



**Northeast Business Park Project**

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

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

**The Coordinator-General**

December 2006

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## PREFACE

The Northeast Business Park (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 21 June 2006. Matters considered by the CG in making this declaration included information in an Initial Advice Statement prepared by the proponent, 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 proponent 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 State and Local Government representatives and authorities to participate in the process as Advisory Agencies. The Advisory Agencies for the EIS process are:

- Department of Communities
- Department of Education, Training and the Arts
- Department of Emergency Services
- Environmental Protection Agency
- Department of Health
- Department of Housing
- Department of Local Government, Planning, Sport and Recreation
- Department of Main Roads
- Department of Mines and Energy
- Department of Natural Resources and Water
- Department of Primary Industries and Fisheries
- Department of State Development, Trade and Employment
- Department of Transport
- Caboolture Shire Council
- Department of Environment and Heritage

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 have 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 12 July 2005, that the proposal did constitute a controlled action under Section 75 of the *EPBC Act*, with the controlling provisions being wetlands of international importance (section 16 and 17B), listed threatened species and communities (section 18 and 18A), and listed migratory species (sections 20 and 20A).

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 proponent 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 circulating in the district and the State. 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 proponent 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*, *Vegetation Management Act 1999* are likely to be required.

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

### **Project Proponent**

The Northeast Business Park Pty Ltd is a Queensland registered company with shares held by the shareholders of Port Binnli Pty Ltd, Laing O'Rourke Caboolture Developments Pty Ltd and a number of smaller shareholders.

### **Project Description**

The project site occupies 762 hectares on the southern banks of the Caboolture River to the east of the Bruce Highway. The proposal seeks to develop the site into a major integrated mixed-use residential, business park and marine precinct comprising:

- 160 hectare business and industry precinct;
- marina and associated commercial/retail/service facilities;
- more than 100 hectares of mixed density residential development;
- golf course; and
- 365 hectares of active and passive recreation areas

### **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 and to ensure that those 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 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.***

The EIS process followed will be as specified in the *State Development and Public Works Organisation Act 1971* and (if necessary) 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 enhance benefits;
- to engage 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*, *Coastal Protection and Management Act 1995*, *Integrated Planning Act 1997*, *Environmental Protection Act 1994*, *Fisheries Act 1994*, *Marine Parks Act 1982*, *Vegetation Management Act 1999*, *Nature Conservation Act 1992*, *Aboriginal and Cultural Heritage Act 2003* and other legislation and the Caboolture Shire Planning Scheme; and
- 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.

### ***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 marine terrestrial environment, including visual and aesthetic amenity and environmental rehabilitation;
- impacts on infrastructure in the area including the road network, waste water treatment facilities, telecommunications and electricity networks;
- impacts on the coastal environment including water quality and the impacts of dredging;
- impacts on areas of cultural heritage value and / or indigenous significance;
- air emissions and impacts;
- soil and geology issues.
- impacts of noise and vibration;
- impacts on surrounding land uses and land use planning;
- economic effects, including impacts and benefits on local and regional businesses;

- social issues and opportunities;
- 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 notified in *The Courier-Mail* and *The Australian* newspapers and the CG website inviting comment on the draft ToR for the project over the period from 16 October to Monday 13 November 2006.

Relevant comments received from Government Agencies, the public and interest groups have been incorporated into this document.

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

**It is strongly recommended that the environmental impact statement (EIS) follow 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 proponent is 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 proponent**

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 other 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 environmental impact statement (EIS) process**

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

#### **1.4.1 Methodology of the EIS**

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

- 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 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 EM Plan.**

**When considering whether a potential impact may or may not significant, the proponent should take account of both the intensity of the impact and the context in which it could 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 topics for inclusion in the project's draft environmental management plan (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 proponent is 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 proponent, 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 must provide opportunities for community involvement and education. It may include interviews with individuals, information sessions, key stakeholder briefings, 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 construction, ongoing operation and maintenance. Refer to the 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 *Integrated Planning Act 1997* and other relevant Queensland laws particularly the *Coastal Protection and Management Act 1995* and the *Fisheries Act 1994* (and *Fisheries Regulation 1995*). Any requirements of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* should also be included.

Local Government planning controls, local laws and policies applying to the development should be described including the *South East Queensland Regional Plan 2005-2026* (SEQ Regional Plan), 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. 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**

This project is a controlled action under the Commonwealth’s *Environment Protection and Biodiversity Conservation Act 1999* (EPBC). In this regard, the Commonwealth has accredited the State’s EIS process for the purposes of the Commonwealth’s assessment under Part 8 of the EPBC.

When a State EIS process has been accredited, it is 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 case the NES matters are as follows:

- sections 16 and 17B (Wetlands of international importance) and
- sections 18 and 18A (Listed threatened species and communities) and
- sections 20 and 20A (Listed migratory species) and

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.

For wetlands of international importance, the description of the environment should set out the relevant ecological characters of the Ramsar wetland that are potentially affected by the proposal within the wider context of the values of the wetland as a whole.

For listed threatened and migratory species, the description of the environment should include:

- the current species 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; and
- relevant controls or planning regimes already in place.

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

In this section, the impacts and potential impacts on the matters protected should be described, and the possible mitigation measures for each impact need to be 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.

The discussion of impacts to the relevant matters protected should 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. For example 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 matters of National Environmental Significance (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.

### Impact on the values of wetlands of international importance:

- areas of the wetland being destroyed or substantially modified;
- a substantial and measurable change in the hydrological regime of the wetland.
- substantial change to the volume, timing, duration and frequency of ground and surface water;
- flows to and within the wetland;
- the habitat or lifecycle of native species, including invertebrate fauna and fish species, dependant upon the wetland being seriously affected;
- a substantial and measurable change in the water quality of the wetland – for example, a substantial change in the level of salinity, pollutants, or nutrients in the wetland, or water temperature which may adversely impact on biodiversity, ecological integrity, social amenity or human health; or
- an invasive species that is harmful to the ecological character of the wetland being established (or an existing invasive species being spread) in the wetland.

### 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; or
- consistency with recovery plans.

### Impact on a listed migratory species:

- substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species;
- result in an invasive species that is harmful to the migratory species becoming established;
- area of important habitat for the migratory species; or
- seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

## **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.

A detailed assessment of the need/demand for the various elements of the proposal is required with regard to the following matters:

- the need for the proposed business and industry precinct against the manufacturing industry outlook and any relevant policy and regulatory framework;
- the suitability for the location proposed;
- the need for the proposed urban uses, in particular the residential component, in the context of the SEQ Regional Plan mapping designations and associated principles and policies and, where applicable, the Regulatory Provisions.
- the use of District Industry zoned land (the Caboolture Shire Council planning scheme ) for residential and commercial use;
- impact of the proposal on the network of centres advocated in the SEQ Regional Plan and the Caboolture Shire Council planning scheme;
- need for the proposal against existing and proposed marina facilities in the region eg. Pumicestone Passage and Brisbane River;
- potential benefits for the SEQ marine industry;
- potential for environmental rehabilitation of degraded habitats;
- potential to improve water quality in the Caboolture River;
- need to dredge the navigation channel in the Caboolture River as part of the proposal;
- need for the golf course as part of the proposal and other expected benefits.
- need for commercial and retail facilities as part of the proposal;
- the justification of retail and commercial floor space proposed within the local and regional context and the impacts this will have on existing retail centres and local businesses in the area.
- local and regional market requirements;
- expected community, regional, state or national economic benefits (including anticipated capital expenditure, peak construction and operational jobs on a FTE (full time equivalent) basis);
- identify the anticipated social benefits for the proposal in a "balance sheet" against any perceived social detriments;

### **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 or various elements of the project. Alternatives should be discussed in sufficient detail to enable an understanding of the reasons for preferring certain options and courses of action and rejecting others. Comparative environmental impacts of each alternative should be summarised.

The EIS must specifically examine an alternative plan of development that would not require any disturbance to the bed or banks of the Caboolture River and which would provide appropriate vegetated buffers between tidal lands and all development related impacts.

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

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

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

### 3 Description of the project

The objective of this section is to describe the project through its lifetime of construction and operation and ability to respond to future changes to land use mix. This information is required to allow assessment of all aspects of a proposal including all phases of the proposal from planning, construction and long term operations. It also allows further assessment of which approvals may be required and how they may be managed through the life of the proposal.

The various elements of the project should be described in the text and illustrated with maps, diagrams, architectural plans (at a suitable scale) and artist's impressions, as required. Consideration should be given to providing a rectified air photo enlargement to illustrate components of the project in relation to the land and natural and built features of the area. The description should include, but may not be limited to:

- location of the development site in relation to protected areas (e.g. Ramsar, Fish Habitat Areas and Moreton Bay Marine Park);
- indicative final lot configurations and land tenure;
- proposed land use locations and yields within the site;
- summary of proposed master plan and associated planning framework, including an overview of proposed precinct intents, level of assessment and preferred land uses;
- detail of indicative retail and commercial facilities (floor areas & types);
- indicative layout, size and number of residential lots;
- layout of the golf course and associated buildings;
- dimensions and visual impact of proposed buildings and structures – include concept drawings, outline perspective or elevation drawings;
- location and layout of the marina precinct including layout, size and number of marina berths and public boating facilities eg boat ramps, pontoons and jetties;
- details of proposed capital works necessary for upgrading the navigability of the Caboolture River;
- details of infrastructure and service provision for development and operation of the project, including roads, pipelines, power and other services;
- details of the proposed road network layout and control method of major intersections within the development;
- details as to potential car parking rates and opportunities for shared use amongst mixed development types should be identified;
- details of how the development may be served by public transport;
- a plan showing the indicative pedestrian and cyclist network;
- location and scope of open space areas including public facilities, public & private open space, protected areas and stormwater management areas;
- extent of vegetation areas and buffer zones in and surrounding the development including proposed buffering to the Bruce Highway;
- landscaping, rehabilitation and beautification proposals (including types of plants to be used e.g. native or exotic);
- Details of the proposed tenure arrangements for development including proposed open space areas/conservation areas developed in consultation with Caboolture Shire Council and relevant State agencies;
- details of any particular sustainability initiative proposed;

It should be noted that the proposal is of significant size and scale, requiring development in stages over an extended period of time. Concept plans for the development need to provide sufficient clarity such that an accurate depiction of the nature, scale, functioning and timing of the development can be ascertained. Concept plans however should also provide sufficient flexibility to allow for refinements in detailed design to be undertaken at the time of future development applications, provided they are generally consistent with concept plans included in the EIS.

### 3.1 Ecological Sustainable Development

A brief summary of the proposal's compatibility with Ecological Sustainable Development 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.

This information is required to assess why the scope of the project is as it is and to ensure that the ESD principles and sustainable development aspects have been considered and incorporated during the scoping and planning of the 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 local context of the proposal should be described and illustrated on maps at suitable scales. Real property descriptions of the project site should be provided.

### 3.3 Concept master plan

Two applications for preliminary approval to override the planning scheme are currently active for the project. Both applications were lodged with Caboolture Shire Council prior to 24 October 2004.

The EIS shall provide a full justification of the proposal in relation to the Caboolture Shire Council planning scheme and the *South East Queensland Regional Plan 2005-2026*, the Superseded Planning Scheme for the Shire of Caboolture (1988), as well as the Strategic Land Use Plan (1993) and the Caboolture ShirePlan (2005).

A proposed master plan for the site should be provided in the EIS with sufficient detail to enable a decision on the two (2) applications for preliminary approval. Any deviations in the Master Plan from what was originally applied for in the preliminary approval applications must be highlighted and described in the context of the regulatory provisions of the SEQ Regional Plan. The master plan is to address the relevant requirements of the *South East Queensland Regional Plan 2005-2026* (SEQ Regional Plan) and Caboolture Shire Plan Planning Scheme Policy 20 Structure Plans. The proposed master plan is to demonstrate effective integration of the range of land uses to be incorporated in the development, having regard to stakeholder input and the following planning instruments:

- The relevant provisions of the Superseded Planning Scheme.
- The aims and objectives of the Strategic Land Use Plan (now superseded).
- The requirements of Local Planning Policy 415/02 – Social Planning – Social Impact Assessment. Particular attention is to be paid to the proposed scale of the commercial/retail precinct(s) in relation to Council's retail hierarchy.
- The Caboolture ShirePlan, including the following codes;
  - Planning Area Code (Rural Zone)
  - Planning Area Code (District Industry Zone)
  - General Works Code
  - Landscaping Code
  - Lighting Code
  - Stormwater Code
  - Transport, Access and Parking Code
  - Acid Sulfate Soils Overlay Code
  - Bushfire Hazard Overlay Code
  - Catchment Protection Overlay Code
  - Nature Conservation Overlay Code
  - Scenic Amenity Overlay Code
- Caboolture ShirePlan Planning Scheme Policy 2 – Community Wellbeing Impact Assessment.
- Developer Contribution Planning scheme Policies 21A (Transport Network) and 22 (Water supply and Sewerage).

### 3.4 Construction

The extent, nature and timing 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.

Where possible, sustainable engineering solutions are to be considered where appropriate and provided these solutions concur with engineering best practice.

Information is to be provided outlining the proposed staged construction of the project including:

- The layout, development sequencing and timeframes of construction of the various precincts within the project site including the business park, residential areas, golf course and public open space components.
- The nature, extent and scheduling of proposed earthworks including fill that may need to be imported to the site. As part of the information, the proponent should provide a schedule for construction and development to occur outside periods of high rainfall, therefore limiting the potential impacts associated with runoff.
- The nature, extent and scheduling of revegetation and rehabilitation works proposed within the open space precincts including construction of public facilities.
- Temporary or permanent diversion of natural watercourses on the site.
- Layout, staging and construction methodology of all infrastructure necessary for development and operation of the project, including roads, pipelines, power, telecommunications and any other services.
- The likely staging and construction methodology of all building works associated with the project.
- The estimated numbers of people to be employed in the project construction phase(s) 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.
- Construction plant and equipment required and materials stockpiles.
- Pollution control methods that will be used during construction.

Details of the proposed construction of the marina are to be provided including:

- How the excavation of the marina basin will be sequenced and undertaken, in particular the measures that would be used to avoid or minimise impacts to the adjacent waterways and the Fish Habitat Area.
- The proposed use of the excavated material including treatment and handling of potential acid sulfate soils.
- Layout, staging and construction methodology of proposed structures including revetments, piling, pontoons and hardstand areas.

Details of the proposed capital dredging of the navigation channel in the Caboolture River are to be provided including:

- The location, area and volume of dredging required (including cross-sectional drawings).
- The nature of the seabed within the proposed dredged area including the occurrence of marine plants.
- Provide details of the grading and composition of likely dredged materials including potential contaminants and/or indurated layers and the methods and sites for disposal via land or sea.
- Describe access to the disposal areas, the dimensions of disposal areas (both capital and maintenance) as well as any proposed tenure stipulations of any land to be designated dredge spoil disposal/rehandling areas.
- Describe all alternatives to the proposed methods of dredged material disposal including potential beneficial use of dredged material.
- Determine the potential rate of sedimentation within the navigation channel as a consequence of the proposed dredging.
- Provide details of the dredging methods including typical dredging plant, timing of capital dredging and dredge material disposal in terms of avoiding or minimising impacts on marine mammals, turtles and fish, including migrations and marine plant propagation.
- Describe the methods of minimising dredging plumes and water quality contaminant release criteria which cannot be exceeded during dredging activities such that dredging must cease.

- If land based dredge material disposal is proposed, provide an assessment to demonstrate that the quality of the water discharged from dredge material disposal areas will meet standards necessary to achieve water quality objectives and therefore maintain receiving water environmental values.

Drawings indicating the type, location and extent of any tidal works or operational works on State land within a coastal management district (eg. construction of the marina basin, channel dredging, revetments, piles, pontoons, dredge material disposal etc) are required. Drawings should include levels of relevant tidal planes and adjacent land affected by the proposed works.

### 3.5 Operations

The location and nature of the operations to be used should be described in the text and illustrated with maps, diagrams and artist's impressions as required. Detailed description is required of all operations that would be environmentally relevant activities as prescribed in the *Environmental Protection Act 1994*. Operational issues to be addressed shall include, but may not be limited to:

- a description of plant and equipment to be employed;
- the capacity of plant and equipment;
- the nature, sources, location and quantities of all chemicals to be handled on site;
- water use and the amount and characteristics of solid and liquid wastes produced and method of disposal;
- control of weeds and pests including mosquitoes and biting midges;
- details of emergency access provisions.

Concept and layout plans should be provided highlighting proposed buildings, structures, plant and equipment associated with the operation of the business and industry precinct. The nature, sources, location and quantities of all materials to be handled, including the storage and stockpiling of raw materials, should be described. Include discussion of any environmental design features of these facilities including bunding of storage facilities.

Indicative process flow-sheets should be provided showing material balances for all industrial and commercial operations and the anticipated rates of inputs, along with similar data on products, wastes and recycle streams.

Details of the proposed activities, including chemical and mechanical, to be conducted within the marina precinct should be provided including:

- the location and nature of shipyard operations including abrasive blasting and painting;
- the nature, sources, location and approximate quantities of all chemicals to be handled on site;
- the use of bunds, dry-break couplings and containment for fuel oils, gases and other environmentally hazardous substances during transfer, use and storage should be identified together with the development of appropriate contingency plans for containing and cleaning up spills;
- water use and the approximate amount and characteristics of solid and liquid wastes produced and method of disposal;
- details of sewage disposal for vessels utilising the marina;
- details of predicted vessel movements in the Caboolture River as a consequence of the project, including the maximum displacement and draft of vessels intended to be catered for by the proposed marina; and
- maintenance provisions for all structures within the marina precinct, including responsibility for maintenance works and monitoring requirements.

Details of the proposed maintenance dredging of the marina basin and the navigation channel in the Caboolture River are to be provided including:

- Details of the proposed design dredging depths and the depths to be maintained and detail of how the maintained depths relate to the level of access for the range of vessels expected to use the marina.
- Quantify the expected amount of maintenance dredging required, the expected frequency of maintenance dredging and the expected composition of dredged material.
- Describe provisions for maintenance dredging in the event of a major flood or other extreme conditions.
- Provide details of the dredging methods including typical dredging plant, timing of maintenance dredging and dredge material disposal in terms of avoiding or minimising impacts on marine mammals, turtles and fish, including migrations and marine plant propagation.

- Describe the methods of minimising dredging plumes and water quality contaminant release criteria which cannot be exceeded during dredging activities such that dredging must cease.
- Describe arrangements to be put in place for long-term management of maintenance dredging operations including details of the party responsible for the long-term maintenance dredging operations and the necessary funding arrangements.
- Describe arrangements to be put in place for long-term (20 years) dredge material disposal including details of proposed material placement areas and contingency for disposal of contaminated dredge material.
- If land based dredge material disposal is proposed, provide an assessment to demonstrate that the quality of the water discharged from dredge material disposal areas will meet standards necessary to achieve water quality objectives and therefore maintain receiving water environmental values. Provide details of the long-term management arrangements of the dredge material disposal site.

### 3.6 Land Tenure

Maps at suitable scales should be provided showing the precise location of the project area (including access to the site), and in particular:

- the location and boundaries of land tenures, in place or proposed, to which the project area is or will be subject, including adjoining land tenure and/or legislative boundaries such as the Moreton Bay Marine Park boundary and the boundary of the declared Deception Bay Fish Habitat Area;
- the location and boundaries of the project footprint showing all key aspects including excavations, stockpiles, areas of fill, crossings and built structures within waterways including all services infrastructure, plant locations, water storages, buildings, bridges, culverts, hardstands, car parks, etc;
- the location of any proposed buffers surrounding the working areas; and
- lands identified to be used for mitigation purposes, either through retention in their current natural state or to be rehabilitated.

Consideration should be given to providing a rectified air photo enlargement to illustrate components of the project in relation to the land tenures and natural and built features of the area.

Details of the final tenure of the land following development including details of future reconfigurations, Community Title, Body Corporate Management and Conservation Covenants/Agreements, Reserves or Nature Refuges over the land and including a supporting plan, for the entire site and access to the site. Such details should include:

- The nature and structure of any future reconfigurations or the tiered body corporate arrangements to be established for the various components of the development, including the road system;
- Further information concerning proposed legal arrangements for the governance of the site and the ability of a body corporate or other managing entity to:
  - manage the staging of the development;
  - manage domestic animals and garden waste disposal;
  - set standards and control the design and finish of structures and roads;
  - manage traffic;
  - manage the production of interpretative material and signage;
  - prevent future vegetation destruction, pollution and pest incursion into waterways.
- The general terms to form part of the Body Corporate structure for the protection and maintenance of the private open space areas, and in particular, the areas to be retained under native vegetation;
- A statement clearly defining the responsibility (if any) of Council or any other State Agency in on-going maintenance of either infrastructure established within the subject site or open space areas within the site.

### 3.7 Infrastructure Requirements

This section should provide descriptions, with concept and layout plans, of requirements for constructing, upgrading or relocating all infrastructure in the vicinity of the project area and how temporary works and temporary establishment, with respect to environmental aspects will be dealt with. The matters to be considered include such infrastructure as roads, rail, bridges, jetties, tracks and pathways, power lines and other cables, wireless technology (e.g. microwave telecommunications), and pipelines for any services (whether underground or above).

### **3.7.1 Transport**

Describe arrangements for the transport of plant, equipment, products, wastes and personnel during both the construction phase and operational phases of the project. The description should address the use of existing facilities and all requirements for the construction, upgrading or relocation of any transport related infrastructure.

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

- the expected 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;
- method of movement (including vehicle types and number of vehicles likely to be used);
- anticipated times at which movements may occur;
- details of vehicle traffic and transport of heavy and oversize indivisible loads (including types and composition);
- the proposed transport routes including waterway crossings;
- need for increased road maintenance and upgrading of the adjoining road network; and
- The impact on the road network generated by any interim or temporary road works (if any), necessary to service the initial stages of the proposal and the likely timing of such works.

### **3.7.2 Energy**

The EIS should describe all energy requirements, including electricity, natural gas, and/or solid and liquid fuel requirements for the construction and operation of the proposal. The locations of any easements should be shown on the infrastructure plan. Energy conservation should be briefly described in the context of any Commonwealth, State and local government policies.

### **3.7.3 Water supply and storage**

The EIS should provide information on expected water usage by the project, including the quality and quantity of all water supplied to the site. In particular, the proposed and optional sources of water supply should be described (eg. bores, any surface storages such as dams and weirs, municipal water supply pipelines).

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

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.

A detailed assessment of impacts of the proposal on the water supply network shall be submitted including:

- The impact of this development on the existing potable water supply infrastructure. The availability of water in terms of pressure and flows (including fire flows) will need to be confirmed by carrying out comprehensive dynamic network analysis. Analysis should at least cover 3 consecutive max days.
- Identification of any upgrading works required on the existing systems to accommodate the proposed development.
- Provide details of the internal potable water supply requirements of the development.
- The route of any external mains identified in the analysis, including those through private properties.
- Calculation of the number of equivalent persons (eps) for water supply generated by each of the proposed uses, in accordance with Council's Planning Scheme Policy 22 "Determination of water supply and sewerage headworks contributions".

Due to the proximity of the site to Council's South Caboolture Sewerage Treatment Plant, recycled water would be mandatory for uses such as industrial, outdoor irrigation and toilet flushing. A detailed assessment that addresses the following is also to be submitted:

- The impact of this development on the existing recycle water supply infrastructure from the South Caboolture Sewerage Treatment Plant to the subject sites. This shall include any appropriately zoned sites as being developed to ensure capacities are made available for the development of the particular site.
- Identification of any upgrading works required on the existing systems to accommodate the proposed development.
- Provide details of the likely internal recycle water supply requirements of the development.
- The route of any external mains identified in the analysis including those through private properties.
- Calculation of the number of equivalent persons (eps) generated by each of the proposed use in accordance with Council's Planning Scheme Policy 22 "Determination of water supply and sewerage headworks contributions", for the purpose of determining applicable rebates.

### **3.7.4 Stormwater drainage**

A description should be provided of the proposed stormwater drainage system and the proposed disposal arrangements, including any off-site services. A Stormwater Management Plan should be prepared for the site that addresses stormwater quantity and quality and the principles of water sensitive urban design.

The EIS should provide data on the impact of concentrating drainage flows into water courses in terms of both hydrological and ecological implications on the aquatic and fisheries resources. Details of stormwater treatment prior to release should be documented including a description of technologies, structures and/or practices that will be employed to prevent contamination of stormwater and to mitigate downstream impacts.

### **3.7.5 Sewerage**

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

The assessment shall describe, in general terms, the sewerage infrastructure required and the sewerage demands generated by the proposal. A detailed assessment that addresses the following shall be submitted, including:

- The impact of this development on the existing sewerage infrastructure, from the subject site to the South Caboolture Sewerage Treatment Plant in Weier Road as the primary treatment plant as well as the Burpengary East Sewerage Treatment Plant in Uhlmann Road, Burpengary, if this plant would also be required to treat some of the sewerage. This shall include any appropriately zoned sites in between as being developed, to ensure that capacities are made available for the development of the particular site(s). The impact of the development, notwithstanding the ability for increased treatment capacity to be provided shall be made, in relation to the impact on the nutrient loads being discharged to the Caboolture River and Moreton Bay, as a result in the increase of treated effluent resulting from the proposal.
- Identification of any upgrading works required on the existing systems to accommodate the proposed development.
- Provide details of the internal sewerage requirements of the development.
- The route of any external mains identified in the analysis including those through private properties.
- Calculation of the number of equivalent persons (eps) for sewerage generated by each of the proposed uses in accordance with Council's Planning Scheme Policy 22 "Determination of water supply and sewerage headworks contributions".

For the Marina and Industrial uses (where possible), provide details of the physical and chemical characteristics of the effluent being discharged to Council's sewerage infrastructure.

### **3.7.6 Telecommunications**

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

### **3.7.7 Other infrastructure**

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

- fuel storage areas;
- equipment hardstand and maintenance areas;
- technical workshops and laboratories; and
- temporary accommodation, offices and storage.

## **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. In addition to the expected total volumes of each waste produced, include an inventory of the following per unit volume of product produced:

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

Schematic diagrams, which for the operational phase may be simplified versions of those provided in section 3.4, 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 any industrial 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.

### **3.8.2 Air emissions**

Describe in detail the expected quantity and quality of all air emissions (including particulates, fumes and odours) from the project during construction and operation. Particulate emissions include those that would be produced by any industrial process, or disturbed by wind action on stockpiles, 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.

### **3.8.3 Solid waste disposal**

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

### **3.8.4 Liquid waste**

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

The EIS may need to consider the following effects:

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

#### **4 Environmental values and management of impacts**

The functions of this section are to include the following.

- To describe the existing environmental values of the area which may be affected by the proposal. Environmental values are defined in section 9 of the *Environmental Protection Act 1994*, Environmental Protection Policies and other documents such as the ANZECC 2000 guidelines and the South East Queensland Regional Water Quality Management Strategy. Environmental values may also be derived following recognised procedures, such as described in the ANZECC 2000 guidelines and Queensland Water Quality Guidelines 2006. Environmental values should be described by reference to background information and studies, which should be included as appendices to the EIS.
- To describe the potential adverse and beneficial impacts of the proposal on the identified environmental values. Any likely environmental harm on the environmental values should be described.
- To describe any cumulative impacts on environmental values caused by the proposal, either in isolation or by combination with other known existing or planned sources of contamination.
- To present environmental protection objectives and the standards and measurable indicators to be achieved.
- To examine viable alternative strategies for managing impacts. These alternatives should be presented and compared in view of the stated objectives and standards to be achieved. Available techniques, including best practice, to control and manage impacts to the nominated objectives should be discussed. This section should detail the environmental protection measures incorporated in the planning, construction, operations, decommissioning, rehabilitation and associated works for the proposal. Measures should minimise environmental harm and maximise socio-economic and environmental benefits of the proposal. Preferred measures should be identified and described in more detail than other alternatives.

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

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

- Environmental values affected: describe the existing environmental values of the area to be affected including values and areas that may be affected by any cumulative impacts (refer to any background studies in Appendices - note such studies may be required over several seasons). It should be explained how the

environmental values were derived (e.g. by citing published documents or by following a recognised procedure to derive the values).

- Impact on environmental values: describe quantitatively the likely impact of the proposal on the identified environmental values of the area. The expected cumulative impacts of the proposal must be considered over time or in combination with other (all) impacts in the dimensions of scale, intensity, duration or frequency of the impacts. In particular, any requirements and recommendations of relevant State planning policies, environmental protection policies, national environmental protection measures and integrated catchment management plans should be addressed.
- Cumulative impacts on the environmental values of land, air and water and cumulative impacts on public health and the health of terrestrial, aquatic and marine ecosystems must be discussed in the relevant sections. This assessment may include air and water sheds affected by the proposal and other proposals competing for use of the local air and water sheds.
- Where impacts from the proposal will not be felt in isolation to other sources of impact, it is recommended that the proponent develop consultative arrangements with other industries in the proposal's area to undertake cooperative monitoring and/or management of environmental parameters. Such arrangements should be described in the EIS.
- Environmental protection objectives: describe qualitatively and quantitatively the proposed objectives for enhancing or protecting each environmental value. Include proposed indicators to be monitored to demonstrate the extent of achievement of the objective as well as the numerical standard that defines the achievement of the objective (this standard must be auditable). The measurable indicators and standards can be determined from legislation, support policies and government policies as well as the expected performance of control strategies. Objectives for progressive and final rehabilitation and management of contaminated land should be included.
- Recommend control strategies for inclusion in the EMP 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 for the project (see section 5).

## **4.1 Climate**

This section should describe the rainfall patterns (including magnitude and seasonal variability of rainfall), air temperatures, humidity, wind (direction and speed) and any other special factors (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. Reference must be made to any studies undertaken by the Caboolture Shire Council in relation to flooding and storm tide vulnerability. The relative frequency, magnitude and risk of these events should be considered.

The potential impacts due to climatic factors should be addressed in the relevant sections of the EIS. The impacts of rainfall on soil erosion should be addressed in Section 4.2. The impacts of storm events on the capacity of

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

## **4.2 Land**

### **4.2.1 Description of environmental values**

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

#### **4.2.1.1 Topography/geomorphology/bathymetry**

Maps should be provided locating the project in both regional and local contexts. The topography of the proposal site should be detailed with contours at suitable increments, shown with respect to Australian Height Datum (AHD). Significant features of the locality should be included on the maps. Such features would include any locations subsequently referred to in the EIS (e.g. the nearest noise sensitive locations) that are not included on other maps in Section 4.2. Commentary on the maps should be provided highlighting the significant topographical features, specifically

- The location of key tidal planes such as the Highest Astronomical Tide (HAT) and Mean High Water Springs (MHWS).
- Depth increments at 0.5 metre intervals from HAT throughout the works area (including access channels).

#### **4.2.1.2 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.

#### **4.2.1.3 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 and suitability for effluent irrigation.

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 or any updates as they become available) 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 and Water (NR&W) cannot provide adequate mapping at a sampling frequency to be determined in consultation with NR&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. Additional technical information is available from:

- *Acid Sulfate Soils Laboratory Methods Guidelines in the Queensland Acid Sulfate Soils Technical Manual*, Ahern CR et al (2004).
- *Soil Management Guidelines in the Queensland Acid Sulfate Soils Technical Manual*, Dear SE et al (2002).
- *Legislation and Policy Guide in the Queensland Acid Sulfate Soils Technical Manual*, Dear SE et al (2004).

An Acid Sulfate Soil Management Plan must be prepared in consultation with officers of NR&W and EPA. The State Planning Policy SPP 2/02, Planning and Managing Development Involving Acid Sulfate Soils, should also be addressed.

Soil profiles should be mapped at a suitable scale and described according to the Australian Soil and Land Survey Field Handbook (McDonald et al, 1990) and Australian Soil Classification (Isbell, 1996). An appraisal of the depth and quality of useable soil should be undertaken. Information should be presented according to the standards required in the Planning Guidelines: the Identification of Good Quality Agricultural Land (DPI, DHLGP, 1993), and the State Planning Policy 1/92: Development and the Conservation of Agricultural Land.

#### **4.2.1.4 Land use**

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

Maps at suitable scales showing existing land uses and tenures, and the proposal location, should be provided for the entire proposal area and surrounding land that could be affected by the development including accesses. 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.

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

State Planning Policy 1/03 *Mitigating the Adverse Impacts of Flood, Bushfire and Landslide* is also considered relevant for the proposal.

#### **4.2.1.5 Infrastructure**

The location and owner/custodians of all tenures, reserves, roads and road reserves, railways and rail reserves, stock routes and the like, proposed and current 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. All sub-surface infrastructure, proposed and current, is noted and included in a live "services plan" from developing stage onwards. Describe the environmental values affected by this infrastructure.

#### **4.2.1.6 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 4.8 for further guidance on sensitive areas).

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

The proximity of the proposal elements to any of these areas should be identified.

#### **4.2.1.7 Landscape character**

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

#### **4.2.1.8 Visual amenity**

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

- identification of elements within the proposal and surrounding area that contribute to their image of the town/city as discussed in the local government planning scheme;
- 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.

#### **4.2.2 Potential impacts and mitigation measures**

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

##### **4.2.2.1 Land use suitability**

The potential environmental harm caused by the proposal on the adjacent areas currently used for agriculture, urban development, recreation, tourism, other business and the implications of the proposal for future developments in the impact area including constraints on surrounding land uses should be described. If the development adjoins or potentially impacts on good quality agricultural land, then an assessment of the potential for land use conflict is required. Investigations should follow the procedures set out in the planning guideline, The Identification of Good Quality Agricultural Land, which supports State Planning Policy 1/92.

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

##### **4.2.2.2 Land contamination**

The EIS should describe the possible contamination of land from aspects of the proposals including 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" (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/](http://www.epa.qld.gov.au/). Proponents should refer study proposals to the EPA for review prior to commencement.

### **4.2.2.3 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 plant site, including buildings;
- access roads or other transport corridors;
- 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.

### **4.2.2.4 Landscape character**

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

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

### **4.2.2.5 Visual amenity**

This section should analyse and discuss the visual impact of the proposal on particular panoramas and outlooks. It should be written in terms of the extent and significance of the changed skyline as viewed from places of residence, work, and recreation, from road, cycle and walkways, from the air and other known vantage points day and night, during all stages of the project as it relates to the surrounding landscape. The assessment is to address the visual impacts of the project structures and associated infrastructure, using appropriate simulation. Sketches, diagrams, computer imaging and photos are to be used where possible to portray the near views and far views of the completed structures and their surroundings from visually sensitive locations. Special consideration is to be given to public roads, public thoroughfares, and places of residence or work, which are within the line-of-sight of the project.

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

### **4.2.2.6 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;
- night operations/maintenance and effects of lighting on fauna and residents;
- the potential impact of increased vehicular traffic; and
- changed habitat conditions for nocturnal fauna and associated impacts.

### **4.2.2.7 Transport**

The EIS should provide sufficient information to make an independent assessment of how the State-controlled and local government road networks will be affected including implications for planning of future road networks. 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.

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

The EIS needs to identify impacts on the State-controlled and local government road networks and to indicate clearly the corrective measures necessary to address adverse road impacts and the costs involved. This will require the proponent to compare the traffic situation and road conditions with, and without, the project. For state-controlled roads, the assessment should be undertaken in accordance with Section 6 of the Main Roads' *'Guidelines for Assessment of Road Impacts of Development Proposals'* relating to traffic operation assessment. This document is available on the Main Roads' website: [www.mainroads.qld.gov.au](http://www.mainroads.qld.gov.au) under "road-related publications".

Information about the impacts and proposed measures for dealing with those impacts should be prepared by the proponent in close consultation with Queensland Transport, the local District Office of the Department of Main Roads and the Caboolture Shire Council. Specific issues include:

- the likely volume of traffic that would be using the Bruce Highway for local trips; and
- the impact of the proposal on the through road network - for example, Gympie Road and Gateway Arterial.

The EIS should address the principles and policies of the SEQ Regional Plan section 10.4 "protecting key sites and corridors" in particular the potential impact of the project on the proposed North-South arterial corridor (a future State-controlled road which passes to the east of the project site between Boundary Arterial Road and Bribie Island Road).

The EIS should provide details of the impact on any current or proposed rail infrastructure.

Provide information on product spill contingency plans and the adequacy of equipment and facilities to deal with possible spills for the transport nodes of the proposal. Indicate whether there is a need to update the plans based on increase in frequency of traffic and volumes to be transported.

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

Additional water transport issues that should be considered including the potential of the proposal to impact on recreational craft in rivers and dams and increase the demand for public boating facilities (i.e. ramps, pontoons and jetties) in the Caboolture River. The EIS should address the potential impact of water transport on other existing or possible future infrastructure (for example mast clearance requirements for bridges).

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

To achieve more sustainable transport outcomes and plan for future transport requirements, the EIS should develop an overall Transport Management Plan. The plan should identify transport demand and how the proponent will manage/provide for transport demand of the development over the longer term. The plan should include strategies, goals and targets in regard to transport levels and modes. In particular the plan should address the management of increased patronage of public transport and other passive modes of transport including:

- addressing the relevant Desired Regional Outcomes of the South East Queensland Regional Plan. In particular, demonstrate how the principles of Desired Regional Outcome 8 (Urban Development) and Desired Regional Outcome 12 (Integrated Transport) will be achieved. For example, how the proposed development will integrate land use and transport (Section 8.7) and how it will achieve sustainable travel and improved accessibility (Section 12.2). The proposal should demonstrate how it can be adequately served by a variety of modes of transport modes (particularly public transport, cycling and pedestrians) and how it will adequately provide for non-car users.
- with regards to rail, the proposal should demonstrate how the development will provide opportunities for pedestrian and cycling links to rail stops, how it enhances/encourages modal interchange (i.e. cycle parking at train stops); and how it identifies the need for transport information/infrastructure at stations (for example, opportunities to assist visually impaired/disabled users and the provision of shelter, seating, lighting, security, car set down and pick up areas)
- show how the cycle network will connect in and help develop the cycle route proposed in this area in the Integrated Regional Cycle Network Plan for South East Queensland; and
- show how the proposed development supports and links to any relevant Integrated Local Transport Plan (and any pedestrian / cycling strategies under this plan).

### 4.3 Waste

This section should complement other sections of part 4 of the EIS by providing technical details of waste treatment and minimisation, with proposed emission, discharge and disposal criteria, while other sections describe how those emissions, discharges and disposals would impact on the relevant environmental values. The purpose

of this format is to concentrate the technical information on waste management into one section in order to facilitate its transfer into the EM Plan.

### **4.3.1 Description of environmental values**

This section describes the existing environment values that may be affected by the project's wastes. Refer to each of the waste streams described in section 3.8 and provide references to environmental values described in other sections of part 4 of the EIS.

### **4.3.2 Potential impacts and mitigation measures**

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

This section should assess the potential impact of all wastes to be generated and provide details of each waste in terms of:

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

Having regard for the Environmental Protection (Waste) Policy, the EIS should indicate the results of investigation into the feasibility of using waste minimisation and cleaner technology options during all phases of the proposal. The EPA has also released draft guidelines covering aspects of waste management under this EPP, which should be addressed.

Waste minimisation and treatment, and the application of cleaner production techniques, should also be applied to gaseous wastes, particularly nitrogen oxides, sulfur oxides, particulates and carbon dioxide. Particular attention should be paid to measures, which will maximise energy efficiency and minimise internal energy consumption in the proposal.

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 are required.

## **4.4 Water resources**

### **4.4.1 Description of environmental values**

This section describes the existing environment for water resources that may be affected by the proposal in the context of environmental values as defined in such documents as the *Environmental Protection Act 1994*, Environmental Protection (Water) Policy 1997, ANZECC 2000 and the South East Queensland Water Quality Management Strategy.

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

#### **4.4.1.1 Surface waterways**

A description should be given of the surface watercourses and their quality and quantity in the area affected by the proposal with an outline of the significance of these waters to the river catchment system in which they occur (NB

impacts on coastal water quality should be discussed in Section 4.5 (Coastal environment)). Details provided should include a description of existing surface drainage patterns, flows in major streams and wetlands. Also provide details of the likelihood of flooding, history of flooding including extent, levels and frequency, and a description of present and potential water uses downstream of the areas affected by the proposal. Flood studies should include a range of annual exceedance probabilities for affected waterways, where data permits.

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

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

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

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

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

#### **4.4.1.2 Groundwater**

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

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

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

A network of observation points which would satisfactorily monitor groundwater resources both before and after commencement of operations should be developed.

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;
- groundwater flow directions (defined from water level contours);
- interaction with surface water;
- interaction with sea/salt water;
- possible sources of recharge; and

- vulnerability to pollution.

The data obtained from the groundwater survey should be sufficient to enable specification of the major ionic species present in the groundwater, pH, electrical conductivity and total dissolved solids.

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

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

#### **4.4.2 Potential impacts and mitigation measures**

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

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

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

Key water management strategy objectives include:

- protection of the integrity of the marine environment;
- protection of important local aquifers and protection of their waters;
- maintenance of sufficient quantity and quality of surface waters to protect existing beneficial downstream uses of those waters (including maintenance of in-stream biota and the littoral zone); and
- minimisation of impacts on flooding levels and frequencies both upstream and downstream of the project.

Conduct a risk assessment for uncontrolled emissions to water due to system or catastrophic failure, implications of such emissions for human health and natural ecosystems, and list strategies to prevent, minimise and contain impacts.

##### **4.4.2.1 Surface water and water courses**

A detailed flood study by a suitably qualified engineer shall be included in the EIS. The flood study is to demonstrate that the proposed development will comply with Caboolture Shire Council's flood plain management policy including the requirement that there is to be no net loss of flood storage for all events up to the 1 in 100 year event.

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

All hydrological impacts of the proposal should be assessed, particularly with regard to stream diversions, scouring and erosion, and changes to flooding levels and frequencies both upstream and downstream of the project. Modelling of afflux should be provided and illustrated where appropriate. Assessment of impacts on the flow and the quality of surface waters and effects on ecosystems should include an assessment of the likely effects on mangrove and other estuarine habitats as a result of any temporary diversion of existing water courses.

Consideration should be given to monitoring of seawater quality at points of outflow.

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

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

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

The need or otherwise for licensing of any dams or creek diversions, under the *Water Act 2000* should be discussed. Water allocation and water sources should be established in consultation with Department of Natural Resources and Water. Provide details of any proposed construction of waterway barrier works (permanent or temporary) associated with diversion, filling or other modification of surface waterways, the environmental impacts of such activities and measures to avoid/offset/mitigate these impacts.

Having regard for the requirements of the Environmental Protection (Water) Policy, the EIS should present the methods to avoid stormwater contamination by raw materials, wastes or products and present the means of containing, recycling, reusing, treating and disposing of stormwater. Where no-release water systems are to be used, the fate of salts and particulates derived from intake water should be discussed.

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

Options for mitigation and the effectiveness of mitigation measures should be discussed with particular reference to sediment, acidity, salinity and other emissions of a hazardous or toxic nature to human health, flora or fauna.

Where it is proposed that creeks will be diverted, the EIS should detail how rehabilitation will affect both the physical and ecological condition of the creek's bed and banks and the quality of water in it. Furthermore, the EIS should describe the monitoring that will be undertaken after decommissioning, and who will have responsibility for management measures and corrective action, to ensure that rehabilitated creeks do not degrade.

#### **4.4.2.2 Groundwater**

The EIS should include an assessment of the potential environmental harm caused by the proposal to local groundwater resources.

The impact assessment should define the extent of the area within which groundwater resources are likely to be affected by the proposed operations and the significance of the proposal to groundwater depletion or recharge, and propose management options available to monitor and mitigate these effects. The response of the groundwater resource to the construction and operation of the project should be described including proposed:

- Extraction of groundwater;
- Diversion of watercourses;
- Excavation of the marina basin;
- Changes to tidal conditions (water levels and flows) in the Caboolture River.

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

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

## 4.5 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 defined 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 Water quality

Provide baseline information on water quality in the Caboolture River and relevant tributaries downstream of 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 coastal resources of the affected area in terms of values identified in the:

- Environmental Protection (Water) Policy;
- the State Coastal Management Plan;
- the South East Queensland Regional Coastal Management Plan.

#### 4.5.1.2 Coastal processes

Provide an assessment of physical and chemical characteristics of sediments within the littoral and marine zones adjacent to the proposal area.

Describe the physical processes of the adjacent marine environment, including currents, tides, storm surges, freshwater flows and their interaction in relation to the assimilation and transport of pollutants entering marine waters from, or adjacent to, the proposal area.

The existing coastal processes in the tidal reaches of the Caboolture River are to be described in detail including bathymetry, tidal flows and present trends in sedimentation and erosion. This should include a discussion of bank erosion and its likely causes.

Provide baseline information on marine sediments and sediment quality in the area likely to be disturbed by dredging or vessel movements including contaminants (such as heavy metals, nutrients, pesticides), the presence of fines and/or indurated layers and acid sulfate potential. This information should be presented as a map of sediment types based on their physical and chemical properties and include depth profiles.

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.

### 4.5.2 Potential impacts and mitigation measures

The EIS must demonstrate the proposal's consistency with the *State Coastal Management Plan 2001* and its policies and the South East Queensland Regional Coastal Management Plan. In particular, the EIS must address the proposal's consistency with policy criteria in Policy 2.1 Coastal use and development, 2.2 Physical coastal processes, 2.3 Public access to the coast, 2.4 Water quality, 2.5 Indigenous Traditional Owner cultural resources, 2.7 Coastal landscapes and 2.8 Conserving nature. Policies of the State and/or South East Queensland Regional Coastal Management Plan of particular relevance may include:

- Policy 2.1.3 Coastal-Dependant Land Uses;
- Policy 2.1.4 Canals and dry land marinas;
- Policy 2.1.5 Maritime Infrastructure;
- Policy 2.1.8 Dredging;
- Policy 2.2.2 Erosion prone areas;
- Policy 2.8.1 Areas of State Significance (Natural resources);
- Policy 2.8.2 Coastal wetlands; and
- Policy 2.8.3 Biodiversity.

The EIS is to address the potential of the proposed works to impact (through siting, construction and / or ongoing operation including capital and maintenance dredging) on, inter-alia:

- largely undeveloped tidal waterways (Caboolture River is identified as an undeveloped tidal waterway in the SEQ Regional Coastal Management Plan – policy 2.1.5);
- declared fish habitat areas;
- areas of coastal biodiversity significance;
- coastal wetlands, including the opportunity to rehabilitate, restore or enhance degraded coastal wetlands;
- areas of value to Indigenous Traditional Owners;
- areas of state significance (cultural heritage); and
- public access to the coast.

Specific issues to be addressed associated with physical coastal processes include:

- The potential impacts of the proposed works on tidal hydrodynamics in the Caboolture River, Pumicestone Passage and Deception Bay including changes to flow velocities and water levels, and on entrance stability. The assessment should consider the effects of the proposed marina basin and the proposed channel dredging both separately and in combination.
- The potential of the proposed works to impact on bank erosion within the Caboolture River and adjacent waterways. This should include:
  - The likely increase in size and number of vessels using the river and bay areas and an assessment of the erosive effects of vessel wash associated with boat traffic accessing the proposed marina.
  - A survey of the existing condition of the banks in the Caboolture River and identification of the erosion potential of those banks
  - The potential need for bank protection works.
- The vulnerability of the proposed development to storm tide flooding.
- The potential of the proposed works to affect vulnerability to storm tide flooding on properties adjacent to the Caboolture River.
- The impacts of proposed dredging operations (capital and maintenance dredging) associated with the proposal including access to dredge material disposal areas.

The water quality objectives and practical measures for protecting or enhancing coastal environmental values are to be defined and described, including how nominated quantitative standards and indicators would be achieved, and how the achievement of the water quality objectives would be monitored, audited and managed. The potential environmental harm caused by the proposal (both its construction and operational phases) on coastal resources and processes need to 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, the *South East Queensland Regional Coastal Management Plan 2006* and QDPI Guidelines for Marine Areas.

Specific issues to be addressed include:

- Describing the water quality objectives used and how predicted activities will meet these objectives (refer to the Environmental Protection (Water) Policy and in particular Schedule 1.
- Potential threats to the water quality and sediment quality within the Caboolture River associated with the construction and operation of the facilities. This assessment shall consider, at minimum:
  - Method and timing of the excavation of the marina basin including treatment and disposal of excavated materials and tailwater.
  - Dredging and dredge material disposal, including disturbance of layers of coffee rock, fine grained sediments and contaminated material.
  - Potential accidental discharges of contaminants during operation of the marina precinct.

- Release of contaminants from marine structures and vessels, including antifouling coatings.
- Stormwater runoff from developed 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.
- The impact of the proposal on potential blooms of the hazardous cyanobacteria *Lyngbya majuscula* in Deception Bay and the tidal reaches of the Caboolture River with particular reference to policy 2.4.7 (algal bloom management) of the SEQ RCMP 2006.

## 4.6 Air

### 4.6.1 Description of environmental values

This section describes the existing air environment that may be affected by the proposal. The following topics may be addressed (note - the topics are not an exhaustive treatment of all possible air or impacts).

A description of the existing air shed environment should be provided having regard for particulates and gaseous and odorous compounds. The background levels and sources of suspended particulates, SO<sub>x</sub>, NO<sub>x</sub>, and any other major constituent of the air environment that may be affected by the proposal should be discussed.

Sufficient data on local meteorology and ambient levels of pollutants should be gathered to provide a baseline for later studies or for the modelling of air quality environmental harm (if required) within the air shed.

#### 4.6.1.1 Greenhouse gas emissions

This section of the EIS should:

- provide an inventory of projected annual emissions for each relevant greenhouse gas including transport emissions, with total emissions expressed in 'CO<sub>2</sub> equivalent' terms;
- estimate emissions from upstream activities associated with the proposed project, including fossil fuel based electricity consumed; and
- briefly describe method(s) by which estimates were made.

The Australian Greenhouse Office Factors and Methods Workbook (available via the internet) can be used as a reference source for emission estimates and supplemented by other sources where practicable and appropriate.

### 4.6.2 Potential impacts and mitigation measures

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

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

The proposed levels of emissions should be compared with the national environmental protection measures (NEPM) for ambient air quality (1998), the National Health Medical Research Council (NHMRC) national guidelines (1985) for control of emissions from stationary sources, the Environmental Protection (Air) Policy (1998) and the *Environmental Protection Act 1994*.

Where appropriate, the predicted average ground level concentrations in nearby areas should be provided. These predictions should be made for both normal and expected maximum emission conditions and the worst case meteorological conditions should be identified and modelled where necessary. Ground level predictions should be made at any residential, industrial and agricultural developments believed to be sensitive to the effects of predicted emissions. The techniques used to obtain the predictions should be referenced, and key assumptions and data sets explained. The assessment of the proposal's impact, i.e. environmental harm, on air quality should consider at least the following matters:

- The human health risk associated with emissions from industrial operations of all hazardous or toxic pollutants should be assessed whether they are or are not covered by the National Environmental Protection Council (Ambient Air Quality) Measure or the Environmental Protection (Air) Policy 1998.

- Features of the proposal designed to suppress or minimise emissions, including dusts and odours, should be detailed.
- The proposed levels of emissions of dust, fumes and odours should include emissions during typical and worse case conditions. Consideration should be given to the range of potential upset condition scenarios including the air emissions that may be generated as a result.
- Where there is no single atmospheric dispersion model that is able to handle the different atmospheric dispersion characteristics exhibited in the proposal area (i.e.: sea breezes, strong convection, terrain features, temperature inversions and pollutant re-circulation), a combination of acceptable models will need to be applied and referenced.
- The limitations and accuracy of the applied atmospheric dispersion models should be discussed. The air quality modelling results should be discussed in light of the limitations and accuracy of the applied models.
- 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 1998 goals.

#### **4.6.2.1 Greenhouse gas abatement**

This section of the EIS should propose and assess greenhouse gas abatement measures. It should include:

- a description of the proposed measures (alternatives and preferred) to avoid and/or minimise greenhouse gas emissions directly resulting from activities of the project, including such activities as transportation of products and consumables, and energy use by the project and maximising the use of renewable energy sources;
- an assessment of how the preferred measures minimise emissions and achieve energy efficiency,
- a description of any opportunities for further offsetting greenhouse gas emissions through indirect means;
- a description of the proposed means of minimising transport-related emissions (for example minimising the need for private vehicle travel).

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

- minimising clearing at the site (which also has imperatives besides reducing greenhouse gas emissions);
- integrating transport for the project with other local industries such that greenhouse gas emissions from are minimised;
- maximising the use of renewable energy sources.

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

- commitments to the abatement of greenhouse gas emissions from the project with details of the intended objectives, measures and performance standards to avoid, minimise and control emissions,
- commitments to energy management, including undertaking periodic energy audits with a view to progressively improving energy efficiency;
- opportunities for offsetting greenhouse emissions, including, if appropriate, carbon sequestration and renewable energy uses; and
- commitments to monitor, audit and report on greenhouse emissions from all relevant activities and the success of offset measures.

## **4.7 Noise and vibration**

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

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

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

Sufficient data should be gathered to provide a baseline for later studies. The daily variation of background noise levels at nearby sensitive sites should be monitored and reported in the EIS, with particular regard given to detailing variations at different periods of the night. Noise from existing facilities should be measured in sensitive places and used to assist the modelling of predicted noise levels for the new proposal. Monitoring methods should adhere to accepted best practice methodologies, relevant Environmental Protection Agency Guidelines and Australian Standards, and any relevant requirements of the Environmental Protection (Noise) Policy 1997.

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

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

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

Information, including mapped noise contours from a suitable acoustic model, should be submitted based on the proposed generation of noise. The potential sensitivity of all receptors should be discussed and performance indicators and standards should be nominated for each affected receptor. Particular consideration should be given to emissions of low-frequency noise; that is, noise with components below 200Hz. The assessment should also include environmental impacts on terrestrial and marine animals and avifauna, particularly migratory species. Proposed measures for the minimisation or elimination of impacts should be provided, including details and illustrations of any screening, lining, enclosing or bunding. A discussion should be provided of timing schedules for construction and operations with respect to minimising environmental nuisance and harm from noise.

Information should be supplied on blasting which might cause ground vibration or fly rock on, or adjacent to, the site with particular attention given to places of work, residence, recreation, worship and general amenity. The magnitude, duration and frequency of any vibration should be discussed. A discussion should be provided of measures to prevent or minimise environmental nuisance and harm. Blasting noise and vibration limits are provided in section 61 of the Environmental Protection Regulation 1998. Reference should also be made to the EPA Guideline: Noise and vibration from blasting.

The assessment should also address off-site noise and vibration impacts that could arise due to increased road or rail transportation directly resulting from the project. In particular the EIS should address the management of road traffic noise in accordance with the Main Roads document: *Road Traffic Noise Management: Code of Practice*. This document is available on the Main Roads website: [www.mainroads.qld.gov.au](http://www.mainroads.qld.gov.au) >Inside Main Roads>Publications>Road Related.

### **4.8 Nature conservation**

#### **4.8.1 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 description should include areas within the project site and the surrounding area identified on the relevant local government planning scheme overlay map.

The coastal biodiversity values as mapped or described by the State Coastal Management Plan and / or the South East Queensland Regional Coastal Management Plan are to be identified and an ecological survey and assessment of the flora and fauna associated with areas containing coastal biodiversity values undertaken. This is to include areas of state significance (natural resources) (policy 2.8.1) and coastal wetlands (policy 2.8.2), including 100m from these areas, and areas containing biodiversity values (2.8.3).

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 may need to be conducted throughout the year to reflect seasonal variation in communities and to identify migratory species. The EPA should be consulted on the scope of all biological studies.

#### **4.8.1.1 Terrestrial flora**

For terrestrial vegetation a map at a suitable scale should be provided, with descriptions of the units mapped. Sensitive or important vegetation types should be highlighted, including any marine littoral and subtidal 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 location of any horticultural crops in the vicinity of the site should be shown. The existence of important local and regional weed species should also be discussed.

Vegetation mapping should provide vegetation mapping for all relevant project sites. Adjacent areas may also require mapping.

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 Regional Ecosystem Description Database [REDD] available at the EPA's website.
- location of vegetation types of conservation significance based on EPA's regional ecosystem types and occurrence of species listed as Protected Plants under the Nature Conservation (Wildlife) Regulation 1994 and subsequent amendments, as well as areas subject to the *Vegetation Management Act 1999*;
- the current extent (bioregional and catchment) of protected vegetation types of conservation significance within the protected area estate (National Parks, Conservation Parks, Resource Reserves, Nature Refuges);
- any plant communities of cultural, commercial or recreational significance should be identified; and
- location and abundance of any exotic or weed species.

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

#### **4.8.1.2 Terrestrial fauna**

The terrestrial, and riparian fauna occurring in the areas affected by the proposal should be described, noting the broad distribution patterns in relation to vegetation, topography and substrate. The description of the fauna present or likely to be present in the area should include:

- species diversity (i.e. a species list) and abundance of animals, including amphibians, birds, reptiles, mammals and bats;
- any species that are poorly known but suspected of being rare or threatened;
- habitat requirements and sensitivity to changes; including movement corridors and barriers to movement;
- the existence of feral or exotic animals;
- existence of any rare, threatened or otherwise noteworthy species/communities in the study area, including discussion of range, habitat, breeding, recruitment, feeding and movement requirements, and current level of protection (e.g. any requirements of Protected Area Management Plans); and
- use of the area by migratory birds, nomadic birds, fish and terrestrial fauna.

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

#### **4.8.1.3 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 marine environments. The description of the fauna and flora present or likely to be present in the area, particularly in the area of proposed channel dredging, should include:

- fish species, mammals, reptiles, amphibians, crustaceans and aquatic invertebrates occurring in the waterways within the affected area, and/or those in the associated marine environment;
- identification of the types and spatial distribution of economically important fish species, including their migration requirements;
- the principal fishes and crustaceans occurring in and adjacent to the development area should be listed, their recreational, traditional and commercial fisheries interest identified and their present abundance and distribution assessed;
- any rare or threatened marine species, particularly the dugong and its habitat;
- define the nature and extent of existing marine features such as littoral and sub-littoral lands, waterways, affected tidal and sub-tidal lands, corals and marine vegetation for example salt couch, seagrass, mangroves within the proposed area of development and in the areas adjacent to the proposal;
- aquatic plants (including algal species);
- aquatic and benthic substrate; and
- habitat downstream of the project or potentially impacted by the proposal.

#### **4.8.2 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 *Marine Parks Act 1994*, *Nature Conservation Act 1992*, *Environment Protection and Biodiversity Conservation Act 1999*, 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 (also see Attachment 3). 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 Moreton Bay Marine Park 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 any potential adverse impacts associated with the proposal. Additionally, potential opportunities for implementing offsets for existing environmental problems in the Caboolture River should be considered. Any potential net loss of ecological values should be described and justified and options for providing offsets discussed.

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 potential impacts of alterations to stream and tidal flows, and sediment deposition, resulting from dredging should be discussed with specific reference to impacts on benthic environments, fish habitat, and migratory bird species using tidal areas at the mouth of the Caboolture River. Measures to mitigate environmental harm to habitat and potential environmental offsets should also be discussed.

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

Weed management strategies aimed at containing existing weed species (eg. parthenium and other declared plants) and ensuring no new declared plants are introduced to the area are required, and feral animal management strategies and practices should be addressed. The potential to spread weed seeds should be addressed including the relocation of topsoil, transportation by wind or water flows and by the movement of machinery. The EIS should develop strategies to ensure that the project does not contribute to increased encroachment of a feral animal species. Reference should be made to the local government authorities pest management plan when determining control strategies. The strategies for both flora and fauna should be discussed in the main body of the EIS and provided in a working form in a Pest Management Plan as part of the overall EM Plan for the project.

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

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):

- areas of nature conservation interest declared in the *Marine Parks (Moreton Bay) Zoning Plan 1997*;
- protected areas which have been declared as Fish Habitat Areas under the *Fisheries Act 1994*;
- 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;
- sites of palaeontologic significance such as fossil sites;
- sites of geomorphological significance;
- 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*.

Specific issues to be addressed associated with aquatic ecology include:

- assessment of the impact of the proposed works on juvenile and adult aquatic species leading to loss of productivity in fish, crustaceans etc;
- describe any loss of seagrasses in relation to the extent and regional significance of seagrass communities and associated impact on fisheries, dugongs, turtles etc;
- discuss the impact of the creation of permanent deep water within the marina and the likely colonisation of the marina and marine structures;
- potential impacts associated with dredging and dredge material disposal;
- potential impacts associated with altered tidal conditions (water levels and flows) and degraded water quality (as determined from 4.4.2);
- describe mitigation measures to reduce the impacts on turtles and dugongs related to increased recreational and commercial use (i.e. boat strike, degraded water quality);
- assess impacts on the Moreton Bay Marine Park and associated Ramsar wetlands through dredging activities (including alteration of stream and tidal flows and sediment deposition) and increased marine traffic and visitation.
- potential impacts on movements of aquatic species of any construction of waterway barriers (permanent or temporary) and measures to avoid/offset/mitigate these impacts.

The proposal should demonstrate consistency with policies of the State Coastal Management Plan and/or the South East Queensland Regional Coastal Management Plan under topic heading 2.8 Conserving Nature.

Specific issues to be addressed include:

- maintenance and protection of the current extent and diversity of coastal wetlands;
- demonstrating that there is no unavoidable loss or degradation to areas of coastal biodiversity;
- maintenance, protection and enhancement of the connectivity of ecosystems, ensuring it achieves maintenance of ecological functioning and mitigates potential impacts from edge effects and changes to species diversity and composition;
- rehabilitation of degraded areas containing coastal biodiversity values;

- ensuring there is an appropriate buffer to areas containing coastal biodiversity values;
- impacts to the functioning of shorebird habitats, including nesting, roosting and feeding, and maintaining the current extent and quality of critical shorebird habitat.

Requirements of the *Vegetation Management Act 1999* should be addressed including a description of how any vegetation clearing associated with the the proposal would comply with the performance requirements specified in the relevant Regional Vegetation Management Code.

## **4.9 Cultural heritage**

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

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

A cultural heritage study may be required that will describe indigenous and non-indigenous cultural heritage sites and places, and their values.

#### **4.9.1.1 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, Caboolture Shire 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, NR&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 search of both the Cultural Heritage register and the Cultural Heritage database;
- 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.

#### **4.9.1.2 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.

#### **4.9.2 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 affiliated traditional owners. 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 proponent 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.

## **4.10 Social**

### **4.10.1 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;
- 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 4.11).

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 4.9 Cultural Heritage and Section 4.12 Economy.

#### **4.10.2 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 Community. 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 residential amenity and recreational amenity of the area particularly the recreational uses of the Caboolture River;
- impacts associated with increased traffic loads (congestion, noise etc), particularly on the amenity of the existing and future residential areas to the south of the site;
- impacts associated with altered marine habitat areas;
- 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 the project, including 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 along with:

- an estimation of housing trends in the area and future projections, that would give an indication of the degree of potential housing stress over the project's construction period;
- the proposed income levels targeted for the urban residential component as well as an indication of the measures to be taken to ensure a proportion of affordable housing is included in the development;
- 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;
- 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 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.

The educational impacts of the proposed development, is to be analysed and described, particularly in regard to:

- primary, secondary and tertiary educational sectors;
- improved appreciation of conservation areas; and
- environmental education for the general public.

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.

## **4.11 Health and safety**

### **4.11.1 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.

### **4.11.2 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.

## **4.12 Economy**

### **4.12.1 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.

### **4.12.2 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 proponent, 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. 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 and retail/commercial 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 including the potential for the project to increase demand for publicly funded boating facilities in the Caboolture River;

- implications for future development in the locality including constraints on surrounding land uses and existing industry and surrounding existing centres identified in accordance with relevant policy and regulatory frameworks (eg SEQ Regional Plan and Caboolture Shire Council planning scheme);
- provide details of impact on the balance of zones and development in the Shire given that part of the District Industry zoned land is proposed for residential and commercial uses;
- the potential economic impact of any major hazard identified in section 4.13;
- 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.

## **4.13 Hazard and risk**

### **4.13.1 Description of environmental values**

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

Detail the environmental values likely to be affected by any hazardous materials and actions incorporated in the proposal. The degree and sensitivity of risk should be detailed.

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.

### **4.13.2 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.

A management plan for the storage, transport and usage of hazardous materials used during the construction and operational phases of development should be prepared including consultation with Department of Emergency Services Chemical Services Unit.

The proponent should develop an integrated risk management plan for the whole of the life of the project including construction, operation and decommissioning phases. The plan should include a preliminary hazard analysis (PHA), conducted in accordance with appropriate guidelines for hazard analysis (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 major 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.
- potential obstruction of major traffic thoroughfares during the transport of construction materials and hazardous goods.

The plan should include the following components:

- operational hazard analysis;
- regular hazard audits;
- fire safety, emergency response plans;
- a flood hazard management plan that meets Outcomes 1, 2 & 3 of State Planning Policy 1/03 (SPP 1/03);
- qualitative risk assessment; and
- construction safety.

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

#### **4.14 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. Example references are in Attachment 1.

## **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 Section 4.14 of 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. 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.

### **A5. 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;
- transport
- waterway hydrology;
- groundwater;
- flora and fauna studies;
- economic studies, CBA; and
- hazard and risk studies.

## **A6. Research**

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