commercial fisheries productivity within the study area should also be discussed. The relationship between currents, wave actions and extreme events (such as cyclones) and how they influence coastal processes should also be discussed.

#### **4.5.2 Potential impacts and mitigation measures**

##### **4.5.2.1 Marine water and sediments**

This section defines and describes the water quality objectives and practical measures for protecting or enhancing coastal environmental values, to describe how nominated quantitative standards and indicators may be achieved, and how the achievement of the water quality objectives will be monitored, audited and managed.

Describe the water quality objectives used (including how they were developed), and how predicted activities will meet these objectives (refer to the EPA's Queensland Water Quality guidelines and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality, ANZECC 2000).

The potential environmental harm caused by the proposal on coastal resources and processes should be described in the context of controlling such effects. The State Planning Policy – Planning and Managing Development involving Acid Sulfate Soils 2002 should be addressed as should the State Coastal Management Plan 2001 and DPI Guidelines for Marine Areas.

The role of buffer zones in sustaining fisheries resources through maintaining connectivity between coastal and riparian vegetation and estuarine and freshwater reaches of catchments should be discussed.

Impacts on water quality due to increased water turbidity and nutrients being brought into the water column from the sediment due to dredging and sea disposal of material, if required, should be addressed and strategies developed to address potential impacts.

In addition to the above considerations, the following guidelines and standards should be considered:

- the *Environmental Protection (Water) Policy 1997*, and any recent or proposed amendments that incorporate recommendations of the National Environment Protection Measures;
- ANZECC Australian Water Quality Guidelines for Fresh and Marine Waters (2000);
- amelioration or mitigation measures to address each activity identified to impact on local and regional water quality; and
- any monitoring of water quality recommended during past dredging activities at the port to ensure environmental values are protected.

The potential impacts of sediment quality on the marine environment should be discussed. This assessment will be guided by the suitability of the dredged sediment for ocean disposal (if proposed) as determined by the framework outlined in the National Ocean Disposal Guidelines for Dredged Material (DEH 2002).

#### **4.5.2.2 Coastal processes**

The impacts of development of the new berth area (to the full extent of development) on hydrodynamic processes within the study area should be described and quantified. In particular, impacts on siltation and sediment transport and any implications for maintenance dredge requirements, marine flora and fauna and/or biological processes should be discussed, including generation and migration of turbid plumes.

Describe the potential impacts associated with and the frequency of maintenance dredging requirements of the berth and apron area, and the long-term options for disposal of dredge spoil. Consideration needs to be given to the intended size of vessels proposed to access the facility and associated dredging of access channels. Provide details of the capacity and lifespan of existing (including existing approved) reclamation areas to deal with capital and future maintenance dredging to the full extent of development proposed.

Information on currents in the region should be used to predict impacts from dredging and disposal and the subsequent impacts on marine environmental values and coastal processes should be assessed.

## **4.6 Air**

### **4.6.1 Description of environmental values**

A general description of the local air quality should be provided. This should include the existing airshed and local influences on air quality such as emissions from existing industry or climatic factors. A review of the existing levels of coal dust from the current operations and any history of coal dust complaints should be provided. Management strategies currently employed for minimisation of dust levels, and their effectiveness, should be included.

There should be a discussion of the results of air quality monitoring to date including particular references to:

- total suspended particulates;
- coal content;
- coal dust characteristics including respirable fraction where available;
- nuisance levels;
- odour;

- visual effects;
- wind speed and direction; and
- existing air environment of nearby areas.

#### **4.6.2 Potential impacts and mitigation measures**

Proposed dust control methods are to be benchmarked against best practice environmental management. Any deviation from best practice environmental management would need to be justified.

The objectives for air emissions should be stated in respect of relevant standards (ambient and ground level concentrations), relevant emission guidelines, any relevant legislation and the emissions modelled using a recognised atmospheric dispersion model. The potential for interaction between the emissions from the existing and expanded facility and the likely environmental harm from any such interaction should also be detailed.

The proposed levels of emissions should be compared with the current draft National Environmental Protection Measures (1997) for ambient air quality, the National Health Medical Research Council (NHMRC) national guidelines for control of emissions from stationary sources 1985, and the *Environmental Protection (Air) Policy 1997*.

These predictions should be made for both normal and expected maximum emission conditions and extreme case meteorological conditions should be identified and modelled where necessary. Ground level predictions should be made at the nearest residential development. The techniques used to obtain the predictions should be referenced, and key assumptions and data sets explained. The assessment of the proposal's impact on nearby land uses should then be assessed and mitigation and management measures described that will mitigate emissions, notably coal dust management.

Air quality predictions should be compared to the relevant goals in the National Environmental Protection Council (Ambient Air Quality) Measure and the *Environmental Protection (Air) Policy 1997* goals.

### **4.7 Waste**

#### **4.7.1 Description of environmental values**

This section will detail current waste management practices of the port operations addressing:

- ship waste;
- hazardous waste;
- sewage/septic; and
- waste management services (i.e. recycling, resource recovery and general waste).

#### **4.7.2 Potential impacts and mitigation measures**

Detail the methods proposed to manage wastes generated by construction and operational activities, including:

- amount and characteristics of waste (other than shipping waste and dredged material) likely to be generated;
- solid and liquid waste disposal requirements, proposed methods and locations for recycling or disposal; and
- assessment of the potential impacts associated with waste handling (eg spills).

The following guidelines and standards should be considered:

- the *Environmental Protection (Waste Management) Policy 2000*;
- National Ocean Disposal Guidelines for Dredged Material (DEH 2002); and
- EPA Waste Tracking Guideline (2000).

## **4.8 Noise and vibration**

### **4.8.1 Description of environmental values**

This section should detail the existing noise and vibration environment as it relates to the nearby existing coal terminal operations.

Information on current noise levels at the site and any sensitive noise receptors close to the site should be provided.

### **4.8.2 Potential impacts and mitigation measures**

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 and compliance with the *Environmental Protection (Noise) Policy 1997*. This should also include environmental harm on terrestrial and marine animals and avifauna, particularly migratory species. Proposals for any buffer areas on land to minimise or eliminate these effects should be provided. Timing schedules during the construction and operational phases of the proposal should be discussed with respect to minimising environmental impacts from noise. The potential impact of noise from dredging and offshore berth construction on marine fauna should be assessed based on a literature review.

Vibration from the proposed method of piling activities during construction should be discussed.

## **4.9 Nature conservation**

### **4.9.1 Description of environmental values**

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

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 (e.g. see the draft Regional Nature Conservation Strategy for SE Qld 2001-2006).

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.

Reference should be made to both State and Commonwealth endangered species legislation and the proximity of the area to the Great Barrier Reef World Heritage Property.

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. Surveys of flora and fauna need to be conducted throughout the year to reflect seasonal variation in communities and to identify migratory species.

The EPA's guidelines for "Fauna and Flora Assessment in EIA" provide further details. The EPA should be consulted on the scope of any biological studies before they are undertaken.

#### **4.9.1.1 Terrestrial flora**

A vegetation map at a suitable scale should be provided, with descriptions of the units mapped. Sensitive or important vegetation types should be highlighted, including any marine littoral and sub-tidal zone and 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 include 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 local and regional weed species, particularly noxious and declared weeds under the *Land Protection (Pest and Stock Route Management) Act 2002* should also be discussed.

The terrestrial vegetation communities within the affected areas should be described at an appropriate scale (i.e. 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 Conservation Status of Queensland's Bioregional Ecosystems*. (Sattler P.S. & Williams R.D. 1997 2<sup>nd</sup> edition) and the current version of the EPA's listing of the conservation status of regional ecosystems (Regional Ecosystem Description Database [REDD]);
- 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.

A list of species present at each site and their abundance should be recorded. Methodology used for flora surveys and species lists should be specified in the appendices to the report.

#### **4.9.1.2 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 which are poorly known but suspected of being rare or threatened. Reference to the conservation status of existing or likely species listed under State and Commonwealth legislation

(also including species listed under the bilateral agreement between Japan and Australia (JAMBA) and China and Australia (CAMBA) and the Convention on Migratory Species (Bonn Convention);

- 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.

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

#### **4.9.1.3 Aquatic biology**

If no biota surveys/studies have previously been conducted in and downstream of the project area, the aquatic flora and fauna occurring in the areas affected by the proposal should be described, noting the patterns and distribution in the waterways and/or associated lacustrine and marine environments. The description of the fauna and flora present or likely to be present in the area should include:

- fish species, mammals, reptiles, amphibians, crustaceans and aquatic invertebrates occurring in the waterways within the affected area, and/or those in any associated lacustrine and marine environment;
- any rare or threatened marine species, particularly the dugong and its habitat;
- aquatic plants;
- aquatic and benthic substrate; and
- habitat downstream of the project or potentially impacted due to currents in associated lacustrine and marine environments.

This section should also detail the existing marine flora and fauna and conservation values in the dredging area and potential area of impact within Port Curtis (including mapping) addressing at least the following:

- native and introduced marine flora and fauna;
- marine ecosystems;
- integrity of ecological processes;
- habitats of significance, rare or threatened species; and
- integrity of natural habitats.

Where possible, environmental thresholds for specific impacts on marine flora and fauna should also be defined having regard to existing environmental values. Flora and fauna species and marine habitats within the study area should be defined through searches of the appropriate State and Commonwealth databases, review of previous studies and review of aerial photography. Field studies should be undertaken where inadequate information is available to sufficiently describe the marine communities for the purposes of the impact assessment.

Specific issues to be highlighted include:

- presence of turtles and other marine mammals within the study area;
- sea floor habitat and benthic macroinvertebrate communities in the vicinity of the spoil ground; and
- seagrass beds and reefal communities and their sensitivity to disturbance or adverse water quality conditions.

A desktop review of information on the turtle communities of the study area should be undertaken with specific attention paid to any anecdotal or recorded information (including from Turtle Watch) on turtle populations frequenting the Wiggins Island area and any known nesting sites.

#### 4.9.2 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 as listed below. Terrestrial and aquatic (marine and freshwater) environments should also be covered. Also include human impacts and the control of any domestic animals introduced to the area.

Strategies for protecting the Great Barrier Reef Marine Park and World Heritage Property, and 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 benthic and intertidal communities, seagrass beds and mangroves.

Strategies for collecting and preserving any significant fossils should be described.

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.

Strategies to mitigate identified impacts from the project on flora and fauna in relation to dredging should be described. Specific attention should be paid to the potential for turtles to be injured or captured by the dredge and the potential impacts from reduction in water quality from dredging (and offshore disposal if proposed). Potential mitigation measures should be reviewed and their likely effectiveness presented.

The potential environmental harm on flora and fauna due to any alterations to the local surface and ground water environment should be discussed with specific reference to environmental impacts on riparian vegetation or other sensitive vegetation communities. 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 control strategies aimed at containing existing weed species and ensuring no new invasive weeds are introduced to the area 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 presumed extinct, endangered, vulnerable or rare;
- regional ecosystems listed as 'endangered' or 'of concern' under State legislation, and/or ecosystems listed as presumed extinct, endangered or vulnerable under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*;

- good representative examples of remnant regional ecosystems or regional ecosystems which are poorly represented in protected areas;
- 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 adjacent to nesting beaches, feeding, resting or calving areas of species of special interest; for example, marine turtles and cetaceans;
- 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; coral reefs; riparian vegetation; important buffer to a protected area or important habitat corridor between areas;
- protected areas which have been proclaimed under the *Nature Conservation Act 1992* and *Marine Parks Act 1982* 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*.

Dredging is being carried out within the Great Barrier Reef World Heritage Area (but outside the Marine Park). If disposal of dredged material at sea is the recommended option, this will also occur within the Great Barrier Reef World Heritage Area and potentially in the Great Barrier Reef Marine Park.

Potential impacts on World Heritage values and how these should be managed should be described. Assessment criteria outlined in the *Great Barrier Reef Marine Park Regulation 1983* should also be addressed including (as derived from the regulations):

- the objective of the zone in which the proposal is located;
- the need to protect the cultural and heritage values held in relation to the Marine Park by traditional owners and other people;
- the likely effect of granting permission on future options for the Marine Park;
- the conservation of the natural resources of the Marine Park;
- the nature and scale of the proposed use in relation to the existing use and amenity, and the future or desirable use and amenity of the relevant area and of nearby areas;
- the likely effects of the proposed use on adjoining and adjacent areas, and any possible effects of the proposed use on the environment and the adequacy of safeguards for the environment;
- the means of transport for entry into, use within or departure from the zone or designated area and the adequacy of provisions for aircraft or vessel mooring, landing, taking off, parking, loading and unloading;
- in relation to any structure, landing area, farming facility, vessel or work to which the proposed use relates;

- the health and safety aspects involved, including the adequacy of construction;
- the arrangements for removal upon the expiration of the permission of the structure, landing area, farming facility or vessel or any other thing that is to be built, assembled, constructed or fixed in position as a result of that use;
- the arrangements for making good any damage caused to the Marine Park by the proposed activity;
- any other requirements for ensuring the orderly and proper management of the Marine Park;
- any charge payable by the applicant in relation to a chargeable permission (whether or not in force) that is overdue for payment; and
- if the application relates to an undeveloped project—the cost of which will be large—the capacity of the applicant to satisfactorily develop the project.”

## **4.10 Cultural heritage**

### **4.10.1 Description of environmental values**

This section describes 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 is required that will describe Indigenous and non-Indigenous cultural heritage sites and places, and their values.

#### **4.10.1.1 Indigenous Cultural Heritage**

An Indigenous cultural heritage study is a specific process under the *Aboriginal Cultural Heritage Act 2003* (ACHA) the sole purpose of which is to have an area/object recognised and recorded on the Aboriginal Cultural Heritage Register. A requirement of the Act is that a Cultural Heritage Management Plan (CHMP) is an essential element of any EIS. All work must be conducted by a suitably qualified expert that is agreed upon between the parties and must include the following:

- notification, as required by the ACHA, to the Chief Executive of NRM&W, Gladstone City Council (only if owner or occupier of the subject land), and the registered Native Title Claimants, who are the Aboriginal Parties under the ACHA;
- endorsement of those Aboriginal Parties who respond to the notification;
- consultation with the Aboriginal Parties about their involvement in the development of the CHMP, and about outcomes;
- compliance with the Duty of Care Guidelines and the CHMP Guidelines as gazetted;
- seeking approval of the CHMP from the Chief Executive, NRM&W, through the EIS process;
- liaison with the Aboriginal Parties concerning:
  - places of significance to that community (including archaeological sites, natural sites, story sites etc;
  - appropriate community involvement in field surveys;
- any requirements by communities and /or informants relating to confidentiality of site data must be highlighted. Non-Indigenous communities may also have relevant information;
- a systematic survey of the proposed development area to locate and record Indigenous cultural heritage places;
- significant assessment of any cultural heritage sites/places located;
- the impact of the proposed development on cultural heritage values; and
- 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.

#### **4.10.1.2 Non-Indigenous Cultural Heritage**

The cultural heritage study must be conducted by a suitably qualified expert and will require:

- a permit to conduct the research and survey will be required under the provisions of the *Queensland Heritage Act 1992*. The EPA regional manager should be consulted for the provision of general advice including the appropriate conduct of cultural heritage surveys and the necessary permit;
- a systematic survey of the proposed development area to locate and record non-Indigenous cultural heritage places;
- significant assessment of any cultural heritage sites/places located;
- the impact of the proposed development on cultural heritage values; and
- 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;

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

The environmental harm to cultural heritage values in the vicinity of the project should be managed under a 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 the relevant Aboriginal party. The CHMP should address and include the following:

- a process for including Aboriginal/Torres Strait Islander people 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 between the relevant parties i.e. the project Proponents and the relevant Aboriginal party.

Any collection of artefact material as part of a mitigation strategy will need to be done by a suitably qualified expert as agreed between the relevant parties.

Some aspects of the above matters can be referred to the Land and Resources Tribunal. The Land and Resources Tribunal can provide mediation assistance in the course of developing a CHMP or make a recommendation of the suitability of the CHMP if the parties cannot reach agreement.

### **4.11 Social**

#### **4.11.1 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 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;
- recreational and commercial fishers;
- 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.; and
- public health and safety (refer to section 4.12).

Social, economic and cultural values are not as easily separated as physical and ecological values. Therefore it may be necessary for some material in this section to be cross-referenced with in section 4.10 Cultural Heritage and Section 4.13 Economy.

#### **4.11.2 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 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 State authorities, such as Queensland Health and Education Queensland, 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 social impact assessment of the project is to be carried out in consultation with the Department of Communities. The assessment of 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.

Attention should be paid to:

- impacts on demographic, social, cultural and economic profiles;
- impacts on local residents, current land uses and existing lifestyles and enterprises;
- impacts on housing availability within the Gladstone region during the construction phase;
- 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. The impacts of both construction and operational workforces and associated contractors on housing demand,

community services and community cohesion is to be addressed. The capability of the existing housing stock, including rental accommodation, to meet any additional demands created by the project is to be discussed. This should include discussion on the cumulative impacts from this and other major projects that are likely to be constructed concurrently with this project;

- comment should be made 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;
- impacts on local residents' values and aspirations; and
- 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 human and commercial services and housing;
  - the ability to participate in regional and local employment and training opportunities; and
  - the new project workforce and their families.

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 should be described for the construction and operations phases of the development.

The potential environmental harm on the amenity of adjacent areas used for commercial and recreational fishing, cropping, grazing, forestry, recreation, industry, education, aesthetics, or scientific or residential purposes should be discussed. The implications of the proposal for future developments in the local area including constraints on surrounding land uses should be described.

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.

## **4.12 Health and safety**

### **4.12.1 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.

### **4.12.2 Potential impacts and mitigation measures**

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

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

Map(s) should be provided showing the locations of sensitive receptors, such as, but not limited to, kindergartens, schools, hospitals, aged care facilities, residential areas, and centres of work (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.

## **4.13 Economy**

### **4.13.1 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:

- existing housing market, particularly rental accommodation which may be available for the project workforce;
- economic viability (including economic base and economic activity, future economic opportunities, current local and regional economic trends, in particular drought and rural downturn etc); 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.

### **4.13.2 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.

The effect on local and State labour markets should be discussed with regard to the source of the workforce. This information should be presented according to occupational groupings of the workforce. In relation to the source of the workforce, clarification is required as to whether the Proponents, or contractors, are likely to employ locally or through other means and whether there are initiatives for local employment opportunities. The impacts of both construction and operational workforces and associated contractors on housing demand should be addressed. This should include discussion on the cumulative impacts from this and other major projects that are likely to be constructed concurrently with this project. The capability of the existing housing stock, particularly rental accommodation, to meet any additional demands created by the project should be discussed.

Any new skills and training to be introduced in relation to the project should be identified. Adequate provision should be made for apprenticeship and worker training schemes. If possible, the occupational skill groups required and potential skill shortages anticipated should be indicated.

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.

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 (eg. job creation) and adverse (eg. 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 effects of the proposal (including proposals to mitigate any negative impacts) on the economic productivity of commercial fisheries;
- the potential economic impact of any major hazard identified in section 4.14;
- 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; and
- impacts on local property values.

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. The scope of any studies should be referred to the government for input before undertaking the studies.

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

#### **4.14 Hazard and risk**

##### **4.14.1 Description of environmental values**

This section describes the potential hazards and risk that may be associated with the proposal.

Detail risks and hazards associated with the current port operations. The degree and sensitivity of risk should be detailed, including:

- oil spills;
- pilotage;
- commercial and recreational vessel movement; and
- port and terminal operations.

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. Current emergency management and response strategies and plans will also be identified and described.

##### **4.14.2 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.

The EIS should provide an inventory for each class of substances listed in the Australian Dangerous Goods Codes to be held on-site. 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 Proponents 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 (eg 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, Queensland Fire and Rescue Authority, 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;
- potential wildlife hazards such as crocodiles, snakes, and disease vectors; and
- public liability of the State for private infrastructure and visitors on public land.

The plan should include the following components:

- operational hazard analysis;
- qualitative risk assessment;
- regular hazard audits;
- disaster management issues including:
  - emergency plans;
  - safety management strategies; and
  - on-site emergency response procedures;
- fire safety; 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 following guidelines and standards should be considered:

- The *Environmental Protection (Water) Policy 1997*, and any recent or proposed amendments that incorporate recommendations of the National Environment Protection Measures;
- National Environment Protection Measure (NEPM) – Contaminated Land (1999);
- Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland (Qld EPA, 1998);

- GBRMPA guidelines for projects in the Marine Park, if it is proposed to relocate the dredged material to an offshore area in the Marine Park; and
- AS/NZS Risk Management Standard 4360:1999.

#### **4.15 Cross-reference with the terms of reference**

This section provides a cross reference of the findings of the relevant sections of the EIS, where the potential impacts and mitigation measures associated with the project are described, with the corresponding sections of the TOR.

## **5 ENVIRONMENTAL MANAGEMENT PLAN**

The environmental management plan (EM Plan) should 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. The general contents of the EM Plan should comprise:

- the Proponents commitments to acceptable levels of environmental performance, including environmental objectives, 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.

Through the EM Plan, the EIS's commitments to environmental performance can be used as regulatory controls through conditions to comply with those commitments. Therefore, the EM Plan is a relevant document for project approvals, environmental authorities and permits, and may be referenced by them.

For further information, see the EPA guideline **“Preparing environmental management plans”**.

## **6 REFERENCES**

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

## **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 in the EIS. For this purpose the TOR should be line numbered.

### **A2. Development approvals**

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

### **A3. 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 proposal's compatibility with ESD policy and other relevant policy instruments such as the standard criteria as defined by the Environmental Protection Act (Qld) should be presented.

Consideration should focus on 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. These may include:

- geology;
- soil survey and land suitability studies;
- waterway hydrology;
- hydrodynamic studies;
- groundwater;
- flora and fauna studies;
- traffic study;
- road impact assessment (including preparation of a road use management plan);
- economic studies, Cost Benefit Analysis; and
- hazard and risk studies.

#### **A7. Research**

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