ABBOT POINT COAL TERMINAL
STAGE 3 EXPANSION

FINAL

TERMS OF REFERENCE

FOR

ENVIRONMENTAL IMPACT STATEMENT

QUEENSLAND

The Coordinator-General

October 2005

CONTENTS

PREFACE

The Project was declared to be a "significant project" under Section 26 of the Queensland State Development and Public Works Organisation Act 1971 (SDPWOA) by the Coordinator-General (CG) on 11 July 2005. Matters considered by the CG in making this declaration included information in an Initial Advice Statement prepared by the Proponents, the level of investment necessary for the Project, employment opportunities provided by the Project, potential impact on the environment, potential effects on relevant infrastructure and the significance of the Project to the region and State. The declaration initiates the statutory environmental impact assessment procedure of Part 4 of this Act, which requires the Proponents to prepare an Environmental Impact Statement (EIS) for the Project.

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

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

The statutory impact assessment process under the SDPWOA is also the subject of a bilateral agreement between the Queensland and the Commonwealth Governments in relation to environmental assessment under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The Proponent referred the Proposal to the Commonwealth Minister for the Environment and Heritage in accordance with the provisions of the EPBC Act, which is administered by the Environment Assessment and Approvals Branch of the Department of Environment and Heritage (DEH). A delegate of the Commonwealth Minister decided, on 28 June 2005, that the Proposal did not constitute a controlled action under Section 75 of the EPBC Act.

The Proponents will prepare a draft 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 Proponents may be required to prepare a Supplementary Report to the EIS to address specific matters raised in submissions on the EIS.

At the completion of the EIS phase, the CG will prepare a report evaluating the EIS and other related material, pursuant to Section 35 of SDPWOA. The CG Report will include an evaluation of the environmental effects of the proposed Project and any related matters. The 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 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 Report must:

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

Further to the above *IPA* approvals, other approvals under a range of legislation including, but not limited to, the *Environmental Protection (Sea Dumping) Act 1981, Coastal Protection and Management Act 1995, Integrated Planning Act 1997, Environmental Protection Act 1994* are likely to be required.

These ToR provides information in two broad categories:

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

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

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The term environment refers to:

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

b) all natural and physical resources;

c) the qualities and characteristics of locations, places and areas, regardless of size, that stimulate biological diversity and integrity, intrinsic or attributed scientific value or interest, amenity, harmony and sense of community;

d) the social, economic, aesthetic and cultural conditions which influence, or are affected by, the entities and attributes mentioned in paragraphs (a) to (c); and

e) *the local, regional, Queensland and Australian populations and labour markets.*

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

The demand for export coal from Queensland coal fields has increased significantly in recent years and is expected to increase further as existing mines continue to increase production and new mines are brought on-line in the Bowen Basin. This high demand has lead to pressure to expand the handling capacity of coal terminals and their ports in Queensland. The Commonwealth Government, Queensland State Government and coal mine operators have all called for urgent action to provide additional port infrastructure to increase coal exports from the Bowen Basin region.

The Port of Abbot Point, which incorporates the Abbot Point Coal Terminal, is currently the third largest coal export port in Queensland and the most northerly. It services mines in the Bowen Basin region. It has been identified that there is a need to expand the capacity of the coal terminal and studies have identified that a capacity of around 50 Mtpa can be achieved through expansion of existing infrastructure. Such an expansion was envisaged as part of the original design. Additionally, the rail receiving facilities, conveyors, stockyards and stacker reclaimers, ship outloading facilities and berthing facilities all need to be installed or upgraded to achieve this increase in throughput.

The proposed project to be addressed in the Terms of Reference (ToR) and Environmental Impact Statement (EIS) covers those issues related to the upgrade of the infrastructure at Abbot Point and associated berthing arrangements to achieve the required increase in handling capacity at the Port. It does not address any requirement to increase the coal mining or handling capacity at either the Newlands or Collinsville coal mines nor any requirements to upgrade rail infrastructure on the rail route from these mines to the Port of Abbot Point and any associated impacts. These will be assessed as part of separate evaluation processes undertaken by others.

Project Proponent

The Ports Corporation of Queensland (PCQ) is the proponent for the proposed expansion of the Abbot Point Coal Terminal. PCQ is a Queensland Government Owned Corporation. PCQ is responsible for the development and management of 13 ports in Queensland including the coal ports of Abbot Point and Hay Point. The Port of Abbot Point exports coal sourced from coal mines in the Bowen Basin, with the largest suppliers being the Newlands Coal Mine and Collinsville Coal Mine. The proposed expansion of the Abbot Point Coal Terminal is to service additional mines in the region. The terminal is operated under an operating and maintenance contract by Abbot Point Bulk Coal Pty Limited (APB).

Project Description

The project is the Stage 3 Expansion of the Abbot Point Coal Terminal. The Stage 3 project encompasses the development of infrastructure and associated works necessary to upgrade the capacity of the existing Abbot Point Coal Terminal from around 25 Mtpa of coal

(after the completion of the Stage 2 Expansion) to around 50 Mtpa. Key components of the proposed project are as follows:

- a second rail loop and dump station and associated second inloading conveyor;
- installation of a new stockyard bund and two new stockyard rows;
- installation of three stacker reclaimers (or two stacker reclaimers and a stacking machine), with a new yard conveyor and associated transfer stations;
- installation of second outloading conveyor to the offshore berth on the existing jetty structure;
- installation of a second berth and second shiploader;
- dredging associated with the second berth; and
- disposal of dredged material. Spoil volume associated with dredging of the second berth is estimated to be in the order of 100,000 m^3. The material will be disposed either on land or at sea. A recommendation on the preferred approach to spoil disposal will be made in the EIS after assessment of options.

The second berth will be located to either the east or west of the existing berth. The recommended location will be assessed through the EIS process in conjunction with a detailed engineering investigation.

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 Draft 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 EIS process followed will be as specified in the *State Development and Public Works Organisation Act 1971.* 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 measures proposed to mitigate adverse effects; and
- recommendations on the need for and contents of any environmental management plans and/or operational plans to mitigate adverse effects.

EIS Objectives and Key Issues

Objectives

The objectives of the EIS are as follows:

- to provide information on the proposal and development process to the community and decision makers;
- to comprehensively identify and evaluate all relevant issues associated with the proposal;
- to identify all potential environmental, cultural, social, transport and land use planning impacts of the preferred concept, and recommend infrastructure and facilities needs together with other design and operational measures required to minimise or compensate for adverse impacts and enhanced benefits;
- to consult with the community and relevant stakeholders in the process of identifying, assessing and responding to the impacts of the proposal;
- to identify all necessary licences, planning and environmental approvals including approval requirements pursuant to the *Environmental Protection (Sea Dumping) Act 1981, Coastal Protection and Management Act 1995, Integrated Planning Act 1997, Environmental Protection Act 1994* and other legislation; 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 terrestrial environment;
- impacts on marine flora and fauna;
- impacts on marine processes;
- impacts on water quality;
- sediment quality issues;
- impacts on areas of cultural heritage value or indigenous significance;
- air emissions and impacts;
- impacts of noise and vibration;
- impacts on surrounding land uses and land use planning;
- impacts from increased shipping;
- economic issues (including impacts on local and regional businesses);
- 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 Terms of Reference were publicly notified in *The Courier Mail* and *The Bowen Independent*, inviting comment on the Draft ToR for the Project. The Draft ToR were also made available on the Department of State Development, Trade and Innovation website.

Comments and submissions had a submission period of 20 business days from the initial advertising date. The closing date for submissions was Monday 29 August 2005.

PART B - CONTENTS OF THE EIS

The following Terms of Reference present the matters that will need to be addressed in the Environmental Impact Statement (EIS). In general terms, the report is to consist of three parts:

- an executive summary;
- the text of the document, which must be written in a clear and concise manner so as to be readily understood by general readers, and so conclusions can be assessed by an expert third party; and
- a volume of appendices containing detailed technical information. Source documents are to be included so that study methodologies and scope can be assessed.

An Environmental Management Plan (EMP) is to be prepared and include information and descriptions necessary to enable Referral Agencies and stakeholders to be informed of the relevant management measures to be incorporated into the project development and operation. This can incorporate the use of conceptual plans for the location and sizes of structures where appropriate.

The report is to be written so that any conclusions reached can be assessed by a third party, and should include the referencing of all sources. Relevant maps, diagrams and other illustrative material are to be included in the report as appropriate.

The EIS should contain and address the following components. This list is not exhaustive and other issues not described below but relevant to the consideration of impacts of the project are to be incorporated into the report.

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. The structure of the Executive Summary should follow that of the EIS, although focused strongly on the key issues and conclusions. The Executive Summary should be able to be presented as a separate stand-alone report suitable for distribution during the consultation phase.

GLOSSARY OF TERMS

A glossary of technical terms and acronyms should be provided.

1 INTRODUCTION

An introduction should be provided detailing the background and reason/s for the EIS, the audience whom will be reviewing the document, the approval process and legislative context, structure of the document and the level of detail provided in the EIS.

The following general information should be provided:

- the title of the Project;
- the full name and postal address of the designated proponent;
- a clear outline of the objective of the Project;
- the location of the Project;
- the background to the development of the Project;
- the current status of the Project; and
- the consequences of not proceeding with the Project.

1.1 Project Proponent

This section should provide details regarding PCQ as the project proponent and key contact details for project staff and the project consultants, the EIS consultant and any sub-consultants, detailing their primary area of involvement in preparation of the EIS.

The Proponent needs to provide details of any Australian proceedings brought against it relating to an Australian environmental law. Furthermore, details of the Proponent's environmental policy and planning framework must be incorporated into the EIS.

1.2 Project Description

This section should provide a detailed description of the key elements of the Project, including the following:

- the key components of the Project, including the expected coal terminal throughput after the expansion;
- the location of works to be undertaken, structures to be built or elements of the action that may have relevant impacts, particularly where additional to the existing impacts of the project;
- how the works are to be undertaken and design parameters for those aspects of the structures or elements of the Project that may have relevant impacts; and
- any environmental control measures already proposed by the proponent including integration with existing operational and management practices at the Abbot Point Coal Terminal.

This section should also provide a brief description of background studies which have formed the development of the Project including previous studies undertaken for the original terminal development.

1.3 Project Objectives and Scope

This section should provide a statement of the objectives which have led to the formulation of the Project including alternatives and brief outline of the events which have influenced the formulation of the Project. This should include proposed time frames for implementation and expected project life, anticipated construction costs and relevant actions already undertaken at the site to facilitate the further development.

1.4 The Environmental Impact Assessment Process

The purpose of this section is to make clear the methodology and objectives of the environmental impact assessment under the relevant legislation. The Environmental Impact Assessment (EIS) and resulting environmental impact statement (EIS) will meet the requirements of the *State Development and Public Works Organisation Act 1971* and relevant Commonwealth legislation, including the *Environment Protection (Sea Dumping) Act 1981* and the *Great Barrier Reef Marine Park Act 1974*.

1.4.1 Methodology of the EIS

This section should provide a description of the impact assessment 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 1.6) will integrate with the other components of the impact assessment, including the stages and timing for public input.

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.

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

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

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

The role of the EIS in providing the Environmental Management Plan (EMP) for the project should also be discussed, particularly in relation to providing management measures that can become conditions for the Project.

1.4.3 Submissions

Details should be included of how public submissions on the Draft EIS will be addressed in the decision making process.

1.5 Public Consultation Process

An appropriate public consultation program is an important component of the EIS process.

This section should outline the methodology that will be adopted to:

- Identify key stakeholders and sections of the community and how their involvement will be facilitated;
- Identify the process conducted to date and future consultation strategies and programs including during the operational phase of the project;
- Consultation measures that are currently undertaken by PCQ and the operator (APB) in relation to existing site activities; and
- Indicate how consultation involvement and outcomes will be integrated into the EIS process and future site activities including opportunities for engagement and provision for feedback and action if necessary.

A list of stakeholders and affected persons consulted during the program should be provided as well as any meetings held, presentations made and any other consultation measures undertaken during the EIS process.

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

A Consultation Plan should be prepared during the initial phase of the EIS process. This plan should identify:

- the types of activities to be undertaken;
  - timing;
  - target stakeholder/ community representatives;
  - integration with other EIS activities and the project development process;
  - consultation responsibilities;
  - communication protocols; and
  - reporting and feedback arrangements.

Target agencies, stakeholder and communities that may need to be consulted include:

Agencies

- Commonwealth Department of the Environment and Heritage;
- Great Barrier Reef Marine Park Authority;
- Queensland Department of State Development, Trade and Innovation;
- Queensland Environmental Protection Agency;
- Queensland Department of Primary Industries and Fisheries;
- Queensland Department of Housing;
- Queensland Department of Natural Resources and Mines; and
- Maritime Safety Queensland.

Stakeholder, Community and Special Interest Groups

- Local Authority (Bowen Shire Council);
- Abbot Point Bulk Coal Pty Limited;
- Turtle Watch;
- Relevant business associations including local Chamber of Commerce;
- Traditional Owners, and Indigenous and Native Title Claimant organisations;
- Sunfish and Queensland Seafood Industry Association;
- Relevant community groups such as ratepayers association, environmental and heritage groups; and
- Service providers.

1.6 Legislative and Planning Framework Applicable to the Project

1.6.1 Relevant Legislation and Policy Requirements

The EIS should identify all the approvals, permits and licenses that will need to be obtained for the development of the proposed project including any amendments to existing licences/permits held in relation to the existing operation and timing implications.

Key pieces of legislation that will need to be addressed in terms of implications for project approval and operations include:

Commonwealth

Environment Protection (Sea Dumping) Act 1981

Great Barrier Reef Marine Park Act 1974

State

Integrated Planning Act 1997

Environmental Protection Act 1994

State Development and Public Works Organisation Act 1971

Coastal Protection and Management Act 1995

Vegetation Management Act 1999

Fisheries Act 1994

Aboriginal Cultural Heritage Act 2003

Water Act 2000

Land Protection (Pest and Stock Route Management) Act 2002

Transport Infrastructure Act 1995

Transport Operations (Road Use Management) Act 1995

1.6.2 Planning Context

This section should discuss the project's consistency with relevant planning policy for the area and region. This would include:

- Any planning controls, by-laws and policies relating to the study area and adjacent lands;
- details of all licences, planning and environmental approvals required;

- regional strategies or plans that relate to the study area or proposal (existing or in preparation); and
- relationship to other significant developments (existing or proposed) in the study area or surrounding areas.

This should include an assessment of the project's consistency with the PCQ Port of Abbot Point Land Use Strategy, PCQ Port of Abbot Point Environmental Management Plan, the Bowen Shire Planning Scheme and the GBRMP zoning of any off-shore areas potentially impacted by the project.

Options are to include consideration of previous management strategies used in the development of the existing facility and comparative impacts of those strategies. Reasons for selecting the preferred option should include technical, commercial, social and natural environment aspects, in particular reference to the principles of ecologically sustainable development.

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 of the expansion of the existing port facility, including employment and spin-off business development, which the project may provide.

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

2.2 Alternatives to the Project

This section should describe feasible alternatives, including conceptual, technological and locality alternatives to the project, and discussion of the consequences of not proceeding with the project. A comparative description of the impacts of each key project alternative shall be included. Alternatives should be discussed in sufficient detail to enable an understanding of the reasons for preferring the course of action taken and rejecting others. This is to include a review of on-shore and off-shore alternative locations for disposal and other options for disposal of the spoil including reuse (as per the requirements of the National Ocean Disposal Guidelines for Dredged Material (NODGDM-DEH, 2002). A discussion on the alternate location for the second berth (to the east or west of the existing berth) is also to be provided.

3 DESCRIPTION OF THE PROJECT

The objective of this section is to describe the project through its lifetime of construction, operation and decommissioning.

3.1 Overview of Project

An overview of the project should be provided to put the project into context. Provide the current plant capacity and the increase in throughput planned from the project. The key components of the expansion should be described. Provide the expected project cost and overall expected project duration and timing. Summarise the employment benefits from the project from the construction and operations phases.

3.2 Location

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

Maps should show the precise location of the project area, and in particular:

- The location and boundaries of land tenures, in place or proposed, to which the project area is or will be subject;
- The location and boundaries of the project footprint; and
- The location of any proposed buffers surrounding the working areas.
- the location of the plan position of highest astronomical tide, mean high water spring and mean low water spring tides.

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

Include on maps or plans to be provided, the position of applicable erosion prone areas, coastal control management districts and the coastal management district.

3.3 Onshore Construction

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

- Type and methods of construction for:
  - A second rail loop and dump station and associated second inloading conveyor;
  - Installation of the new bund and stockyard rows;
  - Installation of new stacking/reclaiming machines in the stockyard, with a new yard conveyor and transfer stations;

- The equipment to be used for the construction of the above;
- The items of plant to be transported to the site for construction;
- The expected length of the onshore construction phase, and staging of the proposal, with illustration showing site boundaries, development sequencing and timeframes; and
- Accommodation proposed for the construction workforce.
- Description and information on the source of material required for on shore construction and associated potential impacts.
- The estimated numbers of people to be employed in the Project construction phase including a schedule showing anticipated peaks in workers numbers during the construction period. This should include numbers of contract workers.
- Details of the construction workforce should be given, including an estimate of the anticipated numbers of workers who will be accompanied by dependents, as well as those who will be unaccompanied (ie single workers)
- Particular reference should be made to the source of skilled tradespeople and labour. An outline of recruitment schedules and policies for recruitment of workers (addressing recruitment of local and non-local workers) to be included.

3.4 Offshore Construction

The description will include:

- The type and methods of construction for the offshore works, which includes:
  - Installation of a second outloading stream to offshore berth;
  - Installation of a second berth and shiploader;
- The equipment to be used for the construction of the above and the method of construction;
- The existing and proposed launching area for offshore equipment;
- The items of plant to be transported to the site for construction;
- The expected length of the offshore construction phase, and staging of the proposal;
- Information regarding a description of the existing and proposed off shore equipment in terms of existing approvals granted for such work; and
- Description and assessment of the sourcing of material required for off shore construction and proposed off shore equipment in terms of existing approvals granted for such work.

3.5 Dredging and Spoil Disposal

The methods proposed for the dredging of the new berth pocket should be described including:

- the type and method of dredging proposed;
- the dredge equipment, including any turtle protection measures proposed;
- the expected length and timing of the dredging campaign; and
- the amount of spoil to be relocated.

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

- the on-shore and off-shore spoil disposal areas proposed; and
- quality of spoil material;

The characteristics and environmental values of the on-shore and off-shore sites should be described in the appropriate sections of Chapter 4, with particular reference to: the ecological and physical properties of the on-shore site that will influence its erosion potential and stability, stormwater run-off quality, rehabilitation, future use and management; and the sediment movement from, and recovery of the benthos of, the off-shore site.

3.6 Operations

The location and nature of the processes and operations associated with the long-term operation of the Port of Abbot Point expansion should be described including:

- A general description of the operations of the coal terminal that is expected once the Stage 3 expansion is complete;
- The increase and final capacity of stockpiling, inloading and outloading;
- Increase in shipping frequency and intensity, including defining direction of movements to and from the port;
- Increases in tug operation;
- Hours of operation;
- Estimated number of people to be employed following expansion;
- Details of the operation workforce, including an estimate of the anticipated numbers of workers who be accompanied by dependents, as well as those who will be unaccompanied (ie single workers); and
- The source of skilled tradespeople and labour including an outline of recruitment schedules and policies for recruitment of workers (addressing recruitment of local and non-local workers); and
- Any other appropriate issues relevant to the expansion of the Abbot Point Coal Terminal.

Concept and layout plans should be provided highlighting proposed structures, plant and equipment associated with terminal operations. The nature, sources, location and quantities of all materials to be handled, including storage and stockpiling of coal should be described.

Operations should be described in terms of other areas affected such as the Bowen Boat Harbour

3.7 Product Handling

The proposed methods and facilities to be used for coal storage and for transferring product from rail unloading to ship should be described and shown on plans at an appropriate scale. A summary of any environmental design features of the new facilities should be provided to complement the detailed review provided in Section 4.

3.8 Infrastructure Requirements

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

3.8.1 Rail

The impact of increased rail movements outside of the terminal area are not to be addressed in this EIS but will be the subject of a separate assessment process by the rail provider. To identify expected changes for this separate assessment, provide details of the proposed use of rail for transport of coal to the project site. This is to include the increased number of rail movements and any change in train size expected.

3.8.2 Shipping

In relation to shipping of products, details of the increased number of ships and their size should be documented. Any changes to anchorage arrangements and access and departure to and from the port and any other navigational arrangements are to be described as well as any additional servicing of vessels.

3.8.3 Road

Information should be provided on road transportation requirements on public roads for both construction and operations phases. "Refer to Chapter 4 – *Development Profile* in Main Roads "*Guidelines for Assessing the Road Impacts of Development Proposals*".

As a guide the information shall include at least the following:

Identify the state-controlled and local government road network required to supply the following items:

1. All heavy plant required for the construction and operational phases
    a) Materials, including but not limited to
    b) Bulk granular materials including sand
        i. Concrete and cement projects
        ii. Steel and other metal supplies

iii. Fuel, Oil and Lubricants for both the construction and operation phases

c) Any industrial items (Stockpilers, stackers, pumps etc)

2. Identify the configuration, tare and Gross Vehicle Mass (GVM) or Gross Combination Mass (GCM) for vehicles transporting the listed items"

Analyse and discuss the potential traffic problems associated with possible traffic buildup.

3.8.4 Energy

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

3.8.5 Water Supply and Storage

The EIS should provide information on existing and proposed water usage both on site and off site by the expanded project, including the quality and quantity of all water supplied to the site. In particular, the existing and proposed sources of water supply should be described (e.g. bores, any surface storages) and any approvals required under the *Water Act 2000*. Estimated rates of supply from each source (average and maximum rates) should be given. Any proposed water conservation, water treatment and management measures, including water re-use, should be described. Determination of additional potable water demand should be made for the project, including the temporary demands during the construction period. Required water needs for the accommodation camp should be included.

3.8.6 Stormwater Drainage and Seepage from Stockpiles

A description should be provided of the existing and proposed stormwater drainage system, notably from the stockyard area and the proposed disposal arrangements. This section should clearly describe and illustrate how contaminated stormwater and clean stormwater runoff will be managed. This should include a description of the segregation of these stormwater sources and management to prevent the release of contaminated stormwater to the receiving environment.

3.8.7 Waste

Provide an inventory of the main 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 volume and tonnage of any reusable by-products.

Simple schematic diagrams should be provided for each distinct stage of the project (e.g. construction/site preparation, commissioning and operation) indicating the processes to be used and highlighting their associated waste streams (i.e. main 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 the main waste material 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. Best estimate information should also be provided on the variability, composition and generation rates of main waste streams produced at the site and accommodation camp.

Cleaner 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.

3.8.7.1 Air emissions

Describe in detail the quantity and quality of all air emissions (including particulates, fumes and odours) from the project during construction and operation. Particulate emissions include those that would be produced by any industrial process or disturbed by wind action on stockpiles and conveyors, or by transportation equipment (e.g. rail freight). This can be cross-referenced to Section 4.5 for full details.

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

3.8.7.2 Solid waste disposal

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

This section should describe the methods for containing, collecting and disposing of waster from rail unloading areas, stockpiles and conveyors.

This section should also describe the proposed method for disposing of dredge spoil. The potential impacts of spoil disposal should be addressed in the relevant sections of Chapter 4.

3.8.7.3 Liquid waste

A description should be presented of the origin, quality and quantity of wastewater and any immiscible liquid waste originating from the project. 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 should consider the following effects:

- runoff from unloading, stockpile and conveyor areas;
- seepage from any other waste storages;
- groundwater from excavations;
- run-off from roads and plant;

- drainage (i.e. run-off plus any seepage or leakage);
- water usage for:
  - dust suppression, and
  - domestic purposes.
- evaporation;
- domestic sewage treatment - disposal of liquid effluent and sludge; and
- water supply treatment plant - disposal of wastes.

3.8.8 Telecommunication

Any changes to the existing telecommunication arrangements should be described.

3.8.9 Accommodation and Other Infrastructure

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

- site offices and construction camps;
- new fuel storage areas;
- equipment hardstand and maintenance areas;
- new workshops or laboratories;
- Accommodation strategy for the construction workforce addressing the estimated housing needs of single and accompanied construction workers. This should include details of size, location and management of any temporary worker accommodation that will be required either on-site or off-site. Information should include arrangements for housing on contractor labour;
- Maps should be included to illustrate the potential site / s and should include the location of any proposed construction workers' accommodation on-site or in the vicinity of the project; and
- The capability of the existing housing stock in the region, including private rental accommodation, to meet any additional demands created by the Projects is to be discussed. This includes the available capacity of caravan parks, hotels motels and other forms of private dwellings.

3.9 Rehabilitation and Decommissioning

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

4 ENVIRONMENTAL VALUES AND MANAGEMENT OF IMPACTS

This section should describe the existing environment in terms of the environmental values that may be affected by the proposal, including the ecological, social, cultural and economic elements proximate to the project proposal area. The description should be to the extent necessary for the assessment of the potential impacts of the proposal. The assessment should be placed into the context of the nature and effects of the existing developments at the Port and implications of the proposed expansion. Environmental values should be described by reference to background information and studies. Reference should also be made to environmental protection objectives and the relevant standards and measurable indicators to be achieved. Environmental objectives may be derived from legislative and planning requirements which apply to the proposal including commonwealth strategies, state planning policies, local government planning strategic plans and planning schemes.

This section should also describe the potential adverse and beneficial impact of the proposal on the existing environment. Any likely environmental harm (as defined under the *Environmental Protection Act 1994*) should be described. Analysis of any cumulative impacts on environmental values caused by the proposal should be included.

Proposed mitigation measures and design requirements to mitigate impacts should be presented including an examination of 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.

To achieve a comprehensive coverage of all elements of the environment, the following issues should be considered for each environmental value relevant to the project:

- Existing environmental values of the area to be affected including values and areas that may be affected by any cumulative impacts
- Impact on environmental values, including cumulative impacts considered over time or in combination with any other impacts in the dimensions of scale, intensity duration or frequency of the impacts.
- Environmental protection objectives should be described 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.
- Control strategies to achieve the objectives,
- Monitoring programs, describing parameters, monitoring points, frequency, data interpretation and reporting proposals.
- Auditing programs, describing scope, methods, and frequency

- Management strategies describing controlling strategies, reporting, monitoring, staff training, management responsibility pathway and
- Information quality

4.1 Land Uses

4.1.1 Description of Environmental Values

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 (e.g. Port land). 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 new development. The maps should identify terrestrial or marine areas of conservation value in any locality that may be impacted by the proposal. In particular, the EIS should indicate if the land affected by the proposal is, or is likely to become, part of the protected area estate, or is subject to any treaty. Consideration should be given to national parks, conservation parks, declared fish habitat areas, wilderness areas, aquatic reserves, heritage/historic areas or items, national estates, world heritage listings and sites covered by international treaties or agreements (eg Ramsar), areas of cultural significance and scientific reserves. Particular reference is to be given to the Caley Valley Wetland listed on the Directory of Important Wetlands.

Port uses need to be placed into context of The Port of Abbot Point Land Use Strategy (PCQ 1995), or any subsequent revision of this version.

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

4.1.2 Potential Impacts and Mitigation Measures

The following issues should be addressed:

- compatibility of the proposal with surrounding land uses;
- possible impacts on surrounding land uses and human activities;
- relationship to existing planning objectives and controls for study area including PCQ Port of Abbot Point Land Use Strategy and the Bowen Shire Council planning scheme as appropriate;
- consistency of the project with GBRMPA zoning of any affected areas; and
- impacts on existing and proposed aquaculture enterprises within the area that extracts water from Upstart Bay, including dredging. This needs to be related to section 4.9 on water quality.

4.2 Climate

This section should describe the local and regional rainfall patterns (including magnitude

and seasonal variability of rainfall), air temperatures, humidity, wind (direction and speed) and any other special factors (e.g. temperature inversions) that may affect air quality within the environs 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 cyclones, floods and bushfires, should also be addressed. The relative frequency, magnitude and risk of these events should be considered.

4.3 Terrestrial Environment

4.3.1 Description of Environmental Values

This section describes the existing environmental values of the terrestrial environment that may be affected by the proposal. A review of work recently completed should be used to determine any additional information required on the terrestrial environment.

Maps should be provided locating the project and its environs 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 landscape should be included on the maps.

Commentary on the maps should be provided highlighting the significant topographical features.

The EIS should provide a description, map and a series of cross-sections of the geology of the proposed development 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, occupational health and safety, rehabilitation programs, or the quality of wastewater leaving any area disturbed by the proposal should be described.

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, which will influence erosion potential, storm water run-off quality and site stability. An assessment of the presence of acid sulfate soils should be conducted in accordance with State Planning Policy 2/02 and according to ASSMAC guidelines for lands below 5m AHD. The State Planning Policy 1/00 Planning and Management of Coastal Development involving Acid Sulfate Soils should also be addressed (e.g. identification and management and format of environmental management plans). 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 the Australian Soil Classification system (Isbell, 2002). Information should also be provided on soil stability and suitability for construction of proposed facilities.

4.3.2 Potential Impacts and Mitigation Measures

Should acid sulfate soils have been identified, means of handling, treating or disposing of such material should be addressed. Management of acid sulfate soils should be based on assessment in accordance with the *Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils (ASS) in Queensland 1998 (Revision 4.0)*. The EIS should describe the

possible contamination of land from aspects of the proposals including spoil disposal on land, waste, reject product, and spills of coal and at any chemical and fuel storage areas. The potential effects of coal spillage on the external environment should be addressed. The means of preventing land contamination (within the meaning of the *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, plant site and coal storage areas after proposal completion.

The possible impacts of a workers accommodation camp on Terrestrial Environment should be addressed, e.g. increased sewerage and the potential for this increase to have impact if land disposal is needed.

Erosion potential (wind and water) and erosion management techniques should be outlined. 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 stockyard;
- access roads or other rail/ transport corridors;
- water pipelines;
- any waste dumps (including spoil disposal area); 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 and nearby wetlands by suspended solids. Measures to ensure stability of all permanent and temporary landforms, especially stockpiles, dumps and impoundments should be described.

4.4 Water Resources

4.4.1 Description of Environmental Values

A description should be given of the surface watercourses and wetlands (including particular reference to the Caley Valley Wetland) and their quality and quantity in the area potentially affected by the proposal, with an outline of the significance of these waters to the estuarine system in which they occur. Details provided should include a description and mapping at a suitable scale of existing surface drainage patterns and flows in major streams and wetlands within the area affected by the proposal, and the methodology used documented in the EIS. Storm tide inundation is a parameter to be taken into account in both describing and managing impacts associated with water regimes

The following definition of a wetland should be adopted. Wetlands: lands that are transitional between terrestrial and aquatic systems, where the watertable is usually at or near the surface of the land, or the land is periodically covered by shallow water. This

includes deepwater (e.g. lacustrine) habitats within the terrestrial environment and areas up to 6m depth at the marine interface.

To be a wetland an area must have one or more of the following three attributes:

- at least periodically the land support predominantly hydrophytes or obligate aquatic fauna which require inundation for part or all of their lifecycle
- the substrate is predominantly undrained hydric soil
- the substrate is non-soil and is saturated with water, or covered by shallow water with some periodicity.

Also, details should be provided on the likelihood and history of flooding including extent, levels and frequency, and present and potential water uses downstream of the areas affected by the proposal should be described.

An assessment is required of existing water quality in surface waters and wetlands likely to be affected by the proposal including seasonal variations. Existing monitoring data collected as part of site operations should be presented and the implications for future management described.

A relevant range of physical, chemical and biological parameters should be measured to gauge the environmental harm on any affected creek or wetland system. The effectiveness of existing settlement ponds and water management systems should be described to identify implications for the expanded operations. This should identify the quantity of coal dust and sediments currently leaving the site.

Storm tide inundation should be added as a parameter to be taken into account in both describing and managing impacts associated with water regimes.

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

- The framework for determining values within the *Environmental Protection (Water) Policy 1997*;
- sustainability, including both quality and quantity;
- physical integrity, fluvial processes and morphology of watercourses, including riparian zone
- vegetation and form; and
- any water resource plans, land and water management plans relevant to the affected water body.

Attention should be given to the existing and historical water quality characteristics of the Caley Valley wetland and its value recognizing its listing in the Directory of Important Wetlands.

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

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

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

This section should include reference to:

- nature of the aquifer/s;
- geology/stratigraphy - such as alluvium, volcanic, metamorphic;
- aquifer type - such as confined, unconfined; and depth to and thickness of the aquifers;
- hydrology of the aquifer/s;
- depth to water level and seasonal changes in levels;
- 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.

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

4.4.2 Potential Impacts and Mitigation Measures

The EIS should describe the possible environmental impacts of the proposal to environmental values for water within the framework provided by the Environmental Protection (Water) Policy 1997, particularly on the Caley Valley Wetlands/. This description should include:

- construction and operational phases
- on site (including under the stockpiles), off-site (e.g. water extraction locations, groundwater draw down areas, along water pipeline alignment) and down stream (settling ponds & wetland) areas
- surface and groundwater
- quantity and quality.

If land disposal of the dredged material is proposed, the potential impacts on the wetlands as a result saline water drainage or seepage and acidity and heavy metals, if the dredging spoil could potentially be acid sulphate soil material from the disposal area should be studied.

In particular, methods to prevent seepage and contamination of groundwater from stockpiles and/or dumps should be given.

Water management controls should be described, addressing surface and groundwater quality, quantity, drainage patterns and sediment movements. The beneficial (environmental, production and recreational) use of nearby surface, wastewater and groundwater should be discussed. Monitoring programs should be described which will assess the effectiveness of management strategies for protecting water quality during the construction, operation and decommissioning of the operation. Quality characteristics discussed should be those appropriate to the downstream and upstream water uses and environmental values that may be affected. Chemical and physical properties of any waste water (including concentrations of constituents) at the point of entering natural surface waters should be discussed along with adverse effects to flora and fauna. Any surface water needs during the construction phase may require a water permit under the *Water Act 2000.*

Any impacts on bed and banks of watercourses, any need for riverine quarry materials, impacts on riverine vegetation or on surface or groundwater quality, along with any extraction of surface or groundwater, may trigger licensing or permitting requirements under the Water Act 2000.

In relation to water supply and usage, and wastewater disposal (including from the on-shore spoil disposal area), the EIS should discuss anticipated flows of water to and from the proposal area. The EIS should investigate the effects of predictable climatic extremes (droughts, floods) upon the structural integrity of the containing walls; and the quality of water contained, and flows and quality of water discharged. The need or otherwise for licensing of any storage under the *Water Act 2000* should be discussed. Options for mitigation and the effectiveness of mitigation measures should be discussed with particular reference to sediment, acidity, salinity and other emissions of a hazardous or toxic nature to human health, flora or fauna.

The EIS should include an assessment of the potential environmental harm caused by the proposal to local groundwater resources, including supply sources. The impact assessment should define the extent of the area within which groundwater resources are likely to be affected by any increased water demands and the significance of the proposal to groundwater depletion or recharge, and propose management options available to monitor and mitigate these effects. Any potential impacts of increased groundwater extraction leading to induced leakage of poorer groundwater into the pumping acquifer should be assessed.

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

Any potential for surface or groundwater impacts due to disposal of increased sewerage, from the construction camp, should be investigated, e.g. deep drainage or runoff from any land based effluent disposal.

4.5 Terrestrial Flora and Fauna

4.5.1 Description of Environmental Values

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; and
- terrestrial ecosystems.

Identify and map areas regarded as sensitive with respect to flora and fauna, or areas that have low resilience to environmental change.

The assessment of environmental values for flora should include:

- plant species of conservation significance
- fauna of conservation significance (in terms of habitat suitability)
- regional ecosystems of conservation significance
- ecological function.

Plant species of conservation significance include those plants that are:

- listed under the Queensland *Nature Conservation Act* (NCA); and
- regionally uncommon, restricted or endemic.

The EIS should indicate how well any affected communities are represented and protected elsewhere in the province where the site of the proposal occurs. As indicated above, attention needs to be given to the fauna values associated with the Caley Valley Wetland and the implications of the proposed project on these values.

A vegetation map at a suitable scale should be provided, with descriptions of the units mapped. Sensitive or important vegetation types should be highlighted, including any wetland and riparian and threatened 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 and regional ecosystems should be specifically addressed. Vegetation 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.

Maps and aerial photographs should also be used to establish the ecological significance of the project area in a local/regional context. This assessment should consider the ecological processes of the project area based on the following categories.

- **Integrity** (*i.e.* the degree to which a site is free from disturbance and degradation)
- **Connectivity** (*i.e.* geographical contiguity with other remnant areas).
- **Refugial areas** (*i.e.* safe havens for plants and animals during periodic adverse conditions).
- **Critical habitat** (*i.e.* as a priority area for the conservation of viable populations of fauna).
- **Disjunct species or communities** (*i.e.* presence of isolated or outlying populations).
- **Hydrology** (*i.e.* role in maintaining energy and material flows through surface water and groundwater flows)

Each of these categories should be assessed on a scale of site, local, bioregional and national importance to provide an indication of their degree of significance.

Increased traffic along the highway and access road to the site could pose an increased risk of vehicle strike to native fauna and should be discussed.

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

The terrestrial vegetation communities within the affected areas should be described at an appropriate scale (i.e. 1:10,000 or better) with mapping produced from aerial photographs and a sampling intensity that supports this scale. Reference should be made to the Queensland Herbarium's *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland* (Neldner et al. 2004). Vegetation mapping should show 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 Environmental Protection Agency's website from the EPA and Commonwealth threatened species and communities, legislation;
- 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~~;~~
- 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) in the locality;
- Reference to the existing species and communities in the Abbot Point - Caley Valley Wetland to the Directory of Important Wetlands. Any plant communities of cultural, commercial or recreational significance should be identified;
- location and abundance of any exotic or weed species;
- Smaller key communities and habitats (1: 10,000 or better) that may be conservation significant."

- Regionally significant (e.g. restricted/endemic) regional ecosystems/vegetation communities."

In the event mapping of terrestrial vegetation communities within the affected areas differs from available Certified Regional Ecosystem mapping (Version 4.1) under the *Vegetation Management Act 1999*, Queensland Herbarium should be contacted with a request for a map modification to be carried out as part of the EIS. Continued consultation with the EPA will be required to determine the most up to date conservation status of mapped regional ecosystems.

Scope and Methodology

Vegetation surveys should include a record of species present at each site, structure, assemblage, diversity and abundance. Methodology used for flora surveys and species lists, survey site locations, conditions at the time of the survey and methodology of sampling along with additional information sources used to identify species likely to occur, should be specified in the appendices to the report. Where possible survey work should include surveys conducted after rainfall events to identify the presence of conservation significant species that will only be apparent during the 1-2 months following larger rainfall events.

Within each defined (standard system) vegetation community, a minimum of three sites should be surveyed for plant species as follows:

- site data should be recorded in a form compatible with the Queensland Herbarium CORVEG database
- the minimum site size should be 10 by 50 metres;
- a complete list of species present at each site should be recorded;
- the relative abundance of plant species present should be recorded;
- any plant species of conservation, cultural, commercial or recreational significance should be identified; and
- specimens of species listed as Protected Plants under the Nature Conservation (Wildlife) Regulation 1994, other than common species, are to be submitted to the Queensland Herbarium for identification and entry into the HERBRECS database. Collection requires a Scientific Purpose Permit under the *Nature Conservation Act 1992.*

Prior to the botanical survey, searches of the Queensland Herbarium's HERBRECS database and the EPBC online database should be undertaken to determine the possible occurrence of plant species of conservation significance in the general vicinity of the study area. A search of records should include a suitable width buffer (c 10-20km) outside of the proposal area.

The occurrence of plant species of conservation significance should be geocoded to mapped vegetation units or habitats, which can then be used to map areas to be protected from impacts.

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

- species diversity (i.e. a species list) and abundance of animals, including amphibians, birds, reptiles, mammals and bats;
- any species which are poorly known but suspected of being rare or threatened. Reference to the conservation status of existing or likely species listed under State and Commonwealth legislation (also including species listed under the bilateral agreement between Japan and Australia (JAMBA) and China and Australia (CAMBA) and the Convention on Migratory Species (Bonn Convention);
- habitat requirements and sensitivity to changes; including movement corridors and barriers to movement;
- the existence of feral or exotic animals;
- an indicative list of all known and potential species (including threatened species) present or likely to be present, which may be directly or indirectly affected by the project, by reference to regional ecosystems within the affected area and knowledge of species present in the Brigalow Belt bioregion;
- 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 levels of protection (e.g. any requirements of Protected Areas Management Plans)
- The development of profiles for protected animals likely to be adversely impacted by the project, including migratory birds, nomadic birds and/or~~,~~ terrestrial fauna and
- The occurrence of terrestrial fauna of protected status should be geocoded to mapped vegetation units or habitats, which can then be used to map areas to be protected from impacts.

Sampling sites should be selected to represent all habitat/ecosystem types as mapped in the flora survey, with a minimum of two sites per vegetation community. Terrestrial fauna (mammals, birds, bats etc.) should be surveyed using appropriate sampling techniques, such as trapping, spotlighting, recording of calls, and general field observations. Fauna survey equipment should include Elliott traps, drift nets and pitfall traps to ensure that small vertebrates are effectively sampled. Birds should be sampled using standardised transect and wader survey techniques, whilst frogs and reptiles should be sampled by direct field observations through day and night searches.

4.5.2 Potential Impacts and Mitigation Measures

The discussion should cover all likely direct and indirect environmental harm on flora and fauna (particularly areas such as the Caley Valley Wetlands) arising from the construction and operation of the project including clearing, salvaging or removal of vegetation, and the

indirect effects on remaining vegetation should be discussed. Short-term and long-term effects should be considered with comment on whether the effects are reversible or irreversible. Mitigation measures and/or offsets should be proposed for adverse impacts. The potential environmental harm of any alterations to the local surface and groundwater environment should be discussed with specific reference to environmental harm on riparian and wetland and other sensitive areas. This should include a discussion on the potential for erosion within the coal facility, wind or water borne coal dust and leachate from coal dumps, stored mineral sands, and if applicable, the dredge spoil dump to alter water chemistry and impact on flora and fauna. The potential for noise associated with the facility to disrupt wildlife, particularly breeding cycles should also be discussed. Measures to mitigate the environmental harm to habitat or the inhibition of normal movement, propagation or feeding patterns, and change to food chains should be described.

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

Weed control strategies aimed at containing existing weed species and ensuring no new invasive weeds are introduced to the area should be described.

Impacts and mitigation measures should include reference to:

- important habitats of species listed under the *Nature Conservation Act 1992* and/or Commonwealth *EPBCAct 1999*;
- regional ecosystems recognised by the Environmental Protection Agency as 'endangered' or 'of concern' and/or ecosystems listed as presumed extinct, endangered or vulnerable under the Commonwealth *EPBC 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 Bonn Convention, JAMBA and CAMBA;
- management arrangements to mitigate any potential adverse impacts on the Caley Valley Wetland;
- 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; and
- 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;

4.6 Air Quality

4.6.1 Description of Environmental Values

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

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

- total suspended particulates;
- coal content;
- coal dust characteristics including respirable fraction where available;
- nuisance levels;
- odour;
- visual effects;
- wind speed and direction;-
- existing air environment of nearby areas; and
- potential fires due to stockpiles catching alight, wildfires, accidental fire on-site or malicious act on site.

4.6.2 Potential Impacts and Mitigation Measures

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 the existing and expanded facility and the likely environmental harm from any such interaction, should also be detailed. The proposed levels of emissions should be compared with the National Environmental Protection Measures (1998) for ambient air quality, the National Health Medical Research Council (NHMRC) national guidelines for control of emissions from stationary sources 1985, and the *Environmental Protection (Air) Policy 1997*.

Estimate the dust emissions from the project during construction and operation. These emissions include those that would be produced by any industrial process, or disturbed by wind action on stockpiles and conveyors, or by transportation equipment (eg. trucks, either by entrainment from the load or by passage on unsealed roads). Estimation of emission rates should be based on actual measurements on samples taken from similar facilities, either full-scale facilities operating elsewhere, or experimental or demonstration-scale facilities. Where this is not possible, use published emission factors and/or data supplied by manufacturers of process and control equipment. Undertake an impact assessment with relevant inputs of emissions and local meteorology to an air dispersion model to provide estimates of the likely impacts on the surrounding environment. The model inputs should be as detailed as possible, reflecting any variation of emissions with time and including at least a full year of regional hourly meteorological data and the recently acquired local data.

Mitigation measures to prevent potential effects of environmental values should be discussed in full.

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

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

4.7 Noise and Vibration

4.7.1 Description of Environmental Values

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

Information on current noise levels at the site and any sensitive noise receptors close to the site should be provided. The history of any noise complaints received about terminal operations should be included. Existing noise mitigation measures employed at the site and their effectiveness should be documented. Include information on any increase in lighting provided and include provisions for the effects of lighting including management and mitigation strategies in sections 4.7.1 and 4.7.2 in relation to effects on fauna.

4.7.2 Potential Impacts and Mitigation Measures

The potential environmental harm of noise and vibration at all potentially sensitive places, in particular, any place of work or residence, should be quantified in terms of objectives, standards and indicators to be achieved and compliance with the *Environmental*

Protection Noise 1997. This should also include environmental harm on terrestrial and marine animals and avifauna, particularly migratory species. Proposals for any buffers on land to minimise or eliminate these effects should be provided. Timing schedules for construction and operations should be discussed with respect to minimising environmental impacts from noise. The potential impact of noise from dredging and offshore berth construction on marine fauna should be assessed based on a literature review.

The assessment of noise impacts should include matters raised in the document '*The health effects of environmental noise – other than hearing loss*' published by the enHealth Council, 2004 (or later editions), ISNB 0 642 82304 9. Information, including mapped noise contours from a suitable acoustic model, should be submitted based on the proposed generation of noise. The potential environmental harm of noise and vibration at all potentially sensitive places should be quantified in terms of objectives, standards and indicators to be achieved. Particular consideration should be given to emissions of low-frequency noise; that is, noise with components below 200Hz. The assessment should also include environmental impacts on terrestrial and marine animals and avifauna, particularly migratory species. Proposed measures for the minimisation or elimination of impacts should be provided, including details and illustrations of any screening, lining, enclosing or bunding. A discussion should be provided of timing schedules for construction and operations with respect to minimising environmental nuisance and harm from noise.

4.8 Marine Flora and Fauna

4.8.1 Description of Environmental Values

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 wetland environments. The description of the fauna and flora present or likely to be present in the area should include:

- fish species, mammals, reptiles, amphibians, crustaceans and aquatic invertebrates occurring in the waterways within the affected area, and/or those in any associated wetland;
- Assessment of the ecological significance of permanent and ephemeral wetlands
- any rare or threatened species;
- aquatic plants;
- aquatic and benthic substrate; and
- habitat downstream of the project or potentially impacted due to currents in associated wetland environments.

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

- native and introduced marine flora and fauna;

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

Where possible, environmental thresholds for specific impacts on marine flora and fauna should also be defined having regard to existing environmental values. Flora and fauna species and marine habitats within the study area should be defined through searches of the appropriate State and Commonwealth databases, review of previous studies and review of aerial photography. Field studies should be undertaken where inadequate information is available to sufficiently describe the marine communities for the purposes of the impact assessment. An evaluation of previous impacts of dredging activity should be included including the assessment undertaken by James Cook University (Ottaway *et al*. 1989) between 1981 and 1987.

Specific issues to be highlighted include:

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

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

Reference should be made to detailed studies of the turtle populations in Abbot Point carried out by the Queensland Parks and Wildlife Service in 2002 and 2003. Benthic macroinvertebrate communities at the berth and proposed spoil ground (if off-shore disposal is proposed) should be characterised and an assessment made as to the adequacy of available information for the assessment of the potential impacts of dredge spoil disposal.

4.8.2 Potential Impacts and Mitigation Measures

An assessment of the potential impacts of the project on the marine flora and fauna within the study area should be taken, including but not limited to the following:

- Description of existing habitat (natural or otherwise) and any associated marine flora and fauna and natural systems which may be disturbed during dredging and/or operation (both short- and long-term) of the project.
- Identification of flora and fauna species with a conservation status that may be impacted by the dredging or spoil reclamation, including the construction, operation

and maintenance of the project. Critical and potential habitat for rare and threatened flora/fauna species should also be identified.

- Identify the importance of existing habitat within the study area to marine fauna.
- Identification of potential direct and indirect impacts, including cumulative impacts on fauna and flora from the project construction, operation and maintenance including but not limited to:
  - destruction of habitat;
  - hazards of dredging to fauna; and
  - impacts from reduction in water quality from dredging (and offshore disposal if proposed).

Strategies to mitigate identified impacts from the project on flora and fauna should be described. Specific attention should be paid to the potential for turtles to be injured or captured by the dredge. Potential mitigation measures should be reviewed, including the use of fauna-excluding devices during dredging operations, and their likely effectiveness presented.

Address impacts on the commercial fishing industry due to:

- An increased number of international ships and tug traffic; and
- Potential changes to marine habitat

4.9 Marine Water and Sediment

4.9.1 Description of Environmental Values

Provide baseline information on seawater quality, including pH and turbidity. Describe the environmental values of the coastal seas of the affected area in terms of:

- values identified in the *Environmental Protection (Water) Policy 1997*; and
- the State Coastal Management Plan.

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

- the area to be dredged associated with the second berth; and
- if offshore disposal is proposed, the disposal location for dredged material.

Any contaminants and implications for management of the dredged material should be described.

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

framework within the National Ocean Disposal Guidelines for Dredged Material – NODGDM (DEH 2002).

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

4.9.2 Potential Impacts and Mitigation Measures

Impacts on water quality due to increased water turbidity and nutrients from the sediment due to dredging and sea disposal of material, if required, should be addressed and strategies developed to address potential impacts. Address potential impacts on existing and potential aquaculture enterprises that take water from Upstart Bay especially during the dredging program and indicate any mitigation measures to be undertaken.

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

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

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

A discussion on the dredge spoil disposal site should include reference to Policy 2.1.8 Dredging of the State Coastal Management Plan.

> "When deciding where dredged material comprising muds, clays and silts will be placed, the choice of site is to provide the best coastal management outcome, having regard to the nature of the spoil, the cost of alternative sites, and potential impacts on coastal resources and their values. Disposal of dredge spoil should be located so as to not adversely affect areas of state significance (natural resources), such as significant coastal wetlands."

The preparation and implementation of a dredge management plan for maintenance dredging should be described.

4.10 Coastal Processes

4.10.1 Description of Environmental Values

Describe the physical processes of the adjacent marine environment, including but not limited to currents, tides, and storm surges and their interaction in relation to the assimilation and transport of pollutants (e.g. coal particulates) entering marine waters from, or adjacent to the proposal area.". Describe the environmental values of the coastal resources of the affected area in terms of the physical integrity and morphology of landforms created or modified by coastal processes. Assessment should be based on hydrodynamic investigations (including those previously conducted for the existing off-shore structures) and include a description of:

- The physical properties of the sediments likely to be dredged.
- Existing siltation that has occurred within the existing berth and implications for the establishment of a second berth.
- Sediment dynamics at the off-shore disposal ground based on the influence of tides, waves, currents and turbidity.
- Assessment of processes that have occurred at the original spoil ground.

The relationship of these processes to marine flora and fauna and biological processes within the study area should also be discussed. The relationship between currents, wave actions and extreme events (such as cyclones) and how they influence coastal processes should also be discussed. Include reference to proposed maritime infrastructure and effect on coastal processes having regard to the *State Coastal Management Plan-Queensland's Coastal Policy.*

4.10.2 Potential Impacts and Mitigation Measures

The impacts of development of the new berth area on hydrodynamic processes within the study area should be described. In particular, impacts on siltation and any implications for marine flora and fauna and/or biological processes should be discussed, including generation and migration of turbid plumes.

Information on currents in the region should be used to predict impacts and these impacts on marine environmental values should be assessed.

4.11 World Heritage and Marine Park

4.11.1 Description of Environmental Values

Describe the current world heritage and marine park zoning within the port limits and restrictions and conditions associated with such zoning.

4.11.2 Potential Impacts and Mitigation Measures

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

Marine Park. Potential impacts on World Heritage values and how these should be managed should be described.

Assessment criteria outlined in the *Great Barrier Reef Marine Park Regulations 1983* should also be addressed including (as derived from the regulations):

- "The objective of the zone in which the proposal is located
- The need to protect the cultural and heritage values held in relation to the Marine Park by traditional owners and other people
- The likely effect of granting permission on future options for the Marine Park
- The conservation of the natural resources of the Marine Park
- The nature and scale of the proposed use in relation to the existing use and amenity, and the future or desirable use and amenity of the relevant area and of nearby areas
- The likely effects of the proposed use on adjoining and adjacent areas, and any possible effects of the proposed use on the environment and the adequacy of safeguards for the environment
- The means of transport for entry into, use within or departure from the zone or designated area and the adequacy of provisions for aircraft or vessel mooring, landing, taking off, parking, loading and unloading
- In relation to any structure, landing area, farming facility, vessel or work to which the proposed use relates:
- the health and safety aspects involved, including the adequacy of construction
- the arrangements for removal upon the expiration of the permission of the structure, landing area, farming facility or vessel or any other thing that is to be built, assembled, constructed or fixed in position as a result of that use
- The arrangements for making good any damage caused to the Marine Park by the proposed activity
- Any other requirements for ensuring the orderly and proper management of the Marine Park
- Any charge payable by the applicant in relation to a chargeable permission (whether or not in force) that is overdue for payment
- If the application relates to an undeveloped project—the cost of which will be large—the capacity of the applicant to satisfactorily develop the project."

4.12 Cultural Heritage

4.12.1 Description of Cultural Heritage Values

A full cultural heritage investigation has been conducted of the port lands by Barker (1999), of which the findings relevant to the development should be summarised. Any further detailed assessment of areas affected by the development should be documented. This section should detail the outcomes of consultation with Traditional Owners, including details of all consultation undertaken, identified sites of significance and potential impacts.

A requirement of the *Aboriginal Cultural Heritage Act 2003* (ACHA) is that a Cultural Heritage Management Plan (CHMP) is an essential element of any Environmental Impact Study (EIS). As a part of the preparation of the EIS, a CHMP should be prepared. This should involve:

- Notification, as required by the ACHA, to the Chief Executive of the Department of Natural Resources and Mines (NR&M), the local government at Abbot Point (Bowen Shire Council), 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 EIS, and about outcomes;
- Preparation of a report by the Aboriginal Parties and their technical advisors; and
- Seeking approval of the CHMP from the Chief Executive, NRM, through the EIS process.

The CHMP will only cover areas potentially affected by the Stage 3 development. Searches should also be conducted of all relevant heritage registers at the Commonwealth, State and local government levels. In particular, the Historic Shipwrecks Register should be searched for relevant information.

4.12.2 Potential Impacts and Mitigation Measures

An assessment of any likely effects from the proposed development on sites, localities and resources of European or Indigenous cultural heritage values is to be undertaken, including:

- identifying locations of culturally significant sites within the development area or outside it that could be affected;
- describing the significance of artifacts, items or places of conservation or cultural heritage value likely to be affected by the proposal and their values at a local, regional and national level; and
- assess the impact on Native Title rights and the interests of Traditional Owners; and
- recommended means of mitigating any negative impacts on cultural heritage values and protecting such values.

4.13 Visual Amenity and Landscape Character

4.13.1 Description of Environmental Values

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

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

4.13.2 Potential Impacts and Mitigation Measures

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

4.14 Shipping

4.14.1 Description of Existing Values

Describe current vessels utilizing the port, their size, shipping movements, anchorages, access to/from the port and navigational arrangements. Include a description of the environmental values of the Bowen Boat Harbour.

4.14.2 Potential Impacts and Mitigation Measures

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

- potential for introduction of exotic organisms from increased shipping rates;
- ballast water management arrangements - including AQIS mandatory arrangements and agency contingency planning;
- management of ship waste, in particular quarantine waste, garbage, oil and sewage; and
- impact of extra tug voyages;
- any extra infra-structure needs required at the Bowen harbour;
- potential risk to Great Barrier Reef due to increased shipping, e.g. collision, oil and spill; and
- mitigation measures to prevent or minimize environmental harm / nuisance or impacts on environmental values within Bowen Boat Harbour due to an increase in tug movements.

4.15 Roads

4.15.1 Description of Existing Values

Describe the current road network and intersections of the surrounding region and specify current traffic volumes. The existing state-controlled road network should be described and defined as per Chapter 4.2-*Surrounding Road Network* of Main Roads "*Guidelines for Assessing the Road Impacts of Development Proposals*".

4.15.2 Potential Impacts and Mitigation Measures

"A road impact assessment (RIA) report in accordance with Chapter 3 of Main Roads *"Guidelines for Assessing the Road Impacts of Development Proposals"* will be required to assess the potential road impacts from the proposed development. The basis for assessing road impacts should be with and without the proposed development.

The RIA must include detailed assessment of the safety and operation of the existing intersection between the site access road and the Bruce Highway that:

a) Addresses the capacity and operation of the intersection in both the construction and operational phases

b) Details the effects of increased rail movements at the level crossing on the Abbot Point side of the intersection on the interaction between road and rail vehicles"

4.16 Waste Management

4.16.1 Description of Existing Waste Management Practices

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

- ship waste;
- hazardous waste;
- sewage/septic; and
- waste management services

4.16.2 Potential Impacts and Mitigation Measures

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

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

The following guidelines and standards should be considered:

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

4.17 Hazard and Risk

4.17.1 Description of Existing Hazards and Risk

Detail risks and hazards associated with the current port operations including:

- oil spills;
- pilotage;
- commercial and recreational vessel movement;
- port and terminal operations; and
- excavated hill slopes – landslip hazard

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

4.17.2 Potential Impacts and Mitigation Measures

An assessment of hazards and risks associated with the expanded operations is to be undertaken and include identification of:

- all relevant hazards (minor and major);
- the possible frequency of potential hazards, accidents, spillages and abnormal events occurring during all stages of the project;
- counter disaster and rescue procedures in the event of emergency situations;
- indication of cumulative risk levels to surrounding land uses;
- all hazardous substances to be used, stored, processed or produced and the rate of usage;
- potential wildlife hazards such as sharks, crocodiles, snakes, and disease vectors; and
- licensing requirements and compliance with the relevant standards;

The following guidelines and standards should be considered:

- the *Environmental Protection (Water) Policy 1997*, and any recent or proposed amendments that incorporate recommendations of the National Environment Protection Measures;
- National Environment Protection Measure (NEPM) – Contaminated Land (1999);

- draft Guidelines for the Assessment and Management of Contaminated Land in Queensland (Qld EPA, 1998); and
- GBRMPA guidelines for projects in the Marine Park, if it is proposed to relocate the dredged material to an offshore area in the Marine Park.
- AS/NZS Risk Management Standard 4360:1999.

4.18 Socio-Economic Environment

4.18.1 Description of Existing Socio-Economic Environment

This section should detail the existing socio-economic environment that may be affected by the project. Issues to be addressed include:

- Community infrastructure and services;
- Structure of potentially affected communities in the study area;
- Community profile, providing information on the following characteristics:
  - Demography and family structure;
  - Housing; and
  - Economic stability.
- The character and basis of the local and regional economies.

A summary of the key existing environmental values associated with the site and lands in proximity that may be potentially impacted by the project should be provided.

4.18.2 Potential Impacts and Mitigation Measures

Socio-economic impact assessment should address the following issues with particular reference to changes that the expanded project will have on local communities in the Bowen area:

- potential influx of workers and impacts on the local community;
- The impacts of both construction and operational workforces and associated contractors on housing supply and demand,
- impact of a worker's camp if required;
- implications (real and perceived) for public health, safety and amenity as a result of the development;
- implications for property and retail values (perceived and probable);
- impact on existing businesses and commercial activities both within the immediate study area and the wider community;
- impact on community services (particularly child care) delivered by government and private sector entities

- an assessment of likely levels of employment and income (both direct and indirect) during construction and operation;;
- 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; and
- Strategies for minimising potential adverse impacts and enhancing benefits for all issues identified by stakeholders associated with the construction and operation of the project should be identified and recommendations for monitoring programs to ensure social well being is maintained should be provided.

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

The use of both quantitative and qualitative social information from sources including existing reports, data and studies, as well as field observation, discussion, interviews, and the community consultation program should be used.

4.19 Public Health

4.19.1 Description of the Affected Communities

The nearby and potentially affected populations should be identified and described. This should include key sensitive receptors, such as children and the elderly within a 10km radius of the site as well as temporary visitors to the location such as recreational fishers and beach users.

4.19.2 Potential Impacts and Mitigation Measures

Any impacts that the proposal may have on the health of the community should be detailed in terms of health, safety, quality of life from factors such as:

- land
- water resources,
- air emissions,
- odour,
- wastes,
- noise and vibration,
- fire,
- transport.

This section should define and describe the objectives and practical measures for protecting or enhancing the public health community values, describe 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 of occupational health and safety risks on the community in terms of health, safety, and quality of life from project operations and emissions.

Measures to control mosquito and biting midge breeding need to be described.

Practical monitoring regimes should also be recommended in this section.

4.20 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.

4.21 Sensitive Environmental areas

4.21.1 Description of the sensitive environmental areas

The EIS should identify the proximity of the proposal elements to areas that are environmentally sensitive, such as the Abbot Point-Caley Valley wetland aggregation, and determine whether these areas 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.

5 ENVIRONMENTAL MANAGEMENT PLAN

An Environmental Management Plan (EMP) is to be prepared for the project. The general contents of the EMP should comprise:

- the proponents' commitments to acceptable levels of environmental performance, including environmental objectives for management elements, i.e. levels of expected environmental harm, performance standards and associated measurable indicators, performance monitoring, reporting, responsibilities and corrective actions; and
- control strategies to implement the commitments.

The Queensland EPA guideline "Preparing environmental management plans" provides a suitable format for presentation of the plan. Any amendments that may be required to existing management measures resulting from the proposed expansion should be identified.

6 REFERENCES

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

References presented within these ToR are as follows:

Barker,B. (1999) A Cultural Heritage Assessment of Ports Corporation (Queensland) Holdings at Abbot Point/ Bowen Region (Bowen Shire). Report prepared for Ports Corporation of Queensland by the University of Southern Queensland (internal document).

Department of the Environment and Heritage (DEH) (2002) National Ocean Disposal Guidelines for Dredged Material (NODGDM), Environment Australia May 2002.

Isbell, R.F. (2002) Australian Soil Classification System. CSIRO Publishing, Canberra.

McDonald, R.L., Isbell, R.F., Speight, J.C., Walker, J. and Hopkins, M.S. (1990) Australian soil and land survey field handbook. 2nd Edition. Inkata Press Melbourne.

Ottaway, JR, JS Andrews, C Burdon-Jones, LS Hammond, CR Roberts and WK Saalfield (1989) Marine Environmental Impacts of Construction of an Off-shore Facility at Abbot Point, Queensland; 2 Vols; Department of Marine Biology, School of Biological Sciences, James Cook University of North Queensland.

Ports Corporation of Queensland (PCQ) (1995) Port of Abbot Point Strategic Plan. December 1995.

7 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.The decision criteria

A brief summary of the proposal's compatibility with ESD policy and other relevant policy instruments such as the standard criteria as defined by the Environmental Protection Act (Qld) and any other relevant statutory decision criteria should be presented. Consideration should focus on The National Strategy for Ecologically Sustainable Development, published by the Commonwealth Government in December 1992 (available from the Australian Government Publishing Service). Each principle should be discussed and conclusions drawn as to how the proposal conforms. A life-of-project perspective should be shown.

A5.Consultation Report

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

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

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

A6.Specialist studies

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

- geology;
- soil survey and land suitability studies;
- waterway hydrology;

- groundwater;
- flora and fauna studies;
- economic studies, CBA; and
- hazard and risk studies.

A7.Research

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