Queensland Government
Department of Infrastructure

HUMMOCK HILL ISLAND DEVELOPMENT

Eaton Place Pty Ltd

Terms of Reference for an Environmental Impact Statement

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

The Coordinator-General, June 2007

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PREFACE

Eaton Place Pty Ltd proposes to construct an integrated tourism, recreational and residential community of approximately 4,000 people on Hummock Hill Island, near Gladstone in Central Queensland.

Hummock Hill Island is a mainland island, 30km south–east of Gladstone, separated from the mainland by Boyne Creek, a narrow branch of Colosseum Inlet. Hummock Hill Island is located within Rodds Bay in the north east of Miriam Vale Shire. The island lies entirely within the Great Barrier Reef World Heritage Area and adjoins the Great Barrier Reef Coast Marine Park, the Great Barrier Reef Marine Park and the Colosseum Fish Habitat Area.

The project will consist of two resort hotels, camping grounds, holiday and residential dwellings, a golf course, education precinct, a commercial centre, and marine commercial facilities. The development will provide public access to beaches and waterways that are presently accessible only by boat. Recreational facilities will be provided for swimming, boating, fishing, camping, picnicking, bushwalking, bowing, tennis, golfing and flying. Approximately two thirds of the development lease will remain undeveloped and managed for conservation values and compatible recreational usage.

The proponent has advised that the estimated expenditure for the 15-year project development program is $1.125 billion including $125 million for the provision of infrastructure to Hummock Hill Island and preparation and servicing of land and $1 billion for the construction of all buildings. The proponent also expects the direct employment during construction to be around 110 positions, while approximately 400 jobs are expected when the development is fully operational.

The Hummock Hill Island Development proposal (the Project) was declared to be a "significant project for which an environmental impact statement is required" under section 26(1)(a) of the Queensland *State Development and Public Works Organisation Act 1971* (SDPWO Act) by the Coordinator-General (CG) on 25 October 2006. Matters considered by the CG in making this declaration included information in an Initial Advice Statement prepared by the proponent; relevant planning schemes and policy frameworks; infrastructure impacts; employment opportunities; environmental effects; complexity of local, State and Commonwealth requirements; level of investment; and the Project's strategic significance. The declaration initiates the statutory environmental impact assessment procedure of Part 4 of this Act, which requires the proponent to prepare an Environmental Impact Statement (EIS) for the Proposal. Declaration does not infer State Government backing of the project and does not confer a status of "State Significance".

The Department of Infrastructure (DI) is managing the environmental impact assessment process on behalf of the CG. The DI has invited relevant Australian, State and local government representatives and authorities to participate in the process as Advisory Agencies.

The first step in the impact assessment process is the development of a Terms of Reference (ToR) for the preparation of an EIS. The process involves the formulation of a draft ToR that is made available for public and Advisory Agency comment. Advertisements were placed in the Courier Mail, Gladstone Observer and The Australian newspapers on 18 November 2006, inviting comment on the Draft ToR for the Project. A similar notice was placed on the CG internet site. The CG had regard to all comments received on the draft ToR when finalising this ToR.

On 7 March 2007, Eaton Place Pty Ltd wrote to the Coordinator-General stating that the EIS objective will be to seek recommendation under section 39(1)(c) of the SDPWO Act for preliminary approval under the IPA that included a Plan of Development to be used as the document against which subsequent development applications are assessed by the local government. On this basis, Eaton Place Pty Ltd requested that the level of detail required by the ToR reflect the more strategic nature of the approvals being sought through the EIS process.

The request from the proponent to limit the ToR to seeking information at a level of detail that is relevant to a preliminary approval was accepted as an applicant may specifically seek a preliminary approval under the IPA for one or more aspects of development, for the purpose of staging the design and approval process or staging the construction of a development project. A preliminary approval may be sought under Queensland legislation in relation to a development application to give the applicant certainty whilst establishing the parameters for the subsequent development. A preliminary approval may state that any development that may take place on the land, the subject of the approval, may be assessable (requiring code or impact assessment), self-assessable or exempt development or any combination of assessable, self-assessable or exempt development. Once issued (and if current) the preliminary approval is a binding approval and is therefore often a useful step in the development process, in particular in the staging of large and complex approvals. However, preliminary approvals

do not authorise the development to commence.

The level of detail specified in these ToR are to be read as the starting point in the development of the EIS. Consultation with the relevant advisory agencies is to occur to ensure that sufficient information is provided to enable an assessment of all aspects of the proposal to the greatest extent practicable. In this context, the proponent must note that the level of detail required on matters relevant to approvals being sought under the EPBC Act will be greater than that required for a preliminary approval under State legislation, as there is no provision for the Australian Minister for the Environment and Water Resources to approve a concept plan under the EPBC Act.

The proponent is to prepare an EIS to address these ToR. Once the EIS has been prepared to the satisfaction of the CG, a public notice will be placed in relevant newspapers. The notice will state where copies of the EIS are available for inspection and how it can be purchased; that submissions may be made to the CG about the EIS; and the submission period. The proponent may be required to prepare a Supplementary 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 the SDPWO Act. The CG report will include an evaluation of the environmental effects of the proposed Project and any related matters. The CG report will reach a conclusion about the environmental effects and any associated mitigation measures, taking into account all of the relevant material including the EIS; all properly made submissions and other submissions accepted by the CG; and any other material the CG considers is relevant to the Project, such as a Supplementary EIS, comments and advice from Advisory Agencies, technical reports on specific components of the Project and legal advice.

The statutory impact assessment process under the SDPWO Act is also the subject of a bilateral agreement between the Queensland and the Australian Governments in relation to environmental assessment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The proponents referred the Project to the Australian Minister for the Environment and Water Resources in accordance with the provisions of the EPBC Act. The Australian Minister decided, on 13 January 2006, that the Project constituted a controlled action under section 75 of the EPBC Act. The Part 3, Division 1, controlling provisions are:

- sections 12 and 15A (World Heritage);
- sections 18 and 18A (Listed Threatened Species and Communities); and
- sections 20 and 20A (Listed Migratory Species).

However, it must be noted that the Australian Minister will undertake a separate approval process following the release of the Coordinator-General's Report. The Minister will then grant, or refuse, approval for the controlled action under section 133 of the EPBC Act. The Minister may attach conditions to an approval, in addition to those set by the CG, to mitigate impacts on matters of National Environmental Significance (NES).

General EIS format

The EIS should be written in a format matching these ToR or include guidelines (preferably as an appendix) describing how the EIS responds to the ToR. The EIS documentation is also to include:

- maps, diagrams and other illustrative material to assist in the interpretation of the information;
- a list of persons, interest groups and agencies consulted during the EIS;
- a list of advisory agencies consulted with an appropriate contact; and
- the names of, and work done by, all personnel involved in the preparation of the EIS.

The EIS should be produced on A4-size paper capable of being photocopied, with maps and diagrams on A4 or A3 size. The EIS should also be produced on CD ROM. CD ROM copies should be in ADOBE©PDF format for placement on the internet plus one copy in word format (unprotected). It is preferred that all compression be down-sampled to 72 dpi (or ppi) and that PDF documents be no larger than 500 kB in file size. Text size and graphics files included in the PDF document should be of sufficient resolution to facilitate reading and enable legible printing, but should be such as to keep within the 500kB file size.

Relevance of EIS process to the project

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 section 39 of SDPWO Act, state one or more of the following for the assessment manager:

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

Alternatively the CG report must state for the assessment manager:

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

Further, the CG report must:

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

As these ToR have been restricted in their information requirements to a level that would be appropriate for a preliminary approval, the CG's report will only examine the proposal in the context of a preliminary approval, ie. ***the CG's report will not consider the proposal for a development permit as defined in the IPA***.

The relationship between the 'significant project' process under the SDPWO Act and development approval process under the IPA is noted in sections 36 to 42 of the SDPWO Act. Some key points to note include:

- the information and referral stage and the notification stage of the Integrated Development Assessment System (IDAS) do not apply to development applications to the extent the application is for a material change of use, or requires impact assessment;
- there are no referral agencies under the IPA for the applications to the extent the application is for a material change of use, or requires impact assessment;
- a properly made submission about the EIS is taken to be a properly made submission about the application under IDAS;
- the CG's Report is taken to be a concurrence agency's response for the applications to the extent the application is for a material change of use, or requires impact assessment; and
- providing a development application has been made and to the extent the application is for a material change of use, or requires impact assessment, the decision stage does not start until the CG gives the Assessment Manager a copy of the CG's Report.

Further to the approvals that will be sought through the IDAS process, other approvals under a range of legislation including, but not limited to IPA and the *Environmental Protection Act 1994* (EP Act), are likely to be required.

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

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Abbreviations

The following abbreviations have been used in this document:

ACH Act	*Aboriginal Cultural Heritage Act 2003* (Qld)
ASS	Acid Sulfate Soils
CAMBA	China-Australia Migratory Bird Agreement
CPM Act	*Coastal Protection and Management Act 1995*
CG	The Coordinator-General of the State of Queensland
CHMP	Cultural Heritage Management Plan
DUAP	Department of Urban Affairs and Planning (NSW)
EIS	Environmental Impact Statement
EM Plan	Environmental Management Plan
EP Act	*Environmental Protection Act 1994* (Qld)
EPA	Queensland Environmental Protection Agency
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)
HAT	Highest Astronomical Tide
IDAS	Integrated Development Assessment System
IAS	Initial Advice Statement, as defined by Part 4 of the *State Development & Public Works Organisation Act 1971*
IPA	*Integrated Planning Act 1997* (Qld)
JAMBA	Japan-Australia Migratory Bird Agreement
LAT	Lowest Astronomical Tide
NC Act	*Nature Conservation Act 1992*
NES	National Environmental Significance
NR&W	Queensland Department of Natural Resources and Water
RE	Regional Ecosystem
SDPWO Act	*State Development and Public Works Organisation Act 1971* (Qld)
ToR	Terms of Reference as defined by Part 4 of the *State Development and Public Works Organisation Act 1971*

PART A - INFORMATION AND ADVICE ON PREPARATION OF THE EIS

Purpose of the Terms of Reference

The ToR essentially outlines the issues that must be considered in preparing the EIS. However, the ToR must 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 Project during the preparation of the EIS, the community consultation process and associated documentation. In such circumstances, these matters must be included in the EIS.

The ToR also provides the framework for the EIS, including information on the purpose and role of the EIS and the factors considered significant for the Project. The ToR indicates the types of studies and the data that must 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 must be discussed and treated in sufficient detail. The reasons for selection of the preferred option must be clearly identified. The nature and level of investigations must be relative to the likely extent and gravity of impacts.

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

EIS Guidelines

The EIS process followed will be as specified in the SDPWO Act.

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

The term environment (in the SDPWO Act) 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; and

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

Consequently, the EIS must provide:

- a description of the relevant aspects of the existing social, economic, natural and built environment;
- a description of the development Project 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 Project and set conditions for approval to ensure environmentally sound development;
- a definition of all significant impacts and a consolidated list of measures proposed to mitigate adverse effects; and
- recommendations on the need for and contents of any environmental management plans and/or operational plans to mitigate adverse effects.

EIS Objectives

Objectives

The objectives of the EIS are as follows:

- to provide information on the Project and development process to the community and decision makers;
- to comprehensively identify and evaluate all relevant issues associated with the Project;
- to identify all potential environmental, economic, infrastructure requirements and actions, 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 Project;
- to identify all necessary licences, planning and environmental approvals including approval requirements pursuant to the EPBC Act, IPA, EP Act, *Coastal Protection and Management Act 1995* (CPM Act), *Fisheries Act 1994*, *Nature Conservation Act 1992* (NC Act), *Vegetation Management Act 1999* (VM Act), *Electricity Act 1994* and other legislation and regional economic priorities, regional planning and the Miriam Vale Council Planning Scheme; and
- to provide an input to the decision making process, assisting with the determination of whether to accept or modify the Project for preliminary approval under the IPA, approve it with conditions or carry out further studies.

Key Issues

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

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

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

Public Consultation on Draft Terms of Reference

The draft ToR was publicly notified in The Courier Mail, Gladstone Observer and The Australian newspapers and the CG website inviting comment over the period from 18 November 2006 to 18 December 2006.

Although the period for receipt of submissions closed on 18 December 2006, late submissions (with prior agreement) were accepted until 18 January 2006. A total of nineteen written submissions were received, including seventeen from Government agencies. Copies of these have been forwarded to Eaton Place Ply Ltd.

The content of all submissions has been reviewed and considered by the Coordinator-General in finalising the ToR.

PART B - CONTENT OF THE EIS

It is strongly recommended that the EIS follows the heading structure of these ToR to facilitate cross-referencing. This structure has been found through long experience to be the best option.

Executive Summary

The function of the executive summary is to convey the most important aspects and options relating to the proposed Hummock Hill Island Development to the reader in a concise and readable form. The structure of the executive summary must follow that of the EIS, and focus strongly on the key issues and conclusions.

Glossary of terms

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

1 INTRODUCTION

The introduction provides reference to the location of the Project, explains why the EIS has been prepared and what it sets out to achieve. In particular, the introduction will address the level of detail of information required to meet the level of approval being sought (for example, the proponent is seeking only a preliminary approval through the Integrated Development Assessment System (IDAS)).

As the Project will undertake the assessment process under the SDPWO Act, Part 4 – Environmental Coordination for the Environmental Impact Assessment, the EIS will be tailored to meet the requirements for this process. It must also define the audience to whom it is directed, and contain an overview of the structure of the document. Throughout the EIS, factual information contained in the document is to be referenced.

1.1 Project proponent

Provide details of the Project proponents, including details of any joint venture partners.

1.2 Project description

A brief description of the key elements of the Project and any major associated infrastructure requirements is to be provided and illustrated. Detailed descriptions of the Project are to follow in Section 2.

Provide a brief description of studies or surveys that have been undertaken for the purposes of developing the Project and preparing the EIS. This must include reference to relevant baseline studies or investigations undertaken previously.

1.3 Project objectives and scope

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

Describe the current status of the Project and outline the relationship of the Project to other developments or actions that may relate whether or not they have been approved. The consequences of not proceeding with the Project must also be discussed, incorporating an economic and social assessment.

1.4 The EIS process

The purpose of this section is to make clear the methodology and objectives of the environmental impact

statement under the relevant legislation.

1.4.1 Methodology of the EIS

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

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

1.4.2 Objectives of the EIS

Having described the methodology of the EIS, provide a succinct statement 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 must be able to distinguish the EIS as the key environmental document providing advice to decision makers considering approvals for the Project.

While the ToR provides guidance on the scope of the EIS studies, they must 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 ToR are found to be relevant to the assessment of environmental impacts of the Project, those matters must be included in the EIS.

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

When considering whether an impact is or is not significant, the proponent is to take account of both the intensity of the impact, its longevity 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 Project. As such the main text must be written in plain English avoiding jargon as much as possible. Additional technical detail may be provided in appendices. The main text must not assume that a reader would have a prior knowledge of the Project site. It must not be necessary for the reader to have visited the site to understand the issues involved in the Project.

In brief, the EIS objectives must 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 characteristics, and demonstrate how environmental impacts can be managed through the protection and enhancement of the environmental values and characteristics. Discussion of options and alternatives and their likely relative environmental management outcomes is a key aspect of the EIS.

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

1.4.3 Submissions

The reader must be informed as to how and when public submissions on the EIS will be addressed and taken into account in the decision making process and the standing of any such submission made in regard to any application submitted by the proponent for statutory approval.

1.5 Public consultation process

Details of the public consultation process and the major issues emerging from that process must be clearly addressed in the EIS.

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

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

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

The public consultation process must identify broad issues of concern to local community and interest groups and must continue from Project planning through to construction, ongoing operation and maintenance. Focussed consultation must consider issues, resolve conflicts, and develop mitigation and monitoring strategies with the relevant parties. Reference should be made to the EPA guideline "Issue Identification and Community Consultation".

1.6 Project approvals

1.6.1 Relevant legislation and policy requirements

This section must describe and list Commonwealth and State legislation and local policies relevant to the planning, approval, construction and operation of the Proposal. Triggers for the application of each of these must be discussed and relevant approval requirements identified.

A brief explanation of the scope and legislative basis for the EIS must be provided, including the role of the EIS in the Government's decision making process and an explanation of the relationship between Part 4 of the SDPWO Act and the IDAS of the IPA with regard to the Project. A brief discussion of the Australian Government's accreditation of the SDPWO Act process, under section 87(4) of the EPBC Act is also required.

Relevant Commonwealth legislation may include, among other things:

- EPBC Act;
- *Native Title Act 1993*;
- *Aboriginal and Torres Strait Islander Heritage Protection Act 1994*;
- *Great Barrier Reef Marine Park Act 1975*; and
- other relevant Commonwealth obligations such as protection of World Heritage values, migratory animals (CAMBA, JAMBA and Bonn Convention) and wetlands of international importance (Ramsar).

Reference must also be made but not limited to the:

- EP Act*;*
- IPA*;*
- CPM Act*;*
- *Land Act 1994;*

- *Marine Park Act 2004;*
- *Fisheries Act 1994 (and Fisheries Regulation 1995); and*
- other relevant Queensland laws.

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

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

1.6.2 Planning processes and standards

This section is to discuss the Project's consistency with existing land uses or long-term policy framework for the area (e.g. as reflected in local and regional plans), and with legislation, standards, codes or guidelines available to monitor and control operations on site. This section must refer to all relevant State and regional planning policies. Specific attention must be provided to demonstrating the Project's consistency with the draft Miriam Vale Shire Planning Scheme, the transitional planning scheme and Strategic Plan, the Wide Bay Burnett Regional Plan 2006-2026, relevant State Planning Policies (whether draft or final) and the State Coastal Plan and any Regional Coastal Management Plan (whether draft or final). Specifically, provide planning grounds to justify the Project against the statements of intent for each preferred dominant land use designation of the draft Miriam Vale Shire Council Transitional Planning Scheme – Strategic Plan, which applies to the subject site. The section must detail:

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

1.7 Accredited process for controlled actions under Commonwealth legislation

This project is a controlled action under the Commonwealth's EPBC Act. In this regard, the Australian Minister has accredited the State's EIS process for the purpose of the Australian Governments assessment under Part 8 of the EPBC Act.

When a State EIS process has been accredited, it is necessary for the ToR to address potential impacts on the matters of national environmental significance (NES) that were identified in the 'controlling provisions' when the Project was declared a controlled action. In this case the NES matters are as follows:

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

The EIS must include a stand-alone report as an appendix that exclusively and fully addresses the issues relevant to the controlling provisions.

It is important that the current status of the matters protected under the EPBC Act be described in sufficient detail, to inform the analysis of the proposal's impact on these matters.

In which case, it must follow the following template outline:

(i) Introduction
(ii) Description of Proposed Action (as it would impact on NES matters)
(iii) Description of the Affected Environment Relevant to the Controlling Provisions (i.e. describe the features of the environment that are NES matters protected under the EPBC Act)
(iv) Assessment of Impacts on NES Matters and Mitigation Measures
(v) Conclusions

(vi) References

The EIS must thoroughly address the potential impacts of the Project on listed threatened species and communities, listed migratory species and World Heritage values.

With regard to threatened species and communities listed under the EPBC Act, the EIS will need to address:

- the presence of any listed species or community and its associated habitat;
- the potential direct and indirect impacts of the Project; and
- and mitigation measures proposed.

With regard to listed migratory species, the EIS will need to address:

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

With regard to World Heritage, the EIS needs to provide:

- a thorough description of the values of the Great Barrier Reef World Heritage Area in the Hummock Hill Island region, and the particular values of Hummock Hill Island and the surrounding estuarine and marine environments;
- an outline of the potential impacts of the Project on these values, including the potential changes to surface water flows and groundwater hydrology and the consequential impacts on the terrestrial and aquatic elements of the Great Barrier Reef World Heritage Area (including Hummock Hill Island) and marine animals including dugongs and turtles;
- address the discharge of chemicals, nutrients and sediment from the development site, and the potential impact of such discharges on the aquatic elements of the Great Barrier Reef World Heritage Area. These discharges must be considered in the context of the goals of the Australian Government's Water Quality Action Plan (September 2001) and Australian and Queensland Government's Reef Water Quality Protection Plan (October 2003); and
- any outline of any mitigation measures proposed to minimise the potential impacts.

The EIS must also address all matters mentioned in Division 5.2 and Schedule 4 of the Environment Protection and Biodiversity Conversation Act Regulations 2000. This is a requirement under the assessment bilateral agreement between the Australian and Queensland Governments.

2 DESCRIPTION OF THE PROJECT

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

The elements of the Project must be described in the text and illustrated with maps, diagrams, architectural plans (at a suitable scale) and artist's impressions, as required. Issues to be addressed must include, but are not limited to:

- layout, size and number of residential lots;
- layout of both golf courses and associated club houses;
- location of and extent of all waterways (including lakes, watercourses, lagoons, estuaries and drainage

paths detailing water runoff and management);
- location of public infrastructure such as swimming facilities;
- extent of vegetation areas and buffer zones in and surrounding the development and wildlife corridors;
- location and concepts for the retail and commercial precinct;
- location, size and likely footprint and layout of the proposed resorts;
- location and details of infrastructure and service provision for the development;
- location of education facilities;
- details of the location and extent of vehicular access and traffic and car parking impacts associated with the development;
- location, depth, volume and ground-level-AHD of all significant excavations;
- the location, layout and description of the airstrip;
- all major and minor infrastructure, including marine and coastal structures and activities;
- appropriate scaled plan/s (or overlay) showing the location of:

  - the levels of the Highest Astronomical Tide, Mean High Water Spring Tide, and Low Water Spring Tide;
  - any marine plants;
  - the declared Colosseum Inlet Fish Habitat Area FHA-037 Boundaries;
  - the location of proposed structures in relation to the Great Barrier Reef Marine Park boundary, Mean Low Water and Lowest Astronomical Tide; and
  - buffers between development activities and aquatic features, marine plants and declared Fish Habitat Areas within and adjacent to the development site in relation to current and proposed property boundaries.

Concept and layout plans must provide details and illustrations of proposed buildings and structures in relation to existing natural features to be retained and excavations.

2.1 Overview of project

Provide an overview of the Project to put the Project into context. Provide a description of the key components of the Project. Provide the expected Project cost and overall expected Project duration and timing.

Include details of the concept master plan for the development, the staging of the development, and the planning and infrastructure required to facilitate development and design details of all elements of the Project, taking into account the ultimate population and traffic thresholds associated with the Project.

Summarise the expected employment opportunities from the Project. Provide a summary of any environmental design features of the Project.

A description of the overall concept and development plans must be provided, including details of the following matters, with appropriate illustrations:

- the overall concept plan;
- the proposed master plan layout described in words and plans, illustrating all the components;
- expected resident and visitor population including day visitors and overnight stays;
- accessibility and transportation systems and networks, including roads, footpaths, cycle paths, buggy paths and equestrian paths;
- provisions for visually and mobility impaired people;
- landscaping and reinstatement of disturbed areas;
- details of fuels and other chemicals stored and/or used including quantity, chemical characteristics and classifications and storage requirements;
- methods for protecting environmental values and characteristics within the overall development site and surrounding areas, measures to permanently protect the natural values of undeveloped parts of the lease;
- provision of infrastructure and essential services, including anticipated demand for infrastructure and essential services (including water, power, roads, telecommunications, waste)

- provision of community infrastructure and services in the public and private sectors, including commercial facilities, recreational, education and health services;
- development schedule; and
- estimates of operations staff (permanent, temporary and dependants), contractors, movements, travel arrangements, composition, expected sources and local availability of employees.

2.1.1 Residential Development

A description of the concept and development plans for the residential development component must be provided, including details on the following matters, with appropriate illustrations:

- the proposed layout of the residential development components, described in words and plans;
- specific characteristics and attributes of the residential and associated open space precincts, including:
  - proposed facilities, buildings and other constructed features, including identification of those available for public access;
  - building parameters and restrictions, architectural and urban design features, natural hazard design parameters;
  - capacity and/or proposed densities;
  - access and parking;
  - crime prevention through urban design measures; and
  - proposed land tenure of each precinct including information on the tenure, purpose, management arrangements and responsibilities.

2.1.2 Hotel

Provide a description of the concept characteristics and attributes of the hotel including:

- proposed hotel facilities including identification of those available for public access;
- building parameters and restrictions, such as height, architectural and urban design features, natural hazard design parameters;
- capacity (for example, type and number of rooms);
- access and parking; and
- proposed land tenure.

2.1.3 Golf Course

Provide a description of the concept characteristics and attributes of the golf course, including:

- construction and ongoing maintenance requirements;
- architectural, building and urban design principles, and role of the proposed club house, natural hazard design principles;
- golf course operation, including irrigation, pest management and fertilisation;
- location of fairways in relation to natural water bodies, creeks, streams or drainage paths;
- details and location of natural buffers to manage the impacts of golf course operation on ground and surface water quality.

2.1.4 Town and Village Centres

Provide a description of the concept characteristics and attributes of the commercial components, including:

- intended role of and relationship between the town and village centres;
- proposed facilities including identification of those available for public access;
- building parameters and restrictions, architectural and urban design features, natural hazard design

parameters;
- crime prevention through urban design measures;
- access and parking; and
- proposed land tenure and/or management of each centre.

2.1.5 Education Campus

The purpose, concept design and operation of the Education Campus must be discussed, including:

- location of the campus;
- size, scale and layout of the campus;
- likely range of activities to be carried out;
- organisations involved in activities, links with similar facilities elsewhere in Australia and internationally;
- description of the education campus, including:
  - proposed facilities including identification of those available for public access;
  - building parameters and restrictions, architectural and urban design features, natural hazard design parameters;
  - access and parking;
  - proposed land tenure;
  - access for mobility and visually impaired people; and
  - landscaping and reinstatement of disturbed areas;
- methods for protecting environmental values and characteristics within the campus and surrounding areas including visual amenity and rehabilitation; and
- estimates of operations staff (permanent, temporary and dependants), contractors, movements, travel arrangements, composition, expected sources and local availability of employees.

2.1.6 Airstrip

2.1.6.1 Design and construction of the airstrip

The design and construction of the airstrip and associated infrastructure must be discussed, including:

- the adoption or implementation of a plan for aviation airspace management involving aircraft operations that have, will have or are likely to have a significant impact on the environment;
- the Project's interaction with local and regional planning aims, and identifying any potential land use conflicts (such as those that may result from the impact of aircraft noise, existing requirements for the Obstacle Limitation Surface to prevent collision with native animals, especially birds, and potential future changes to these Obstacle Limitation Surface requirements); and
- an analysis of other runway options to the extent necessary to clearly demonstrate why the preferred option has been selected over other options taking into account environmental impacts, aircraft noise impacts, impact on airspace management arrangements for other airstrips in the region, cost and any other relevant factors.

2.1.6.2 Operation of the airstrip

The operation of the airstrip must be discussed, including:

- the preferred operating modes for the runway (for both day and night, noting any seasonal variations);
- flight frequency on the runway, including expected number and percentage of aircraft movements by type, typical annual and daily movements;
- daily and seasonal variations in aircraft movements and potential effects of varying weather conditions on operations and runway utilisation;
- operating hours and flexibility of operating arrangements;

- the responsible party for the development and costing of operating procedures (eg. noise abatement and instrument approach);
- possible legislative/regulatory enforcement of operating procedures (e.g. for noise abatement purposes);
- a description of the potential effects and likely timing of implementation of new technology and changes to operational standards and procedures for runway and airspace utilisation;
- flight paths and other operational procedures governing aircraft movements, including an estimate of normal variability of movements on defined flight paths, and locational criteria governing flight path selection;
- aircraft operating heights for approaches and departures, discuss variability of aircraft heights for given locations;
- ground activities associated with runway operation; and
- underlying assumptions and forecast reliability.

2.2 Ecological sustainable development

Provide a comparative analysis of how the Proposal conforms to the objectives for "ecological sustainable development" (see the National Strategy for Ecologically Sustainable Development (1992) available from the Australian Government Publishing Service) and other relevant policy instruments such as the "standard criteria" as defined by the EP Act should be presented.

This analysis should consider the cumulative impacts (both beneficial and adverse) of the Proposal, taking into consideration the scale, intensity, duration or frequency of the impacts to demonstrate a balance between environmental integrity, social development and economic development.

A life-of-project perspective should be shown.

This information is required to demonstrate that sustainable development aspects have been considered and incorporated during the scoping and planning of the Proposal.

2.3 Project need and alternatives

This section must discuss all components of the Proposal in the context of regional and local development and market potential, and the existence of similar developments at these levels.

The discussion needs to include identification and assessment of alternatives as well as demonstration of need from a social and economic perspective and demand from a market perspective.

2.3.1 Project justification

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

The demonstration of need and demand must be a comprehensive assessment with consideration of relevant local, regional, state and national plans including the current and draft Miriam Vale Shire Planning Schemes and Strategic Plan, the Wide Bay Burnett Regional Plan 2006-2026, the State Coastal Management Plan and the draft Wide Bay-Burnett Regional Coastal Management Plan. The detailed assessment should include:

- an assessment of the demographic profile for the region and locally, provides the basis for arguing need based on community characteristics;
- estimated population and growth trends including age profiles;
- building investment (lot creation, take up rates and dwelling unit approvals);
- labour force, employment (by occupation and income);
- any other economic indicators to indicate support for the development;

- justification for the scale of residential and tourist development proposed within the local and regional context;
- justification for the amount of retail and commercial floor space proposed within the local and regional context;
- suitability for the location proposed;
- impact of the proposed commercial precinct on existing retail centres in the shire;
- educational needs;
- demonstration of the need/demand for an airstrip;
- relevance of the proposed educational facility to the locality and region and demonstration that the facility is complementary to other educational opportunities in Queensland;
- short, medium and long term demands for community services (including Local and State Government services), employment access, and recreation (eg. bus or marina facilities) that are not provided by the proposed development should be clearly identified along with their implications for future development within the lease, on Hummock Hill, and on the adjacent mainland;
- the site in regional context – proximity to major centres, transport facilities – airstrips, train stations, road access – include a review of similar residential developments and associated facilities in the surrounding area and if possible make comment on their success; and
- the site in the local context – role (size, facilities and services – including shopping, banking and community services, recreation facilities etc).

2.3.2 Alternatives to the project

The EIS must outline the basis for selection of the Hummock Hill Island location. It must describe any feasible alternatives to the Project, as well as the alternative of not proceeding with the Project. The assessment of alternatives needs to demonstrate that the Hummock Hill Island location is a suitable location for a residential community development of this type considering the major costs and benefits, including environmental and social costs and benefits and the local and regional scale. These alternatives must be discussed in sufficient detail to make clear the reasons for pursuing the Hummock Hill Island option.

Alternatives considered may include:

- the 'no project' option;
- alternative locations;
- alternative master planning and site arrangements;
- larger or smaller scale development; and
- alternatives for infrastructure and essential service provision, including the range of options considered for access, water, electricity, and waste management.

The reasons for choice of the preferred option must be explained, including a comparison of the adverse and beneficial effects (both to the environment and community) used as a basis for selection, and compliance with government policy and with the principles and objectives of ESD.

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

The interdependencies of the Project components must be explained, particularly in regard to how each of any developments, or various combinations of components, and any infrastructure requirements relate to the viability of the components and the Project as a whole. This section must include a description of and rationale for infrastructure associated including water supply, power, transport and storage infrastructure.

Reasons for selecting the preferred options must include technical, commercial, social and natural environment aspects.

2.4 Location

2.4.1 The site

A brief overview of the Project site must be presented, showing existing natural and human made features (including existing infrastructure and improvements) and relevant named locations. Maps and rectified aerial photographs must be included as necessary to illustrate the site.

Site context must also be discussed in terms of distances from nearby towns and urban centres and other key locations of the region.

2.4.2 Regional context

The regional context of the Project is to be described and illustrated on maps at suitable scales.

2.4.3 Local context

The local description of the Project site must include real property descriptions. Maps at suitable scales must 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;
- the road network servicing the area including road names;
- the location of any proposed buffer areas or buffer zones surrounding the Project's working areas;
- the location of the coastal management district and the erosion prone area;
- the local government boundary; and
- the location of environmentally sensitive receptors potentially affected by the development such as residences, National Park, Marine Park (including zoning information) and World Heritage areas, remnant vegetation on and off the site, natural water, erosion prone areas, wetlands, significant dune systems, extent of marine vegetation and essential habitat for rare and threatened species.

These features must be overlain on rectified air photograph enlargements (in separate outline and infill maps) to illustrate components of the Project in relation to the natural and built features of the area.

2.4.4 Land tenure

Describe the Native Title status of the site.

Maps at suitable scales must be provided showing the precise location of the Project area, and in particular:

- the location and boundaries of land tenures, in place or proposed, to which the Project area is or will be subject, including adjoining land tenure and/or legislative boundaries such as the Great Barrier Reef World Heritage Area boundary, State Marine Park boundary, Great Barrier Reef Marine Park boundary and fish habitat areas;
- the location and boundaries of the Project footprint within and outside the lease, including development necessarily occurring as a consequence of approval of the proposed development, showing all key aspects including excavations, stockpiles, areas of fill, crossings and built structures within waterways including all services infrastructure, plant locations, water storages, buildings, bridges, culverts, hardstands, car parks, etc;
- the location of any proposed buffers surrounding the working areas; and
- lands identified for mitigation, either through retention in their current natural state or to be rehabilitated.

Sufficient survey data should be provided to accurately (0.5 metre) define the location of the lease boundaries and

the area subject to development or set aside for conservation purposes, and to allow correction of the cadastre (DCDB) if required.

Consideration must be given to providing a rectified aerial photo enlargement to illustrate components of the Project in relation to the land tenures and natural and built features of the area. Digital orthophotos with 0.5 metre pixels are preferred as the basis for mapping.

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

- the nature and structure of any future reconfigurations or the tiered body corporate arrangements to be established for the various components of the development, including the private road system;
- further information concerning proposed legal arrangements for the governance of the site and the ability of a body corporate or other managing entity to:

  - manage the development, and manage the operational infrastructure and delivery of services at all stages through to completion of the project, including provision for ownership changes;
  - prohibit domestic animals and dumping of garden waste;
  - set standards and control the design and finish of structures and roads;
  - manage traffic;
  - manage the production of interpretative material and signage;
  - control and condition access to manage visitor impacts; and
  - prevent future vegetation destruction, pollution and pest incursion into waterways;

- the general terms to form part of the Body Corporate structure for the protection and maintenance of the private open space areas, and in particular, the areas to be retained under native vegetation; and
- a statement clearly defining the responsibility (if any) of Council or any other State Agency in on-going maintenance of infrastructure established within or outside the lease area.

2.5 Construction

The nature of the Project's construction at each stage must be described to the greatest extent possible. The description is to describe the construction of each component of the Project and associated facilities, including:

- expected size, source and control of the construction workforce accommodation, services (water, sewage, communications, power, recreation) and safety requirements;
- the types of construction equipment expected to be used and the numbers of plant to be transported onto the construction site ;
- transport infrastructure requirements for construction and transportation/material logistics;
- location and construction material and equipment storage and servicing facilities;
- materials fabrication works (e.g. concrete batching plants), details of air, water and waste emissions;
- construction standards, techniques, and Project management, including construction staging, and the location of sensitive residential and commercial premises during each stage of construction;
- the sources, quantities, transport and storage of construction materials on and off-site;
- the nature, scale and timings for earthworks, including any borrow pit or quarry requirements (and the potential to disturb acid sulfate soils);
- the nature, scale and timings for vegetation clearance, with cross-references to the vegetation types;
- any near shore operations, including need for dredging, and construction of any marine support facilities;
- all temporary works (eg. tidal works) associated with the development;
- an outline of overall environmental site management arrangements (dust and other air emissions, noise, runoff, erosion, earth stabilisation, aquifer dewatering, acid sulfate soils, spills, fire, disposal of wastes both on and off the island, effluent, heritage and cultural sites, emergencies, rehabilitation of construction areas);
- estimates of the quantity of freshwater required for construction purposes and the sources from which this water will be obtained;

- if blasting is to be used, provide justification for this activity and a detailed management plan;
- estimates of construction workers (permanent and temporary and dependants), contractors, movements, travel arrangements and composition, expected sources and local availability of employees; and
- need and potential patronage on current trends.

Describe separately the proposed construction methods to be used for structures within tidal waters (details should include equipment to be used, proposed staging, etc…) and the potential impact on coastal processes, including tides, and currents. Where there are alternative construction methods available provide a comparison against the different methods and justify the reasons for the preferred method.

Any staging of the Project must be described and illustrated showing site boundaries, development sequencing and timeframes. The estimated numbers of people to be employed in the Project construction phase must also be provided with a brief description of the skills required.

A detailed discussion of alternative construction methodologies and recommended methodologies, justified in terms of minimising adverse impacts on water quality, marine and terrestrial biodiversity and the community must also be described.

2.6 Infrastructure requirements

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

Provide an assessment of the impact on Council's road network. This assessment must examine all roads extending from the site boundary, along the full length of Clarks Drive and Foreshores Road to Turkey Beach Road and to the intersection of the Bruce Highway. The assessment must also examine the intersection of Foreshores and Turkey Beach Road east to Turkey Beach. Particular emphasis is to be placed on the impact of the additional traffic on pavement life, and existing intersection design capacity, flood immunity, pavement width and vertical and horizontal alignments.

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

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

- pedestrian or cycle paths within 30 kilometres of the site boundaries;
- public passenger transport services within 30 kilometres of the site boundaries, including school bus, public bus, taxi and ferry; and provide details of timetables, contract areas, patronage, and associated infrastructure;
- marine usage within 30 kilometres of the site boundaries, including both recreational and commercial boating;
- usage patterns of existing marine infrastructure within 30 kilometres of the site boundaries, including details of peak use periods (hours/days/seasons);
- rail infrastructure within 30 kilometres of the site boundaries, including usage patterns for freight traffic, passenger traffic, and railway level crossings; and
- aviation facilities and services within 50 kilometres of the site boundaries, including civilian airstrip, navigational aids and communication facilities; and their usage patterns.

2.6.1 Road Transport

Information must be provided on road transportation requirements on public roads (both State and local, particularly the Turkey Beach Road intersection with the Bruce Highway) for both construction and operations phases, including:

- the volume, composition (types and quantities), origin and destination of goods to be moved including raw materials, wastes, and hazardous materials;
- the volume of traffic generated by workforce personnel, visitors and service vehicles;
- method of movement (including vehicle types and number of vehicles likely to be used);
- anticipated times at which movements may occur;
- details of vehicle traffic and transport of heavy and oversize indivisible loads (including types and composition);
- the proposed transport routes (including waterway crossings);
- need for increased road (and waterway crossing) maintenance and upgrading;
- need for increased road maintenance, and
- communication of these issues to the public.

Describe site specific roadwork relating to road access to the development and the method of providing for pedestrian/cyclist access to and from the development (both directions).

Provide a description of the proposed access bridge to Hummock Hill Island including the size, type of bridge, materials expected to be used, and details on the long term responsible entity for maintenance of the bridge.

Department of Main Roads' "Guidelines for the Assessment of Road Impacts of Development Proposals" must be referred to when assessing road impacts.

The EIS will need to detail public transport requirements and links to, or development of pedestrian and cycle networks to reduce dependency on cars (more transport choices); reduce emissions and therefore improve air quality; and provide opportunities for recreation and contribute to social and community wellbeing.

2.6.2 Shipping/Waterborne Transport

Provide details of the infrastructure requirements for the transport of fill or other materials to the site by coastal barge and details of any marine transport infrastructure, whether temporary or permanent, that is required for construction and ongoing use of the development, or likely to be demanded as a result of the development. Details should include:

- type of infrastructure;
- location;
- anticipated usage and design capacity;
- ancillary facilities such as access, vehicle parking, boat storage; and
- any dredging requirements.

2.6.3 Energy

The EIS must describe all energy requirements, including electricity, natural gas, and/or solid and liquid fuel requirements for the construction and operation of the Project. The location, design and capacity of power generation and transmission infrastructure for construction and ongoing use should be detailed. The locations of any easements must be shown on the infrastructure plan. Energy conservation must be briefly described in the context of any Commonwealth, State and local government policies.

2.6.4 Water supply and storage

The EIS must provide information on the proposed water usage by the Project, including details on the water supply design, the ultimate supply required by full occupancy of the development, the quality and quantity of all water supplied to the site during the construction and operational phases, fire fighting flows required, a site plan be provided outlining actions to be taken in the event of failure of the main water supply, and the potential for recycling of treated waste water. In particular, the proposed sources of water supply must be described (e.g. residential water tanks, bores, dams, weirs, municipal water supply pipelines, surface storages etc) given the implication of any approvals required under the *Water Act 2000*. Emphasis must be placed on demand and supply variability to demonstrate the proposed self-sufficiency of the Project (e.g. during all stages of development and ongoing use, including reasonably predicted low rainfall).

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

Determination of potable water demand must be made for the Project, including the temporary demands during the construction period. Details must be provided of any existing town water supply to meet such requirements. Describe any proposed on site water storage and treatment for use by the site workforce during construction and operational phases.

Provide a description of how onsite water supplies are to be treated, contaminated water is to be disposed of and any decommissioning requirements and timing of temporary water supply/treatment infrastructure is to occur.

2.6.5 Stormwater drainage

A description must be provided of the proposed stormwater drainage system, and the proposed disposal arrangements, including any off site services.

The EIS must detail the sources of stormwater and the quantity, quality and location of discharge to watercourses. Details should be provided to demonstrate that the proposed stormwater treatment systems will maintain natural drainage flow paths and flow volumes. The EIS must also detail the likely impact of drainage flows into water courses in terms of both hydrological and ecological implications on the aquatic and fisheries resources and any localised erosion and/or adverse impact at the discharge point and downstream. Provide details on the standard of stormwater treatment systems, including examples of quality improvement devices (sediment removal, gross pollutant traps) and potential discharge points (spread of flow and scour protection).

2.6.6 Sewerage

This section must describe the sewerage infrastructure required by the Project.

Provide detailed information on:

- the options proposed for wastewater treatment;
- the peak design capacity evaluation of the wastewater treatment system and associated infrastructure using equivalent persons;
- determination of the potential emergency effluent storage that would be required in an extended rain event (50 and 100 year ARIs);
- the proposed disposal and/or reuse of the treated effluent and the management of such use. Provide an irrigation plan detailing where the use of treated effluent is likely. Provide details of the likely impacts of treated effluent on groundwater quality;
- the siting and maintenance regime for the system; and
- treated effluent quality, particularly nutrient content; and treated effluent flow rates and volume available at different development stages.

Provide details, including design parameters of the on site treatment of grey water including ownership, maintenance safeguards to be used, how discharge standards are to be met, details of proposed wet weather

storage (locations and capacities proposed) and any emergency discharges into or sewerage crossings of waterways or major drainage paths.

Provide details on the level of spare capacity in the existing Council reticulated water infrastructure to support this proposal (taking into account other developments, whether approved and not yet commenced or applied for), if it is proposed that Council reticulated water assets are to supplement the Project.

2.6.7 Telecommunications

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

The EIS must describe any proposed telecommunications infrastructure (such as optical cables, microwave towers, etc.) and identify the ultimate owners of that infrastructure. Provide details of the location of existing and proposed telecommunications infrastructure including access points from the mainland.

2.6.8 Accommodation and other infrastructure

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

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

The method of operation and decommissioning of these areas, throughout all stages of construction must also be addressed.

2.7 Waste Management

2.7.1 Character and quantities of waste materials

Provide an inventory of all wastes to be generated by the Project during the construction and operational phases of the Project. In addition to the expected total volumes of each waste produced, include an inventory of the following per unit volume of product produced:

- amount of resulting wastes; and
- volume and tonnage of any re-usable by-products.

Having regard for best practice waste management strategies and the Environmental Protection (Waste) Policy 1997, the proposals for waste avoidance, reuse, recycling, treatment and disposal must be described in the appropriate sub-section below. Information must also be provided on the variability, composition and generation rates of all waste produced at the site and how the waste hierarchy has been applied.

Detail how the principles of cleaner production and natural resource use efficiency will be applied for the development during construction and operation, especially as to how these concepts have been applied to preventing or minimising environmental impacts. The impacts need to be quantified, and mitigation measures need to be provided. This information is required to enable the resource management agencies and other stakeholders to assess the efficiency of resource use, and allocation issues.

Provide details on the methods and responsibility for collection, transport and disposal of solid waste during construction and ongoing use and details on the likely impacts to the capacity and life of any existing landfill used

during construction and operation of the development.

Air emissions

Discuss the expected air emissions (including particulates, fumes and odours) from the Project during construction and operation (including aircraft and associated airstrip infrastructure emissions). Particulate emissions include those that would be produced by any construction or industrial process at the site or disturbance by wind action on spoil stockpiles or by transportation equipment. Monitoring at sensitive receptors must be undertaken and dust suppression and mitigation measures proposed to address these results.

The methods to mitigate impacts from air emissions must be described in section 3.7.

Solid waste disposal

The proposed location and suitability of any existing or proposed landfill to receive solid waste from construction and operational phases of the Project must be identified.

Methods to be employed to prevent leachate from sites where solid waste has been deposited need to be identified and documented. These must include physical, impermeable barriers that are established as part of any waste disposal site.

Liquid waste

A description must be presented of the origin, quality and quantity of wastewater and any immiscible liquid waste that may originate from the Project. A water balance for the Project is required to account for the estimated usage of water. The EIS may need to consider the following effects:

- groundwater from excavations;
- rainfall directly onto disturbed surface areas;
- drainage (i.e. run-off plus any seepage or leakage);
- seepage from other waste storages; and
- wastewater from:
    - dust suppression
    - domestic purposes;
    - evaporation; and
    - domestic sewage treatment.

Surface and groundwaters that leave the site must not be significantly degraded. Current and future water quality must be maintained at levels that are acceptable for users downstream of the site (including the receiving environment).

Management of waste

The proposed management of these wastes must be detailed with consideration given to the suitability of available waste disposal options. Particular attention must be given to the capacity of wastes to generate acidic, saline or sodic conditions.

2.8 Financial feasibility

This part of the EIS may be confidential.

This section shall detail the financial feasibility of the Project, including details of costs of development and ongoing maintenance and operational costs; the capacity of the proponents to satisfactorily develop the Project; fair pricing structures and cash-flow projections; estimated losses in income due to climatic conditions and both natural and human induced hazards; applicable commercial and Government fees; financial assurances and Joint Venture

arrangements; and Foreign Investment Review Board issues.

An assessment of financial feasibility will be based on industry knowledge and experience to incorporate maintenance and long term costs and on demonstration that the staging of the development will deliver all infrastructure commitments necessary to support the residential, tourism and commercial elements of the development in good time. This assessment will be tailored to meet design criteria identified in the engineering component of this Project. An estimate of Financial Assurance based on assessment of the maximum cost to effect full rehabilitation/remediation of the site and any offsite disturbances using the services of third parties at any stage of construction should be provided. Include itemised costs for design, implementation, monitoring, and validation with CPI indexing over the expected construction life of the proposal plus three years.

3 ENVIRONMENTAL VALUES, CHARACTERISTICS AND MANAGEMENT OF IMPACTS

The functions of this section are:

- to describe the existing environmental values and characteristics of the area which may be affected by the Project. Environmental values and characteristics are defined in section 9 of the EP Act, environmental protection policies and other documents such as the ANZECC 2000 guidelines, Queensland Water Quality Guidelines 2006, State Coastal Management Plan, and South East Queensland Regional Water Quality Management Strategy. Environmental values and characteristics may also be derived following recognised procedures, such as described in the ANZECC 2000 guidelines. Environmental values and characteristics must be described by reference to background information and studies, which must be included as appendices to the EIS;
- to describe the potential adverse and beneficial impacts of the Project on the identified environmental values and characteristics. Any likely environmental impacts on the environmental values and characteristics must be described;
- to describe any cumulative impacts on environmental values and characteristics caused by the Project, either in isolation or by combination with other known existing or planned sources of contamination or activities;
- to present environmental protection objectives and the standards and measurable indicators to be achieved; and
- to examine viable alternative strategies for managing impacts. These alternatives must 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 must be discussed.

This section must detail the environmental protection measures incorporated in the planning, construction, operations, rehabilitation and associated works for the Project. Measures must maintain environmental values and characteristics outside the area subject to development, minimise environmental impact, and maximise socio-economic and environmental benefits of the Project. Preferred measures must be identified and described in more detail than other alternatives.

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

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

- environmental values and characteristics affected: describe the existing environmental values and characteristics of the area to be affected including values and areas that may be affected by any cumulative impacts (refer to any background studies in Appendices - note such studies may be required

over several seasons). It must be explained how the environmental values and characteristics were derived (e.g. by citing published documents or by following a recognised procedure to derive the values);

- impact on environmental values and characteristics: describe quantitatively and qualitatively the likely impact of the Project on the identified environmental values and characteristics of the area. The cumulative impacts of the Project must be considered over time or in combination with other (all) impacts in the dimensions of scale, intensity, duration or frequency of the impacts. In particular, any requirements and recommendations of the relevant State planning policies, environmental protection policies, national environmental protection measures and integrated catchment management plans must be addressed;
- cumulative impacts on the environmental values and characteristics of land, air and water and cumulative impacts on public health and the health of terrestrial, aquatic and marine ecosystems, must be discussed in the relevant sections;
- where impacts from the Project will not be felt in isolation to other sources of impact, it is recommended that the proponent develop consultative arrangements with other industries in the Project's area to undertake cooperative monitoring and/or management of environmental parameters. Such arrangements must be described in the EIS;
- environmental protection objectives: describe qualitatively and quantitatively the proposed objectives for enhancing or protecting each environmental value. Include proposed indicators to be monitored to demonstrate the extent of achievement of the objective as well as the numerical standard that defines the achievement of the objective (this standard must be auditable). The measurable indicators and standards can be determined from legislation, support policies and government policies as well as the expected performance of control strategies. Objectives for management of contaminated land, and progressive and final rehabilitation must be included;
- control strategies to achieve the objectives: describe the control principals and proposed actions to be implemented that are likely to achieve the environmental protection objectives; include designs, relevant performance specifications of plant, equipment and structures. Details are required to show that the expected performance is achievable and realistic;
- monitoring programs: describe the monitoring parameters, monitoring points, frequency, data interpretation and reporting projects, and the adequacy of the program in assessing the impacts;
- auditing programs: describe how progress towards achievement of the objectives will be measured, reported and whether external auditors will be employed. Include scope, methods and frequency of auditing proposed, and how auditing recommendations will be considered and employed;
- management strategies: describe the strategies to be used to ensure the environmental protection objectives are achieved and control strategies implemented e.g. continuous improvement framework including details of corrective action options, reporting (including any public reporting), monitoring, staff training, management responsibility pathway, and any environmental management systems and how they are relevant to each element of the environment. Provide details of the mechanisms by which residents and property owners will be encouraged or obligated to comply with environmental management strategies aimed at improving sustainability, controlling water or energy consumption or minimising environmental impacts; and
- information quality: information given under each element must also state the sources of the information, how recent the information is, how any background studies were undertaken (eg intensity of field work sampling), how the reliability of the information was tested, and what uncertainties (if any) are in the information.

It is recommended that the EIS follows the heading structure shown below. The mitigation measures, monitoring programs, etc., identified in this section of the EIS must be used to develop the environmental monitoring program for the Project (see Section 4).

3.1 Land

3.1.1 Description of environmental values and characteristics

This section describes the existing environment values of the land area (including seabed where applicable) that may be affected by the Project. It must also define and describe the objectives and practical measures for protecting or enhancing land-based environmental values and characteristics, describe how nominated quantitative standards and indicators may be achieved, and how the achievement of the objectives will be monitored, audited and managed.

3.1.1.1 Topography/geomorphology/bathometry

Maps must be provided locating the Project in both regional and local contexts. The topography of the Project site must be detailed with contours at suitable increments, shown with respect to Australian Height Datum (AHD) and showing slope for all development areas on land. Significant features of the locality must be included on the maps. Such features would include any locations subsequently referred to in the EIS (e.g. the nearest noise sensitive locations and view points) that are not included on other maps in Section 3.1. Commentary on the maps must be provided highlighting the significant topographical features:

- all levels between Highest Astronomical Tide (HAT) and Lowest Astronomical Tide (LAT); and
- depth increments at 0.5m intervals from HAT throughout any works area.

In tidal areas, show the location of the limit of HAT, Mean High Water Springs, Mean Low Water Springs, and LAT and depth increments at 0.5m intervals throughout any works area and 100m beyond. Where structures are proposed in marine waters, provide a bathometric survey of the seabed below and 100m beyond the extent of the structure. Soundings are to be shown with respect to AHD and show depth increments at 0.5m intervals.

3.1.1.2 Geology

The EIS must provide a description, map and a series of cross-sections of the geology of the Project area relevant to the Project components. Geological properties that may influence ground stability (including seismic activity, if relevant), occupational health and safety, or the quality of wastewater leaving any area disturbed by the Project must be described. In locations where the age and type of geology is such that significant fossil specimens (such as of dinosaurs or their tracks) may be uncovered during construction/operations, the EIS must address the potential for significant finds.

3.1.1.3 Soils

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

Soil profiles are to be mapped at a suitable scale and described according to the "*Australian soil and land survey field handbook*" (McDonald et al, 1990) and "*Australian soil classification*" (Isbell, 1996). An appraisal of the depth and quality of useable soil must be undertaken and a discussion presented of their influence in the erosion potential, stormwater run-off quality and site stability.

An acid sulfate soil investigation, that meets the standards set out in "*Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils (ASS) in Queensland 1998*" Ahern, Ahern and Powell or any subsequent updates as they become available, must be undertaken. If an investigation based on relaxation in the sampling and analysis required under those guidelines is proposed, written agreement to any changes in the investigation standard from the Queensland Acid Sulfate Soils Investigation Team (of Department of Natural Resources and Water) must be provided. If any previous partial investigations have already been conducted then these must be provided as appendices to a document synthesising the overall results of all these investigations clearly. Any additional work required to bring investigative work up to the standard detailed above must be performed and included in the overall investigation. The ASS Investigation must clearly define the extent of all potential and actual acid sulfate soils (if any) on the site and must adequately characterise (in the context of a preliminary approval as agreed with QASSIT) all soil horizons within the areas to be excavated and the areas that may be drained. The basis for defining the areas that may be drained must be clearly stated.

3.1.1.4 Land use

Maps at suitable scales showing existing land uses and tenures, and the Project location, must be provided for the entire Project area and surrounding land that could be affected by the development. The maps must identify areas of conservation value, marine areas and State and Commonwealth Marine Park zoning adjacent to and covering any locality that may be impacted by the Project, including State and Commonwealth Marine Park zoning, the

Colosseum Inlet Fish Habitat Area, and the Port of Gladstone – Rodd's Bay Dugong Protection Area. The location of existing dwellings and the zoning of all affected lands according to any existing town or strategic plan must be included.

Identify and map all existing and proposed tracks and trails on the island. Describe current recreational use of the island and likely future use based on natural features and anticipated community recreational demands

Describe and map currently degraded sites (e.g. old tracks, rubbish dumps, coastal erosion) to provide a baseline for future assessment of impacts, support commitments to rehabilitation, and to give background to commitments to manage future recreational and other uses of the island outside the developed area, especially along the coastline.

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

3.1.1.5 Sensitive environmental areas

The EIS must identify whether areas that are environmentally sensitive could be affected, directly and indirectly, by the Project.

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

- habitats of species listed under the NC Act or EPBC Act as presumed extinct, endangered, vulnerable or rare;
- regional ecosystems listed as 'endangered' or 'of concern' under State legislation, and/or ecosystems listed as presumed extinct, endangered or vulnerable under the EPBC Act;
- good representative examples of remnant regional ecosystems or regional ecosystems which are poorly represented in protected areas;
- sites listed under international treaties such as Ramsar wetlands and World Heritage areas;
- sites containing near threatened or bio-regionally significant species or essential, viable habitat for near threatened or bio-regionally significant species;
- sites in, or adjacent to, areas containing important resting, feeding or breeding sites for migratory species of conservation concern listed under the Convention of Migratory Species of Wild Animals, and/or bilateral agreements between Australia and Japan (JAMBA) and between Australia and China (CAMBA);
- sites adjacent to nesting beaches, feeding, resting or calving areas of species of special interest; for example, marine turtles and cetaceans;
- sites containing common species which represent a distributional limit and are of scientific value or which contains feeding, breeding, resting areas for populations of echidna, koala, platypus and other species of special cultural significance;
- sites containing high biodiversity that are of a suitable size or with connectivity to corridors/protected areas to ensure survival in the longer term; such land may contain:
  - natural vegetation in good condition or other habitat in good condition (e.g. wetlands); and/or
  - degraded vegetation or other habitats that still supports high levels of biodiversity or acts as an important corridor for maintaining high levels of biodiversity in the area;
- a site containing other special ecological values, for example, high habitat diversity and areas of high endemism;
- ecosystems which provide important ecological functions such as: wetlands of national, state and regional significance; coral reefs; riparian vegetation; important buffer to a protected area or important habitat corridor between areas;
- sites of palaeontologic significance such as fossil sites;

- sites of geomorphological significance, such as lava tubes or karst;
- erosion prone areas declared under section 70(1) of the CPM Act;
- areas of remnant vegetation classified as being of State or regional significance for biodiversity conservation by the Environmental Protection Agency under a Biodiversity Planning Assessment using the Biodiversity Assessment and Mapping Methodology;
- significant coastal dunes, and significant coastal wetlands as defined by the State Coastal Management Plan and mapped by the draft Wide Bay-Burnett Regional Coastal Management Plan;
- protected areas which have been proclaimed under the NC Act and *Marine Parks Act 2004* or are under consideration for proclamation; and/or; and
- areas of major interest, or critical habitat declared under the NC Act or high nature conservation value areas or areas vulnerable to land degradation under the VM Act.

In particular, the EIS should indicate if the land affected by the Project is, or is likely, to become part of the protected area estate, or is subject to any treaty. Consideration must be given to national parks, conservation parks, declared fish habitat areas, wilderness areas, aquatic reserves, heritage/historic areas or items, national estates, world heritage listings and sites covered by international treaties or agreements (e.g. Ramsar, JAMBA, CAMBA), areas of cultural significance and scientific reserves. The proximity of the Project elements to any of these areas must be described.

[To obtain copies of plans of declared fish habitat areas contact Queensland Fisheries Service of the Department of Primary Industries and Fisheries at the call centre 13 25 23 or visit www2.dpi.qld.gov.au/fishweb/13402.html.]

3.1.1.6 Landscape character

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

The landscape character of the property and its surrounds must be described in the context of landscape ecology and incorporate the concepts of patch-corridor-matrix in describing the pattern of existing vegetation. In addition, the character of the landscape with respect to physical landform patterns and elements and to the characteristics of the land surface must be described using the Australian standard definitions and concepts espoused in the "*Australian Soil and Survey Field Handbook*" (McDonald *et al* 1990).

3.1.1.7 Visual amenity

This section must describe existing landscape features, panoramas and views that have, or could be expected to have, value to the community whether of local, regional, State-wide, national or international significance, with particular consideration to retention of the aesthetics value criteria of the Great Barrier Reef World Heritage Area, and having regard to guidance provided by Schedule 2 of the State Coastal Management Plan. Information in the form of maps, sections, elevations and photographs is to be used, particularly where addressing the following issues:

- major views, view sheds, existing viewing outlooks, ridgelines and other features contributing to the amenity of the area, including assessment from vessels entering and leaving Gladstone Harbour private residences in the Tannum Sands area;
- focal points, landmarks (built form or topography), gateways associated with the Project site and immediate surrounding areas, waterways, and other features contributing to the visual quality of the area and the Project site;
- character of the local and surrounding areas including character of built form (scale, form, materials and colours) and vegetation (natural and cultural vegetation) directional signage and land use;
- identification of the areas of the Project that have the capacity to absorb land use changes without detriment to the existing visual quality and landscape character; and

- the value of existing vegetation as a visual screen.

The assessment is to address the visual impacts of the Project and associated infrastructure, using appropriate simulation. Sketches, diagrams, computer imaging and photos are to be used where possible to portray the near views and far views of the completed development and their surroundings from visually sensitive locations.

3.1.2 Potential impacts and mitigation measures

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

3.1.2.1 Land use suitability

The potential for the construction and operation of the Project to change existing and potential land uses (terrestrial and marine) of the Project site and adjacent areas must be detailed. Post construction land use options must be detailed including suitability of the surrounding area to be used for agriculture, or nature conservation. The factors favouring or limiting the establishment of those options must be given in the context of land use suitability prior to the Project and minimising potential liabilities for long-term management.

The potential environmental impacts caused by the Project on the adjacent areas currently used for agriculture, urban development, recreation, tourism, other business and the implications of the Project for future developments in the impact area including constraints on surrounding land uses must be described. If the development adjoins or potentially impacts on good quality agricultural land, then an assessment of the potential for land use conflict is required, as well as the identification of any "overriding need (for the development) in terms of benefit to the community" (from State Planning Policy 1/92). Investigations must follow the procedures set out in the planning guideline, The Identification of Good Quality Agricultural Land, which supports State Planning Policy 1/92.

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

3.1.2.2 Land disturbance

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

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

Proposals for the reinstatement of the creeks must be provided if the diversion of creeks during construction or operations is expected. Where temporary dams and roads and other infrastructure are to be constructed, works programs for the management of these structures after the completion of the Project must be given. A contour map of the area must be provided (if relevant). Also, the drainage and seepage control systems and any long-term monitoring plans must be described.

An ASS management plan must be prepared for any works that have the potential to disturb ASS. Management of acid sulfate soils must be based on the ASS assessment in accordance with the "*Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils (ASS) in Queensland 1998*" or any subsequent updates as they become available, and management and monitoring plans prepared in consultation with officers of the Department of Natural Resources and Water and the EPA. Reference must be made to the *Soil Management Guidelines* (Dear *et al*. 2002), *Instructions for the Treatment and Management of Acid Sulfate Soils* (EPA 2001), the State Planning Policy 2/02, Planning and Managing Development involving Acid Sulfate Soils (e.g. identification and management and format of environmental management plans) and the State Coastal Management Plan 2001. Assess the likely

effectiveness of the proposed mitigation measures and the likely consequences for the surrounding environment.

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

3.1.2.3 Land contamination

A preliminary site investigation (PSI) of the site consistent with the EPA's *Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland* (available from the EPA website) must be undertaken to determine background contamination levels. The results of the PSI must be summarised in the EIS and provided in detail in an appendix.

If the results of the preliminary site investigation indicate potential or actual contamination, a site investigation, and remediation and/or validation works must be undertaken and the results submitted to the Environmental Protection Agency – Contaminated Land Unit (CLU), in accordance with the *Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland* (DEH, 1998), to enable the CLU to determine that Lot 3 on Plan FD841442 is suitable for the intended use by either:

- removing the site from the Environmental Management Register, or
- approving a submitted draft Site Management Plan/Remediation Action Plan..

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

- mapping of any areas listed on the Environmental Management Register or Contaminated Land Register under the EP Act;
- identification of any potentially contaminated sites not on the registers which may need remediation; and
- a description of the nature and extent of contamination at each site and a remediation plan and validation sampling.

The EIS must address management of any existing or potentially contaminated land in addition to preventing and managing land contamination resulting from Project activities. The Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland can be downloaded from the EPA website at: www.epa.qld.gov.au/environment/business/contaminated).

Methods proposed for preventing, recording, containing and/or remediating any contaminated land must be outlined. Intentions must be stated concerning the classification (in terms of the Queensland Contaminated Land Register) of land contamination on the land and product storage areas after Project completion.

Proponents must refer study projects to the EPA for review prior to commencement (consult with the Contaminated Land Section in the Queensland EPA).

3.1.2.4 Soil erosion

For all permanent and temporary landforms, possible erosion rates and management techniques must be described. For each soil type identified, erosion potential (wind and water) and erosion management techniques must be outlined. An erosion-monitoring program, including rehabilitation measures for erosion problems identified during construction, must also be outlined and acceptable mitigation strategies provided.

The report must include an assessment of likely erosion effects, especially those resulting from the removal of vegetation, and construction of retaining walls both on-site and off-site for all disturbed areas such as:

- the site, including buildings;
- access roads or other transport corridors;
- any waste dumps;

- dams, banks and creek crossings; and
- tidal and subtidal areas.

Summarise methods proposed to prevent or control erosion with regard to (a) the Soil erosion and sediment control, Engineering Guidelines for Queensland Construction Sites (Institute of Engineers Australia (Qld Division) 1996), (b) preventing soil loss in order to maintain land capability/suitability, and (c) preventing degradation of local waterways, Rodds Bay and Colosseum Fish Habitat Area by suspended solids.

3.1.2.5 Landscape character

Describe the potential impacts of the Project landscape character of the site and the surrounding area. Particular mention must be made of any changes to the broad-scale topography and vegetation character of the area and vegetation clearing.

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

3.1.2.6 Visual amenity

This section must analyse and discuss the visual impact of the Project on particular panoramas and outlooks, including but not limited to the Great Barrier Reef Coast Marine Park, Great Barrier Reef Marine Park and World Heritage areas. It must be written in terms of the extent and significance of the changed skyline as viewed (where applicable) from places of residence, work, and recreation, from road, cycle and walkways, from the air, water and other known vantage points day and night, during all stages of the Project as it relates to the surrounding landscape. The assessment is to address the visual impacts of the Project structures and associated infrastructure, using appropriate simulation. Sketches, diagrams, computer imaging and photos are to be used where possible to portray the near views and far views of the completed structures and their surroundings from visually sensitive locations. Special consideration is to be given to vessels entering and departing Gladstone Harbour, public recreation areas at Tannum Sands, public roads, public thoroughfares, and places of residence or work, which are within the line-of-sight of the Project.

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

3.1.2.7 Lighting

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

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

3.2 Infrastructure

The location and owner/custodians of all tenures for infrastructure such as reserves, roads and road reserves and the like, covering the affected land must be shown on maps of a suitable scale. Indicate locations of gas and water pipelines, power lines and any other easements. Describe the environmental values and characteristics affected by this infrastructure. In particular, with respect to the coastal access route, any adverse impacts associated with vegetation clearing for vehicular access and services requirements must be identified. Adverse impacts to species from vegetation clearing, edge effects and vehicle-wildlife collisions must be identified.

3.3 Transport

3.3.1 Road

The EIS must provide sufficient information to make an independent assessment of how the State-controlled and local government road networks will be affected. The impact on stakeholders along the whole route must be detailed and how any impacts will be managed.

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

The EIS needs to identify impacts on the State-controlled and local government road networks and to indicate clearly the corrective measures necessary to address adverse road impacts and the costs involved. This will require the proponent to compare the traffic situation and road conditions with, and without, the Project.

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

Information about the impacts and proposed measures for dealing with those impacts must be prepared by the proponent in close consultation with the Department of Main Roads and EPA.

The EIS must outline details of any potential impacts on existing or proposed transport, within 30 kilometres of the site boundaries, as follows:

- public passenger transport services and infrastructure, including school bus, scheduled bus, taxi and ferry;
- marine usage and infrastructure, including jetties, wharves, marinas, docks, navigational aids, recreational boating and commercial boating;
- rail services or infrastructure, including freight traffic, passenger services and railway level crossings; and
- transport of agricultural produce;

and within 50 kilometres of the site boundaries, as follows:

- aviation facilities and services, including civilian airstrips, navigational aids, and communication facilities.

3.3.2 Water/Air based

The EIS must also address the following transport issues:

- the potential of the Project to impact on recreational and commercial activities within and adjoining Rodds Bay, and Colosseum Fish Habitat Area including:
  - the need for additional public boat ramps, facilities and parking (for vehicle and trailers);
  - all-tide ramp status;
  - current mooring owners;
  - management and control of boat ramps (include ownership proposals);
- a review of the need for this Project to provide additional recreational boat launching facilities to ensure reasonable availability of boat launching facilities in the region; and
- aircraft/airstrip operations noise and emission impacts and potential offset options.

3.4 Climate

This section must describe the rainfall patterns (including magnitude and seasonal variability of rainfall), air temperatures, humidity, wind (direction and speed) and any other special factors (e.g. temperature inversions) that may affect air quality within the region of the Project. Extremes of climate (droughts, floods, cyclones, etc) must also be discussed with particular reference to water management at the Project site. The vulnerability of the area to natural or induced hazards, such as storm surge, floods, cyclones and bushfires must also be addressed be evaluated against SPP 1/03 Mitigating the impacts of flood, bushfire and landslide, and against section 2.2.4 Coastal Hazards in the State Coastal Management Plan with reference to the EPA guideline "Mitigating the adverse impacts of storm tide inundation". The storm tide hazard area and high risk area must be mapped. The relative frequency, magnitude and risk of these events must be considered.

The potential impacts due to climatic factors must be addressed in the relevant sections of the EIS. The impacts of rainfall on soil erosion must be addressed in Section 3.1. The impacts of storm events on the capacity of waste containment systems (e.g. site bunding/stormwater management) must be addressed in Section 3.5 with regard to contamination of waterways. The impacts of winds, rain, humidity and temperature inversions on air quality must be addressed in Section 3.7.

Provide information on historic fire regimes on the island and the likely changes to these regimes resulting from the development including:

- the cause, frequency, intensity and extent of fires (last 10 years);
- a wildfire protection strategy for all stages of the development (including additional clearing requirements, and controlled burning regime);
- a general overview of the impact of the historic fire regime on the natural environment and the potential impact based on the wildfire protection strategy; and
- commitments to fire management services (fire crews & equipment).

3.5 Water resources

3.5.1 Description of environmental values and characteristics

This section describes the existing environment for water resources that may be affected by the Project in the context of environmental values and water quality objectives as defined in such documents as the EP Act, Environmental Protection (Water) Policy 1997, Queensland Water Quality Guidelines (2006) and ANZECC 2000 and any relevant regional water quality improvement strategies.

Sufficient baseline water quality information is to be presented (in consultation with the Environmental Protection Agency and the Great Barrier Reef Marine Park Authority) to set long term water quality goals, and to set limits on contaminants in water discharged from the Project site.

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

3.5.1.1 Surface waterways

A description must be given of the perennial and ephemeral creeks/wetlands, their environmental values and characteristics, physical integrity and riparian vegetation affected by the Project with an outline of the significance of these waters to the system in which they occur. Details provided must include a description of existing surface drainage patterns, flows in major streams and wetlands. The location, extent, frequencies and durations to which the highest astronomical tides and the mean high water spring tides penetrate into surface water systems must also be described.

The EIS must provide a description, with photographic evidence, of the geomorphic condition of any watercourses and wetlands likely to be affected by disturbance or stream diversion, including a description of any likely barriers to fish and aquatic wildlife movement likely to be affected by disturbance or stream diversion. The results of this description must form the basis for the planning and subsequent monitoring of rehabilitation of the watercourses

during or after the operation of the Project.

An assessment is required of existing water quality in surface waters and wetlands likely to be affected by the Project. The basis for this assessment must be a monitoring program, with sampling stations located upstream and downstream of the Project where applicable. Results of water quality monitoring must be referenced against established or derived long term water quality goals. Complementary stream-flow data must also be obtained from historical records (if available) to aid in interpretation.

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

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

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

3.5.1.2 Groundwater

The EIS must review the quality, quantity and significance of groundwater in the Project area.

The review must include a survey of existing groundwater aquifers and must 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;
  - inferred groundwater flow directions (defined from water level contours);
  - potential interaction with surface water;
  - potential interaction with sea/salt water;
  - possible sources of recharge; and
  - vulnerability to pollution.

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

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

3.5.2 Potential impacts and mitigation measures

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

The EIS must describe the potential environmental impacts caused by the proposed Project to environmental values and characteristics for water as expressed in the Environmental Protection (Water) Policy.

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

Key water management strategy objectives include:

- protection of the integrity of the marine environment, and ultimately the Great Barrier Reef Marine Park and World Heritage property;
- protection of the integrity of wetlands that have the potential to be affected by the Project;
- protection of important local aquifers and protection of their waters;
- assessment of the potential need for access to surface or groundwater resources at different stages of the development, to supplement the runoff collection that is proposed as the water supply for the development;
- maintenance of sufficient quantity, persistence and quality of surface waters to protect existing beneficial downstream uses of those waters (including maintenance of in-stream riverine and lacustrine biota and the littoral zone); and
- minimisation of impacts on flooding levels and frequencies both upstream and downstream of the Project.

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

3.5.2.1 Surface water and water courses

The EIS must address any proposed modifications or impacts to waterways both on and adjacent to the site, including infrastructure required for road crossings, drainage, pipelines and if any waterway barriers (both temporary and permanent) are required. Timeframes for any temporary waterway barriers must be nominated. This section must address the infrastructure associated with any lagoons and lakes.

The potential environmental impacts caused by changes in the flow and the quality of perennial and ephemeral waters and excavations, placement of materials or destruction of vegetation within and beside waterways or extraction of quarry material from within waterways associated with all phases of the Project must be discussed. Particular reference must be given to their impacts on the current and potential downstream uses, including water and sediment input requirements of any affected waterway, riverine or lacustrine area, wetland, estuary, littoral zone, and any marine, riparian and aquatic biological uses (e.g. impact on migration and breeding patterns of native terrestrial and aquatic species).

The need or otherwise for licensing and permitting of any diversions, water impoundments, extraction of quarry materials or the excavation, placement of fill or destruction of native vegetation within any watercourse, lake or spring under the *Water Act 2000* and the *Fisheries Act 1994* must be discussed. The location and extent of watercourses both longitudinal and lateral, water and quarry material allocations, water sources and the type and location of infrastructure associated with any crossings of or stormwater outlets into such features must be established in consultation with Department of Natural Resources and Water. Survey plans depicting the ground levels within waterways and lines depicting the locations of the top of the high and low banks of these features for the purposes of such permits must be provided.

The hydrological impacts of the Project must be assessed, particularly with regard to stream diversions, crossings, scouring and erosion, both upstream and downstream of the Project (including off-site where required for infrastructure crossings), for both permanent or temporary works. Assessment of impacts on the flow and the quality of perennial and ephemeral waters and effects on associated ecosystems must include an assessment of the likely effects on mangrove and other estuarine habitats and fish passage as a result of any temporary diversion of existing water courses. The potential environmental impacts caused by water quality changes within near coastal freshwater environments due to any changes in the interactions between the freshwater hydrological

regime and/or changes to the penetration of seawater over or through coastal dunes into brackish waterways resulting from the Project must also be discussed.

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

Provide details of seawater quality monitoring at points of outflow and water quality within any near coastal lakes that have the potential to be affected by the Project. Quality characteristics discussed must be those appropriate to the downstream and upstream water 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 must be discussed along with toxicity of effluent constituents to flora and fauna.

Provide details on the proposed road network and design of bridges and culverts and their potential impacts as barriers or impediments to water flows and to wildlife movement or mitigations (either permanently or seasonally) and to any special habitat requirements of significant aquatic species, especially fish (e.g. for breeding purposes).

Having regard for the requirements of the Environmental Protection (Water) Policy, the EIS must present the methods to avoid stormwater contamination and the means of containing, recycling, reusing, treating and disposing of stormwater.

The EIS must identify any water quality changes associated with the development arising from nutrients, chemicals, or biophysical changes such as pH, turbidity, etc. The Australian and New Zealand Environment and Conservation Council (ANZECC, 2000) National Water Quality Management Strategy, Australian Water Quality Guidelines for Fresh and Marine Waters and the Environmental Protection (Water) Policy 1997 must be used as a reference for evaluating the effects of various levels of contamination.

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

3.5.2.2 Groundwater

The EIS must include an assessment of the potential environmental impacts caused by the Project to local groundwater resources.

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

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

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

3.6 Coastal environment

3.6.1 Description of environmental values and characteristics

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

This section must also identify actions associated with the Project that are assessable development within the coastal zone and will require assessment under the provisions of the CPM Act.

3.6.1.1 Water quality

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

- values identified in the Environmental Protection (Water) Policy;
- Queensland Water Quality Guidelines 2006; and
- the State Coastal Management Plan and any Regional Coastal Management Plan (draft or final).

Define and describe the water quality objectives (WQO) required to protect the environmental values identified, (protocols must be consistent with the Environmental Protection (Water) Policy 1997). Specific details should be provided on how the WQO have been developed and derived.

Provide baseline information on water quality in estuaries below the limit of tidal influence surrounding Hummock Hill Island, consistent with the identified environmental values and WQOs. Discuss the interaction of freshwater flows with marine waters and its significance in relation to marine flora and fauna adjacent to the Project area.

Provide a comprehensive discussion of physical factors affecting marine water quality in the area including interactions with surface waters from land, tides, cyclones, sea level rise, winds and waves.

Discuss the dominant ecological processes, including nutrient and organic matter cycling and the key limiting physical factors to the ecological processes.

Provide an assessment of existing water quality of waters within adjacent coastal and estuarine reaches within the Rodds Bay and Colosseum Fish Habitat Area through either monitoring or using recent available published data. This assessment is to establish baseline water quality in the adjacent coastal zone, against which potential impacts of the Project can be considered. The assessment is to include parameters relevant to the identified environmental values and characteristics and long term water quality goals for the areas, but not limited to total and dissolved organic carbon, pH, dissolved oxygen, suspended solids, turbidity, total nitrogen, total phosphorous, total and dissolved aluminium, total and dissolved iron, faecal coliforms, and chlorophyll-a. Sufficient baseline water quality information is required to be collected in consultation with the EPA and the Great Barrier Reef Marine Park Authority to define the natural variation of parameters to set marine water quality objectives, and to set limits on contaminants in water discharged from the construction site.

3.6.1.2 Coastal processes

Describe the environmental values and characteristics of the coastal resources of the affected area in terms of the physical integrity and morphology of landforms created or modified by coastal processes.

Provide an assessment of physical and chemical characteristics of sediments within the littoral and marine zone where works are to occur below the level of the Highest Astronomical Tide.

Provide a discussion of physical factors and processes affecting marine waters in the area including currents, tides, storm surges, cyclones, sea level rise, winds and waves

3.6.2 Potential impacts and mitigation measures

This section defines and describes the practical measures for protecting or enhancing coastal environmental values and characteristics, to describe how the achievement of established long term water quality goals will be monitored, audited and managed through nominated quantitative standards and indicators. It should assess potential impacts of construction and operational activities on the coastal zone, identified environmental values and characteristics and long term water quality goals.

Describe the long term water quality goals used (including how they were developed), and how predicted activities

will meet these objectives (refer to the Queensland Water Quality Guidelines 2006; and the Australian and New Zealand guidelines for fresh and marine water quality, ANZECC, 2000).

The potential environmental impacts caused by the Project on coastal resources and processes must be described in the context of controlling such effects. The State Planning Policy – Planning and Managing Development involving Acid Sulfate Soils 2002, the State Coastal Management Plan 2001, any Regional Coastal Management Plan (draft or final) and QDPI Guidelines for Marine Areas must be addressed.

Discuss the subsequent likely impact from use of the proposed structures such as the jetty and boat ramp on the future need for dredging and impact on coastal processes and describe the measures proposed to minimise impacts from construction of tidal works on coastal processes and resources.

The role of buffer zones in maintaining connectivity between coastal and riparian vegetation and estuarine and freshwater reaches of catchments must be discussed.

3.7 Air quality and greenhouse gases

3.7.1 Description of environmental values and characteristics

3.7.1.1 Air quality

This section describes the existing air environment and environmental values and characteristics that may be affected by the Project.

A description of the existing air shed environment must be provided having regard for particulates and gaseous and odorous compounds and local meteorology conditions including air temperature, wind speed and direction, atmospheric stability, mixing depth and other parameters necessary for input into later studies or for the modelling of air quality within the air shed.

3.7.2 Potential impacts and mitigation measures

3.7.2.1 Air quality

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

The objectives for air emissions must be stated in respect of relevant standards (ambient and ground level concentrations), relevant guidelines, and any relevant legislation.

Potential air quality impacts from emissions must be discussed reference to the National Environmental Protection Measures (NEPM) for ambient air quality (1998), the Environmental Protection (Air) Policy 1997 and relevant Australian Standards.

The assessment of the Project's impact on air quality must include a discussion of at least the following matters:

- features of the Project designed to suppress or minimise emissions, including dusts and odours; and
- a potential dust and odour emissions during both construction conditions.

3.7.2.2 Greenhouse gas emissions and abatement

This section of the EIS must:

- provide a discussion of potential emissions during construction for each relevant greenhouse gas from construction equipment and plant, with total emissions expressed in 'CO2 equivalent' terms;
- provide a discussion of expected operational emission sources (including aviation and related activities)

and emissions expressed in 'CO2 equivalent' terms;
- estimate emissions from upstream activities associated with the construction of the proposed Project, including fossil fuel based electricity consumed; and
- briefly describe method(s) by which estimates were made.

The Australian Greenhouse Office Factors and Methods Workbook can be used as a reference source for emission estimates and supplemented by other sources where practicable and appropriate (www.greenhouse.gov.au/workbook/pubs/workbook-2005.pdf).

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

- a description of the proposed measures (alternatives and preferred) to avoid and/or minimise greenhouse gas emissions directly resulting from construction activities of the Project;
- an assessment of how the preferred measures minimise emissions and achieve energy efficiency;
- an indication of how the preferred measures for emission controls and energy consumption compare with practice in the relevant sector of industry with a view to achieving best practice environmental management; and
- a description of any opportunities for further offsetting greenhouse gas emissions (including aviation and other operational gas emissions) through indirect means.

Direct means of reducing greenhouse gas emissions could include such measures as minimising clearing at the site (which also has imperatives besides reducing greenhouse gas emissions).

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

- commitments to the abatement of greenhouse gas emissions from the Project with details of the intended objectives, measures and performance standards to avoid, minimise and control emissions; and
- commitments to monitor, audit and report on the success of offset measures.

3.7.2.3 Climate change adaptation

Climate change, through alterations to weather patterns and rising sea level, has the potential to impact in the future on developments designed now. Most developments involve the transfer to, or use by, a proponent of a community resource in one form or another, such as the granting of a non-renewable resource or the approval to discharge pollutants to air, water or land. The EIS must provide an assessment of the Project's vulnerabilities to climate change and describe possible adaptation strategies for the activity including:

- a risk assessment of how changing patterns of rainfall and hydrology, temperature, extreme weather and sea level (where appropriate) may affect the viability and environmental management of the Project;
- the preferred and alternative adaptation strategies to be implemented; and
- commitments to undertaking, where practicable, a cooperative approach with government, other industry and other sectors to address adaptation to climate change.

The State government recognises that predictions of climate change and its effects have inherent uncertainties, and that a balance must be found between the costs of preparing for climate change and the uncertainty of outcomes. However, proponents must use their best efforts to incorporate adaptation to climate change in their EIS and Project design.

3.8 Waste

This section must complement other sections of part 3 of the EIS by providing technical details of waste treatment and minimisation, with proposed emission, discharge and disposal criteria, while other sections describe how those emissions, discharges and disposals would impact the relevant environmental values and characteristics. The purpose of this format is to concentrate the technical information on waste management into one section in order to facilitate its transfer into the EM Plan.

3.8.1 Description of environmental values and characteristics

This section describes the existing environment values that may be affected by the Project's wastes. Refer to each of the waste streams described in section 2.7 and provide references to environmental values and characteristics described in other sections of part 3 of the EIS.

3.8.2 Potential impacts and mitigation measures

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

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

- operational handling and fate of all wastes including storage;
- on-site treatment methods proposed for the wastes;
- methods of disposal (including the need to transport wastes off-site for disposal) proposed to be used for any trade wastes, liquid wastes and solid wastes;
- the potential level of impact on environmental values and characteristics;
- proposed discharge/disposal criteria for liquid and solid wastes;
- methods to prevent, seepage and contamination of groundwater from stockpiles and/or dredge spoil must be given;
- expected frequency and nature of discharges into waterways from emergency sewerage outfalls or the failure of sewerage infrastructure particularly at crossings of waterways and major drainage paths;
- market demand for recyclable waste (where appropriate) must be addressed; and
- waste minimisation techniques processes proposed.

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

Waste minimisation and treatment, and the application of cleaner production techniques, must also be applied to gaseous wastes, particularly particulates and carbon dioxide. Particular attention must be paid to measures that will maximise energy efficiency and minimise internal energy consumption in the Project.

Waste management planning must be detailed especially as to how the concepts have been applied to preventing or minimising environmental impacts at each stage of the Project. Details on natural resource use efficiency (eg energy and water), integrated processing design, co-generation of power and by-product reuse (as shown in a material/energy flow analysis) are required.

3.9 Noise and vibration

3.9.1 Description of environmental values and characteristics

3.9.1.1 General

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

The locations of sensitive sites must be identified on a map at a suitable scale. Noise sensitive places are defined in the Environmental Protection (Noise) Policy 1997.

Comment must be provided on any current activities near the Project area that may cause a background level of

ground vibration (for example: major roads, quarrying activities, etc).

If the proposed activity could adversely impact on the noise environment, the daily variation of background noise levels at nearby sensitive sites must be monitored and reported in the EIS, with particular regard given to detailing variations at different periods of the night. Monitoring methods must adhere to accepted best practice methodologies, relevant Environmental Protection Agency guidelines and Australian Standards, and any relevant requirements of the Environmental Protection (Noise) Policy 1997. Baseline monitoring should also be described with reference to AS1055– Description and Measurement of Environmental Noise (1997).

3.9.1.2 Aircraft noise environment

Describe the existing environmental values and characteristics that may be affected by noise and vibration and assess noise and vibration impacts arising from the airstrip construction and operation.

Provide an assessment (at a scale appropriate to the proposed airstrip development and usage) of aircraft noise predictions for the airstrip during the operational phase of the Project. This assessment should include seasonal predictions and predictions based on the predominant operating modes under prevailing meteorological conditions. Different levels of airstrip and runway usage and flight paths must be considered.

The assessment of aircraft noise impacts should consider matters raised in "*Australian Standard AS 2021-2000 Acoustics – Aircraft noise intrusion-Building siting and construction*" and the following Australian Department of Transport and Regional Services (DOTARS) material:

- Discussion Paper - Going Beyond Noise Contours, Local Approaches to Land Use Planning around Smaller Australian Airstrips
  www.dotars.gov.au/aviation/environmental/transparent_noise/pdf/going_beyond_noise_contours.pdf
- Discussion Paper on Expanding Ways to Describe and Assess Aircraft Noise
  www.dotars.gov.au/aviation/environmental/transparent_noise/expanding/index.aspx
- Guidance Material for Selecting and Providing Aircraft Noise Information
  www.dotars.gov.au/aviation/environmental/transparent_noise/guidance/index.aspx

Discuss issues relating to existing ambient noise levels and characteristics and identify noise sensitive facilities and areas, including:

- relevant meteorological conditions (including frequency and characteristics of temperature inversions) and any topographic features which may influence noise or vibration impacts;
- existing, developing and potential or proposed areas of residential development which may be exposed to aircraft noise;
- community facilities which may be noise sensitive (including health, aged, disabled and child care centres, places of worship, educational and recreation facilities), indicating the location of the facilities using maps and other suitable means and where possible, the number of people potentially exposed at each facility; and
- environmentally sensitive areas (e.g. wildlife habitat) which may be noise or vibration sensitive.

3.9.2 Potential impacts and mitigation measures

3.9.2.1 General

This section defines and describes the objectives and practical measures for protecting or enhancing environmental values and characteristics from impacts by noise and vibration, describes how nominated quantitative standards and indicators may be achieved for noise and vibration management, and how the achievement of the objectives will be monitored, audited and managed. The assessment of noise impacts must (where relevant) 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.

The likely noise impacts upon existing residents from both construction and operation of the Project must be detailed.

The potential environmental impact of noise and vibration at all potentially sensitive places, in particular, any place of work or residence must be assessed in terms of noise objectives and standards to be achieved. Particular consideration must be given to emissions of low-frequency noise; that is, noise with components below 200Hz. The assessment must also include environmental impacts on terrestrial and marine animals and avifauna, particularly migratory species. Proposed measures for the minimisation or elimination of impacts must be provided, including details and illustrations of any screening, lining, enclosing or bunding.

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

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

3.9.2.2 Airstrip

In addition to expressing noise impact in terms of average measures, the EIS must include information and discussion about peak noise levels, frequency of overflights, and the times of day overflights could occur, compare maximum aircraft noise levels to existing ambient noise levels and characteristics without impacts from airstrip/aircraft noise, and discuss the effects of changes in noise exposure.

Fully assess the potential disturbance to everyday activities of the proposed development created by aircraft noise with reference to current research. This must include, but not necessarily be limited to:

- discussion of the impact of changes to the noise environment on interruptions to everyday activities (in particular, sleep disturbance resulting from night-time operations), level of annoyance and effects on the physical and psychological health of the affected population and groups of people who may be especially vulnerable to such effects including:
  - preschool children;
  - students;
  - the aged;
  - hospital and nursing home patients; and
  - shift workers;
- discussion on the implications of aircraft noise on sensitive times of the day (e.g. late evening and early morning) and any proposed noise mitigation strategies; and
- discussion of aircraft noise impacts on existing or proposed recreational, conservation, residential, heritage or wilderness areas, including impacts on amenity and the wildlife using those areas.

The assessment of potential impacts from aircraft noise should be discussed in the context of *AS2021 –* "*Acoustics – Aircraft noise intrusion. Building siting and construction (2000)*".

3.10 Nature conservation

3.10.1 Description of environmental values and characteristics

This section describes the existing environment values for nature conservation that may be affected by the Project, including indirect or subsequent impacts on parts of Hummock Hill Island outside the lease and development footprint, surrounding waters, and ecosystems affected by infrastructure corridors.

Describe the environmental values and characteristics of nature conservation for the affected area in terms of:

- integrity of ecological processes, including habitats of terrestrial, aquatic and marine rare and threatened

species or geographically restricted, locally endemic or scientifically significant species or populations;
- conservation of resources;
- biological diversity, including vegetation communities and habitats of rare and threatened species geographically restricted, locally endemic or scientifically significant species or populations;
- integrity of landscapes; and
- aquatic, riparian, riverine, freshwater, marine and terrestrial ecosystems.

A discussion must be presented on the nature conservation values of the areas likely to be affected by the Project. The flora and fauna communities which are rare or threatened, environmentally sensitive localities including the marine environment, waterways, riparian zone, and littoral zone, rainforest remnants, old growth indigenous forests, wilderness and habitat corridors must be described. The description must include a current plant species list, a vegetation map at appropriate scale and an assessment of the significance of native vegetation, from a local and regional and state perspective. The description must indicate any areas of state or regional significance identified in an approved biodiversity planning assessment (BPA) produced by the EPA and any areas of State significance (natural resources) as defined by the State Coastal Management Plan and mapped by the draft Wide Bay – Burnett Regional Coastal Management Plan.

The EIS must identify issues relevant to sensitive areas, or areas, which may have, low resilience to environmental change (see 3.1.1.5). Areas of special sensitivity include the marine environment and wetlands, wildlife breeding or roosting areas, any significant habitat or relevant bird flight paths for migratory species, bat roosting and breeding areas, and habitat of threatened plants, animals and communities. Project proximity to any biologically sensitive areas must be described.

Reference must be made to both State and Commonwealth endangered species legislation and the location of the area within a World Heritage property.

The VM Act and the findings of any regional vegetation management plan must also be referenced.

The occurrence of pest plants and animals in the Project area must be described.

Provide details on the likely occurrence of (including seasonal variations) and impacts from mosquito and biting midge populations on future residents of the Project and the proposed mitigation measures to be employed.

Key flora and fauna indicators must be identified for future ongoing monitoring. Surveys of flora and fauna need to be conducted throughout the year to reflect seasonal variation in communities and to identify migratory species.

3.10.1.1 Flora

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

Any variation between regional ecosystem mapping in the EIS and the current regional ecosystem mapping prepared by the Environmental Protection Agency (Queensland Herbarium) must be highlighted and justified. Consultation should occur with the Environmental Protection Agency on the extent of regional ecosystems prior to finalising the EIS.

The existence of important local and regional weed species must also be discussed with consideration given to identify weed species and potential for establishment of weeds arising form the importation of fill.

Vegetation mapping must provide vegetation mapping for all relevant Project sites including new infrastructure routes.

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

- location and extent of vegetation types using the EPA's regional ecosystem type descriptions in accordance with the Regional Ecosystem Description Database [REDD] available at the EPA's website;
- location of vegetation types of conservation significance based on EPA's regional ecosystem types and occurrence of species listed as protected plants under the Nature Conservation (Wildlife) Regulation 1994 and subsequent amendments, as well as areas subject to the VM Act;
- the current extent (bioregional and catchment) of protected vegetation types of conservation significance within the protected area estate (national parks, conservation parks, resource reserves, nature refuges);
- any plant communities of cultural, commercial or recreational significance must be identified; and
- location and abundance of any exotic or weed species.

Within each defined (standard system) vegetation community, a minimum of three sites (numbers must be discussed with the EPA) must be surveyed for plant species, preferably in both summer and winter, as follows:

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

Existing information on plant species may be used instead of new survey work provided that the data is derived from surveys consistent with the above methodology. Methodology used for flora surveys must be specified in the appendices to the report.

3.10.1.2 Terrestrial fauna

The terrestrial and riparian fauna occurring in the areas affected by the Project must 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 must include:

- species diversity (i.e. a species list) and abundance of animals, including amphibians, birds, reptiles, mammals and bats;
- any rare or threatened species that is suspected (but not confirmed) to occur on the site;
- habitat requirements and sensitivity to changes; including movement corridors and barriers to movement;
- the location and estimated population of feral or exotic animals;
- existence of any rare, threatened or otherwise noteworthy species/communities in the study area, and specifically any species for which essential habitat has been mapped for the purposes of the VM Act, including discussion of range, habitat, breeding, recruitment, feeding and movement requirements, and current level of protection (e.g. any requirements of protected area management plans); and
- use of the area by migratory birds, nomadic birds, fish and terrestrial fauna.

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

3.10.1.3 Aquatic biology

General

The aquatic flora and fauna occurring in the areas affected by the Project must be described from recent biota surveys/studies using quantitative and qualitative ecological data, noting the patterns and distribution in the

waterways and/or associated lacustrine and marine environments. The description of the fauna and flora present or likely to be present in the area must include:

- fish species, mammals, reptiles, amphibians, crustaceans and aquatic invertebrates occurring in the waters within and adjoining the affected area, and/or those in any associated lacustrine and marine environment;
- any rare or threatened marine species, particularly dugong, marine turtles and their habitats;
- the location and frequency of use (historical and current) of turtle nesting beaches, and the species of turtles using the rookery;
- aquatic plants, cyanobacterium (e.g. *Lyngbya* sp.) and marine algae;
- aquatic and benthic habitats; and
- habitat downstream of the Project or potentially impacted due to currents in associated lacustrine and marine environments.

Fisheries Impacts

Provide a specific section that details the commercial, recreational and indigenous fishing activities in the Hummock Hill Island area that have the potential to be impacted. Specific points to include:

- nature and extent of fish habitats, including seagrass (permanent and ephemeral), macro-algae, mangrove and saltcouch communities and sand bars/mudflats, mapped relative to existing features for reference;
- location of declared Fish Habitat Areas proximal to the proposed development site;
- types and spatial distribution of economically important fish species, inc their migration requirements;
- nature, timing and spatial distribution of the respective fishing sectors;
- immediate and longer term impacts on existing fish habitats, fish populations, migrations and sectoral fishing activities;
- benefits to the fishing sectors; and
- measures to be employed to minimise the impacts on fisheries resources in and adjacent to the proposed development footprint both during and post construction.

Surveys for seagrass and algae should reflect the seasonal variation in occurrence and density of these communities. The location and density of marine plants should be mapped at an appropriate scale.

Detail the potential environmental impacts in the short term to flora and fauna communities from the direct effects of any dredging works. This should include modelling of the potential effects of the dredge plume (eg. increased turbidity) and re-suspension and seabed movement of dredge derived sediment on seagrass and other aquatic species within and adjacent to the proposed marina area.

Any offsets (mitigation) for impacts on fish habitats, fish and fisheries activities needs to be identified and quantified with regard to government policies, including the Department of Primary industries and Fisheries policy "*Mitigation and compensation for activities causing marine fish habitat loss*."

3.10.2 Potential impacts and mitigation measures

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

The EIS must address any actions of the Project or likely impacts that require an authority under the NC Act, and/or would be assessable development for the purposes of the VM Act.

The discussion must cover all likely direct and indirect environmental impacts due to the Project on flora and fauna particularly environmentally sensitive areas and species that have local, state, national and international significance such as species listed under the Nature Conservation (Wildlife) Regulations 1994 (Qld) as Rare, Vulnerable or Endangered and species listed under the EPBC Act. These must include, but not be limited to:

- Water Mouse (*Xeromys myoides*);
- Eastern curlew (*Numenius madagascariensis*);
- Beach stone curlew (*Esacus neglectus*);
- Loggerhead Turtle (*Caretta caretta*);
- Green Turtle (*Chelonia mydas*);
- Leatherback Turtle (*Dermochelys coriacea*);
- Hawksbill Turtle (*Eretmochelys imbricata*);
- Flatback Turtle (*Natator depressus*); and
- Dugong (*Dugong dugon*).

Identify the location of existing bat colonies, and the location of historically used colony sites, relative to the proposed development. Describe the risk to any colony sites as a result of community health concerns related to droppings (especially contamination of tank water supply) and intolerance of noise and odour.

The potential environmental impacts on flora and fauna due to any alterations to the long term hydrodynamic processes of adjacent coastal environments must be discussed with specific reference to environmental impacts on riparian vegetation or other sensitive vegetation communities including mangrove stands and seagrass meadows. Measures to mitigate the environmental impacts to habitat or the inhibition of normal movement, propagation or feeding patterns, and change to food chains must be described.

Assess impacts on the nature conservation values of the marine park values through increased marine traffic and visitation, with specific consideration of boat strike frequency for dugong and turtle. The potential demand for high speed ferry connection to Gladstone and marina facilities should be discussed in relation to potential future impacts on marine park values, if such a demand is identified.

Discuss potential human impacts resulting from recreational use of the island, unauthorised activities such as tree clearing and waste disposal, use of trail bikes, horses and four wheel drives, and introduction of domestic animals. Any proposal to exclude or manage domestic animals must be supported by a practical and cost effective plan supported by local government. Strategies for protecting the Great Barrier Reef Marine Park and World Heritage Property in the vicinity of Hummock Hill Island, and any rare or threatened species must be described, and any obligations imposed by State or Commonwealth legislation or policy or international treaty obligations (i.e. JAMBA, CAMBA) must be discussed. Emphasis must be given to potential environmental impacts to benthic and intertidal communities, seagrass beds and mangroves.

An assessment of the potential impacts of altered lighting and noise environments on terrestrial and marine fauna, including a discussion of measures to reduce such impact must be undertaken.

An assessment on the extent of direct and potential long term remnant vegetation degradation/ loss, including a description of its vegetation management and biodiversity conservation status must be performed.

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

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

The assessment of potential impacts from construction and operation of the development must cover the lease area, remaining land on the island, and areas affected by infrastructure associated with the development and consider ongoing issues such as fire management, recreational management, unapproved waste disposal, domestic animal control and weed control.

Mitigation assessment must be addressed in terms of avoidance, redesign or relocation, onsite offsets and offsite offsets. Any mitigation outcomes must address those undertaken during construction and those that will occur post-construction. Rehabilitation of degraded areas must include tidal and freshwater habitats, as appropriate.

The responsibility and commitment for post-construction mitigation measures need to be clearly defined.

The potential environmental impacts on flora and fauna due to any alterations to the local surface and ground water environment must be discussed with specific reference to environmental impacts on riparian vegetation or other sensitive vegetation communities. Measures to mitigate the environmental impacts to habitat or the inhibition of normal movement, propagation or feeding patterns, and change to food chains must be described.

Quantify the extent of vegetation clearing and trimming required to achieve aircraft obstacle limitation surface requirements and to limit the risk of impact with flying fauna (birds, bats). Quantify the hazard to aircraft presented by birds and bats and discuss measures proposed to achieve acceptable risk.

The provision of buffer zones and movement corridors, and strategies to minimise environmental impacts on migratory, nomadic and aquatic animals must be discussed. Particular consideration must be given to the movement of fauna between the eastern and western sections of the island and the effect of opening a road to the proposed jetty site.

Weed management strategies are required for containing existing weed species (e.g. Giant rat's-tail grass, parthenium and other declared plants) and ensuring no new declared plants are introduced to the area. Feral animal management strategies and practices must also be addressed. The EIS must outline strategies to ensure that the Project does not contribute to increased encroachment of a feral animal species. Reference must be made to the local government authority's pest management plan when determining control strategies. The strategies for both flora and fauna must be discussed in the main body of the EIS and provided in a working form in a Pest Management Plan as part of the overall EM Plan for the Project.

3.11 Cultural heritage

3.11.1 Description of environmental values and characteristics

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

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

3.11.1.1 Indigenous Cultural Heritage

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

- notification, as required by the ACHA, to the Chief Executive of NR&W, Miriam Vale Shire Council (only if owner or occupier of the subject land), and the registered Native Title Claimants, who are the Aboriginal Parties under the ACHA;
- endorsement of those Aboriginal Parties who respond to the notification;
- consultation with the Aboriginal Parties about their involvement in the development of the CHMP, and about outcomes;
- compliance with the Duty of Care Guidelines and the CHMP Guidelines as gazetted;
- seeking approval of the CHMP from the Chief Executive, NR&W, through the EIS process;
- liaison with the Aboriginal Parties concerning:
    - places of significance to that community (including archaeological sites, natural sites, story sites etc;
    - appropriate community involvement in field surveys;

- any requirements by communities and /or informants relating to confidentiality of site data must be highlighted. Non-Indigenous communities may also have relevant information;
- a search of both the Cultural Heritage register and the Cultural Heritage database;
- a systematic survey of the proposed development area to locate and record Indigenous cultural heritage places;
- significant assessment of any cultural heritage sites/places located;
- the impact of the proposed development on cultural heritage values; and
- a report of work done which includes background research, relevant environmental data and methodology, as well as results of field surveys, significance assessment and recommendations.

3.11.1.2 Non-Indigenous Cultural Heritage

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

- a permit to conduct the research and survey will be required under the provisions of the Queensland *Heritage Act 1992*. The EPA regional manager must be consulted for the provision of general advice including the appropriate conduct of cultural heritage surveys and the necessary permit;
- a systematic survey of the proposed development area to locate and record non-Indigenous cultural heritage places;
- significance assessment of any cultural heritage sites/places located;
- the impact of the proposed development on cultural heritage values;
- consultation regarding non-indigenous cultural heritage values within the study area with relevant community groups (eg historical society, museum organisation, and conservation groups); and
- a report of work done which includes background research, relevant environmental data and methodology, as well as results of field surveys, significance assessment and recommendations.

3.11.2 Potential impacts and mitigation measures

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

The environmental impacts to cultural heritage values in the vicinity of the Project must be managed under a CHMP developed specifically for the Project. The CHMP will provide a process for the management of cultural heritage places both identified and sub-surface at the Project sites. It is usual practice for the CHMP to be based on information contained in archaeological and/or anthropological reports on the survey area and cultural reports and/or information from affiliated traditional owners. The CHMP must address and include the following:

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

The development of the CHMP must be negotiated between the relevant parties i.e. the Project proponent and the relevant Aboriginal party.

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

Provide a cultural heritage management plan for non-indigenous cultural heritage values if significant values are identified.

3.12 Social

3.12.1 Description of environmental values and characteristics

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

The social amenity and use of the Project area and adjacent areas for rural, agricultural, forestry, fishing, recreational, industrial, educational or residential purposes must be described. Provide details on:

- community infrastructure and services, access and mobility;
- population and demographics of the affected community;
- local community values, vitality and lifestyles;
- recreational, commercial, tourism, indigenous, cultural, leisure and sporting facilities and activities in relation to the affected area;
- health and educational facilities;
- current property values;
- number of properties directly affected by the Project; and
- number of families affected by the Project, this must include not only property owners but also families of workers either living adjacent the site or workers where the area is their primary employment.

Social, economic and cultural values are not as easily separated as physical and ecological values. Therefore, it may be necessary for some material in this section to be cross-referenced with in section 2.5 Construction, 2.6.1 Road Transport, 3.1.2.6 Visual Amenity, 3.3 Transport, 3.9 Noise and Vibration, 3.11 Cultural Heritage, 3.13 Health and Safety, and Section 3.14 Economy.

3.12.2 Potential impacts and mitigation measures

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

The social impact assessment of the Project must consider the information gathered in the community consultation program and the analysis of the existing socio-economic environment, and describe the Project's impact, both beneficial and adverse, on the local community. The impacts of the Project on local and regional residents, community services and recreational activities are to be analysed and discussed for all stages of the development. The nature and extent of the community consultation program are to be described and a summary of the results incorporated in the EIS.

The social impact assessment must include sufficient data to enable State authorities, such as Queensland Health, Department of Communities and Education Queensland, to plan for the continuing provision of public services in the region of the Project. Proponents of Projects that are likely to result in a significant increase in population of an area must consult the relevant management units of the State authorities and the GBRMPA Local Marine Advisory Group (LMAC), and summarise the results of the consultations in the EIS. The summary must discuss how the impacts of population increase on public services, particularly health, emergency services and education, would be mitigated.

The social impact assessment of the Project is to be carried out in consultation with the Department of Communities. The assessment of impacts must describe the likely response of affected communities and identify possible beneficial and adverse impacts (both immediate and cumulative). These impacts must be considered both at the regional and local level.

The EIS must address the following matters:

- include an assessment of impacts on local residents, current land uses and existing lifestyles and enterprises;
- a baseline analysis of the existing housing market with emphasis on:
  - the size of the private rental market in the area (including boarding houses, caravan parks, backpacker hostels, hotel and motel accommodation);
  - vacancy rate of rental accommodation (including assessment of seasonal fluctuations, median rents for the area;
  - the availability and median cost of housing for purchase in the area; and
  - the level of social housing in the area (including rental housing administered by community housing organisations and public housing, and constraints and opportunities for new housing construction in the area including the capacity of the local land development and housing construction industries to provide new housing). (The Department of Housing can supply relevant information on the housing market.);
- impacts of both construction and operational workforces and associated contractors on housing demand, community services and community cohesion is to be addressed. The capability of the existing housing stock, including rental accommodation, to meet any additional demands created by the Project is to be discussed. Impacts on the housing sector must include;
  - impacts on housing prices and rent as well as any deterioration in housing affordability by low-income groups including temporary workers;
  - cumulative impacts on the local and regional housing market due to the presence of other existing or proposed major projects in the area, as well as cumulative impacts due to seasonal employment factors; and
  - impact of the construction phase of the Project on the local and regional residential development and housing construction industry;
- existing housing market, particularly rental accommodation which may be available for the Project workforce;
- development of an accommodation management strategy, where necessary, in consultation with the Department of Housing;
- comment must be made on how much service revenue and work from the Project (e.g. provisioning, catering and site maintenance) would be likely to flow to existing communities in the area of the Project;
- include an assessment of impacts on local and state labour markets, with regard to the source of the workforce. This information is to be presented according to occupational groupings of the workforce. In relation to the source of the workforce, information is required as to whether the proponent, and/or its contractors, is likely to employ locally or through other means and whether there are initiatives for local employment opportunities;
- the EIS must address impacts of both construction and operational workforces and associated contractors on housing demand, community services and community cohesion. The capability of the existing housing stock, including rental accommodation, to meet any additional demands created by the Project is to be discussed;
- the assessment of impacts must take account of relevant demographic, social, cultural and economic profiles;
- identify any new skills and training to be introduced in relation to the Project. Adequate provision must be made for apprenticeship and worker training schemes. If possible, the occupational skill groups required and potential skill shortages anticipated must be indicated;
- provide comment on how much service revenue and work from the Project (e.g. provisioning, catering and site maintenance) would be likely to flow to existing communities in the area of the Project;
- include an assessment of impacts on existing local residents' values and aspirations; and
- in regard to affected Indigenous and non-Indigenous communities respectively, particular attention must be paid to the effects on:
  - the ability of both indigenous and non-indigenous people, to live in accordance with their own

values and priorities;
- the use of and access to culturally important areas and landscapes;
- the access to existing human and commercial services and housing;
- the ability to participate in regional and local employment and training opportunities; and
- the new Project workforce and their families.

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

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

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

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

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

3.13 Health and safety

3.13.1 Description of environmental values and characteristics

This section describes the existing community values for public health and safety that may be affected by the Project. For projects proposing air emissions, and/or those with the potential to emit odours, nearby and other potentially affected populations must be identified and described. Particular attention must be paid to those sections of the population, such as children and the elderly, which are especially sensitive to environmental health factors.

Consideration must also be given to health and safety aspects of erosion control structures and water storages or other structures that may impact on public health and safety especially for children in and near waterways and drainage infrastructure.

3.13.2 Potential impacts and mitigation measures

This section defines and describes the objectives and practical measures for protecting or enhancing health and safety community values and 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 must assess the effects on the Project workforce of occupational health and safety risks and the impacts on the community in terms of health, safety, and quality of life from Project operations and emissions (including airstrip/aircraft emissions). Any impacts on the health and safety of the community, workforce, suppliers and other stakeholders must be detailed in terms of health, safety, quality of life from factors such as air emissions, odour, dust and noise.

Map(s) must be provided showing the locations of sensitive receptors, such as, but not necessarily limited to, kindergartens, schools, hospitals, aged care facilities, residential areas, and centres of work (e.g. office buildings, factories and workshops).

The EIS must address the Project's potential for providing disease vectors. Measures to control mosquito and biting midge breeding must be described (including the potential impacts to the receiving environment). Any use of recycled water must be assessed for its potential to cause infection by the transmission of bacteria and/or viruses by contact, dispersion of aerosols, and ingestion (e.g. via use on food crops). Similarly, the use of recycled water

must be assessed for its potential to cause harm to health via the food chain due to contaminants such as heavy metals and persistent organic chemicals. Practical monitoring regimes must also be recommended in this section.

Any health or safety issues associated with the feral pigs that frequent the site must be assessed, e.g. attacks, disease.

Practical monitoring regimes must also be recommended in this section.

3.14 Economy

3.14.1 Description of environmental values and characteristics

This section describes the existing economic environment that may be affected by the Project. The character and basis of the local and regional economies must be described including:

- economic viability (including economic base and economic activity, future economic opportunities, current local and regional economic trends, in particular drought and rural downturn etc); and
- historical descriptions of large-scale developments and their effects in the region and the likelihood that similar effects may occur from the proposed development.

The economic impact statement must include estimates of the opportunity cost of the Project and the value of ecosystem services provided by natural or modified ecosystems to be disturbed or removed during development.

3.14.2 Potential impacts and mitigation measures

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

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

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

An economic analysis, including a cost-benefit analysis, must be presented from national, state, regional and local perspectives as appropriate to the scale of the Project. The general economic benefits from the Project must be described.

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

- the significance of this Project on the local and regional economic context;
- the long and short-term beneficial (e.g. job creation) and adverse (e.g. competition with local small business) impacts that are likely to result from the development;
- the potential, if any, for direct equity investment in the Project by local businesses or communities;
- the cost to all levels of government of any additional infrastructure provision;
- implications for future development in the locality (including constraints on surrounding land uses and existing industry);
- the potential economic impact of any major hazard identified in section 3.15;

- the distributional effects of the Project including proposals to mitigate any negative impact on disadvantaged groups;
- the value of lost opportunities or gained opportunities for other economic activities anticipated in the future; and
- impacts on local property values.

Consideration of the impacts of the Project in relation to energy self-sufficiency, security of supply and balance of payments benefits may be discussed. Attention must be directed to the long and short-term effects of the Project on the land-use of the surrounding area and existing industries, regional income and employment and the state economy. The scope of any studies must be referred to the relevant State government agencies for input before undertaking the studies.

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

3.15 Hazard and risk

3.15.1 Description of environmental values and characteristics

3.15.1.1 General

This section describes the potential hazards and risk that may be associated with the Project. The level of detail in this section should be appropriate to the level of approval being sought.

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

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

Additional issues to be discussed include:

- security issues (during construction and once operational);
- identification of types of dangerous goods to be used both during the construction and during operational stages including any additional onsite refuelling storage, procedures to minimise adverse environmental impacts;
- an assessment of fire risks, including bushfire risk, and discuss fire control and management proposals along with details of fire safety measures for treatment of hazardous material spills;
- development and implementation of emergency plans, procedures and notifications and the identification and provision of emergency services and resources both on and off-site;
- information on access points to the airstrip for accidents and/or Medivac retrievals during the construction and operational stage, including alternative access in the event of gridlock during construction;
- a description of relationships with disaster control organisations including command and control; and
- measures to reduce the risk of hazardous incidents affecting the public and environment.

3.15.1.2 Airstrip hazards and risk

Undertake a quantitative risk assessment to assess the impacts on individual and societal risk levels. This must include the following:

- probability analysis of aircraft accidents with reference to aircraft incidents within Australia;
- consequences of aircraft accidents (including crashes on the airstrip, crashes in residential areas, crashes in industrial areas, crashes over Rodds Bay and the Colosseum Fish Habitat Area, crashes with other

aircraft, crashes into or over water catchments and storage reservoirs, aircraft fuel spills, ignition of bushfires etc);
- the effect of flight paths and frequency of aircraft movements on the risk of accidents involving residential and industrial areas;
- identification of sites on or near the airstrip that attract birds or bats and the typical routes used by birds and bats taking into account seasonal variation; and
- the relative risk of bird strike, including quantitative and qualitative discussion of:

  - how the risk of bird strike is to be managed;
  - how successful planned measures are likely to be; and
  - what the consequences of that level of risk are expected to be.

3.15.2 Potential impacts and mitigation measures

3.15.2.1 General

This section defines and describes the objectives and practical measures for protecting people and places from hazards and risk, describes how nominated quantitative standards and indicators may be achieved for hazard and risk management, and how the achievement of the objectives will be monitored, audited and managed.

The EIS must provide a discussion of the classes of substances listed in the Australian Dangerous Goods Codes that are expected to be held on-site. Details must be provided, to the greatest extent possible, of:

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

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

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

The plan must include the following components:

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

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

Describe the possible risks of a single access road (entrance and exit) for the proposed development, e.g. access by emergency vehicles if the road is blocked as a result of a natural disaster.

Report on consultation with Emergency Management Queensland (EMQ) regarding the proposed utilisation of the onsite airstrip for helicopter evacuation in relation to emergency response issues.

State Planning Policy 1/03 - Mitigating the adverse impacts of flood, bushfire and landslide must be addressed.

3.16 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 ENVIRONMENTAL MANAGEMENT PLAN

The environmental management plan (EM Plan) must be developed from the mitigation measures detailed in part 3 of the EIS. Its purpose is to set out the proponent's commitments to environmental management. That is, how environmental values and characteristics will be protected and enhanced. Separate EM Plans must address discrete Project elements and must provide life-of-proposal control strategies in accordance with agreed performance criteria for specified acceptable levels of environmental impacts.

Although the EM Plan is an integral part of the EIS and must be capable of being read as a stand-alone document without reference to other parts of the EIS, the EM Plan must not raise any issues or proposed mitigation measures not already addressed in the body of the EIS.

The aims of an EM Plan are to provide:

- commitments by the proponent to practical and achievable strategies and design standards (performance specifications) for the management of the Project to ensure that environmental requirements are specified and complied with;
- an integrated plan for comprehensive monitoring and control of impacts;
- local and State authorities, stakeholders and the proponent with a common focus for approvals conditions and compliance with policies and conditions; and
- the community with evidence that the environmental management of the Project is acceptable.

EM Plans must commit to manage, enhance or protect identified environmental values and characteristics. The commitments must contain the following components for performance criteria and implementation strategies:

- environmental protection objectives for enhancing or protecting each relevant value;
- indicators to be measured to demonstrate the extent to which the environmental protection objective is achieved;
- environmental protection standards (a numerical target or value for the indicator), which defines the achievement of the objective; and
- an action program to ensure the environmental protection commitments are achieved and implemented. This will include strategies in relation to:

    - continuous improvement;
    - environmental auditing;
    - monitoring;
    - reporting;
    - staff training; and
    - a rehabilitation program for land proposed to be disturbed under each relevant aspect of the

proposal.

It is expected that all EM Plans will be prepared in accordance with the EPA Guideline "Preparing Environmental Management Plans" and its recommended structure for EM Plans. While this EPA guideline has been developed primarily for the mining industry, the principles are in general applicable to this proposal. The general contents of the EM Plan must comprise:

- the proponent's commitments to acceptable levels of environmental performance, including environmental objectives, i.e. levels of expected environmental impacts, performance standards and associated measurable indicators, performance monitoring and reporting;
- impact prevention or mitigation actions to implement the commitments; and
- corrective actions to rectify any deviation from performance standards.

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

Arrangements must be in place to support the "best practice environmental management and design" components of the Project so that there are no impacts on environmental protection measures should the property market fail to meet expectations.

5 PROPONENT'S ENVIRONMENTAL RECORD

Pursuant to the State Development and Public Works Organisation Regulation 1999, Eaton Place Pty Ltd needs to provide details of any Australian proceedings relating to an environmental law against it, its parent company or members of the Board of Directors. Eaton Place Pty Ltd. must supply information regarding any applicants for permits under an environmental law for the Project. Furthermore, details of Eaton Place Pty Ltd's environmental policy and planning framework must be incorporated into the EIS.

6 CONCLUSIONS AND RECOMMENDATIONS

The EIS must make conclusions and recommendations with respect to the proposal, based on the studies presented, the Environmental Management Plans and conformity of the proposal with legislative and policy requirements.

7 REFERENCES

All references consulted must be presented in the EIS in a recognised format such as the Harvard standard (refer to the Style Guide, Australian Government Publishing service). This standard lists references by presenting in the following order: author (date of publication) title, publisher, and place of publication.

RECOMMENDED APPENDICES

A1. Final terms of reference for this EIS

A copy of the final ToR must 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 must 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, must also be provided in Section 3.16 of the EIS. For this purpose the ToR must be line numbered.

A2. Development approvals

A list of all the approvals (including local law approvals) required by all phases of the Project must be presented (in the expected sequencing of applications) along with their corresponding regulating legislation and the approving authority.

A3. Potential impacts on matters of national environmental significance

The EIS must provide a stand-alone report that exclusively and fully addresses the issues relevant to the matters of national environmental significance (NES) that were identified in the 'controlling provisions' when the Project was declared a controlled action under Part 3, Division 1 of the EPBC Act. The report must provide:

- a description of proposed action (as it would impact on NES matters);
- a description of the Affected Environment Relevant to the Controlling Provisions (i.e. describe the features of the environment that are NES matters protected under the EPBC Act); and
- an assessment of Impacts on NES Matters and Mitigation Measures.

A4. Study team

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

A5. Consultation report

The summary Consultation Report appendix for an EIS must commence by including the details of affected and interested persons (as described by the EP Act), and the statement of planned consultation with those persons. It must describe how 'interested' and 'affected persons,' and any 'affected parties' as defined in the EPBC Act, were identified.

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

The Consultation Report appendix must summarise the methods and 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 must include the methodology used in the community consultation program including criteria for identifying stakeholders and the communication methods used and when the consultation was undertaken.

The Department of Communities is able to provide advice on community engagement principles, frameworks and processes. There are a number of Departmental publications which can be used to inform the development and implementation of appropriate methodologies in any community engagement process. Community engagement guides and resources can be found on the department of Communities website: *www.communities.qld.gov.au* or *www.getinvolved.qld.gov.au*. Officers at the Department of Communities, Far North Queensland Region, are able to provide advice regarding appropriate community engagement strategies.

A6. Research

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

A7. 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;
- surface water hydrology and quality;
- groundwater;
- flora and fauna studies;
- economic studies, and
- hazard and risk studies.

A8. List of Proponent Commitments

A list of all commitments made by the Proponents in the EIS (in addition to the performance criteria stipulated in the EM Plan) must be provided along with a reference to the relevant section in the EIS.