Terms of reference
for an environmental impact statement

Port of Gladstone
Western Basin Dredging project

September 2009

Under part 4 of the *State Development and Public Works Organisation Act 1971*

The Coordinator-General

Queensland Government

Port of Gladstone Western Basin Dredging project

Contents

Synopsis

Gladstone Ports Corporation (GPC) is proposing to undertake the Port of Gladstone Western Basin Dredging project (WBD project) to accommodate the long-term dredging and dredged material disposal that is required to provide safe and efficient access to the existing and proposed Western Basin Port facilities over the foreseeable future.

The WBD project comprises dredging associated with the deepening and widening of existing channels and swing basins; and the creation of new channels, swing basins and berth pockets. Dredged material is proposed to be placed into reclamation areas to create a land reserve to be used to service new port facilities.

The Coordinator-General has declared the WBD project to be a significant project requiring an environmental impact statement (EIS) under section 26(1)(a) of the *State Development and Public Works Organisation Act 1971* (SDPWO Act).

The declaration of the project as a significant project does not indicate support for, or approval of, the project by the Coordinator-General or the Queensland Government. Rather it is a requirement for the project to undergo a rigorous environmental impact statement process.

The Australian Government has determined that the project constitutes a controlled action pursuant to the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The Australian Government has accredited the environmental impact statement (EIS) process to be conducted under the SDPWO Act under the bilateral agreement between the Australian and Queensland Governments. The Project will require approval from the Australian Government Minister for the Environment, Water, Heritage and the Arts under Part 9 of the EPBC Act before it can proceed.

Consequently, the term EIS used in these terms of reference (TOR) should be interpreted as satisfying the impact assessment requirements of all relevant state and Commonwealth statutes for this project (which include, but are not limited to, the SDPWO Act, the *Environment Protection Act* 1994 (EP Act), the *Integrated Planning Act* 1997 (IPA), *Transport Infrastructure Act 1994* and the EPBC Act).

TOR set out the requirements, both general and specific, that the proponent should address in preparing the EIS. These TOR are presented in two broad categories:

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

Abbreviations

The following abbreviations have been used in this document:

AHD	Australian Height Datum
ANZECC	Australia and New Zealand Environment and Conservation Council
CHMP	Cultural heritage management plan
CG	The Coordinator-General
CPM Act	*Coastal Protection and Management Act 1995*
DEEDI	Qld Department of Employment, Economic Development and Innovation
DERM	Qld Department of the Environment and Resource Management
DEWHA	Australian Government Department of Environment, Water, Heritage and the Arts
DIP	Department of Infrastructure and Planning
DPI&F	former Department of Primary Industries and Fisheries
EIS	Environmental impact statement
EMP	Environmental management plan
EP Act	*Environmental Protection Act 1994*
EPA	Former Qld Environment Protection Agency, now part of DERM
EPP	Environmental Protection Policy
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)
ESD	Ecologically sustainable development
GBRWHA	Great Barrier Reef World Heritage Area
GPC	Gladstone Ports Corporation Limited
HAT	Highest Astronomical Tide
IAS	Initial advice statement as described in Part 4 of the *State Development and Public Works Organisation Act 1971*
IPA	*Integrated Planning Act 1997*
LAT	Lowest Astronomical Tide
MHWS	Mean High Water Springs (tide)
MOF	Materials offloading facility
MNES	Matters of National Environmental Significance as defined by the *Environment Protection & Biodiversity Conservation Act 1999* (Cwlth)
SDPWO Act	*State Development and Public Works Organisation Act 1971*
TOR	Terms of reference
WBD project	Port of Gladstone Western Basin Dredging project

Part A—General information and administrative procedures

1. Project summary

The Port of Gladstone Western Basin Dredging project (WBD project) seeks to accommodate the long term dredging and dredged material disposal that is required to provide safe and efficient access to the existing and proposed port facilities in the harbour.

The Port of Gladstone Western Basin is defined as that area of Port Curtis extending from Auckland Point to The Narrows.

Approval for dredging and dredge spoil disposal is sought to accommodate the progressive development of the harbour. The rate of development will be controlled by the demands of industry locating in the Gladstone region and requiring access to port facilities.

Two areas of development are required for the long-term strategic development of the port:

- The inner harbour works are required for access to proposed berths and associated wharf facilities located in the Western Basin area of the port.
- The outer harbour works are associated with the duplication of channels to account for the increased traffic through the port.

This document relates only to the approvals that are sought for the development of the Western Basin.

The development of the Western Basin incorporates dredging associated with the deepening and widening of existing channels and swing basins and the creation of new channels, swing basins and berth pockets. The proposed dredging will provide access to port facilities which will be a key component of the import and export chain and assist in encouraging industries, including the emerging LNG industry, to develop within the Gladstone region.

Material dredged during the Western Basin development is proposed to be placed into a reclamation area(s) to the north and immediately adjacent to the existing Fisherman's Landing reclamation area, 10 km north of Gladstone City, to create a land reserve which will be used to service new port facilities.

A 153 ha expansion of Fisherman's Landing by Gladstone Ports Corporation (GPC) is currently progressing as a separate project. An environmental impact statement (EIS) was lodged at the end of June 2009 for review by the Department of Infrastructure and Planning (DIP) on behalf of the Coordinator-General. This project is not a 'controlled action' under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) and caters for immediate GPC needs including a site for the LNG Limited project.

The WBD project is being undertaken in parallel with the Port of Gladstone Western Basin Master Plan which is being prepared by DIP to provide direction at a high-level to government decision making on the scale and nature of impacts of future industrial development in the Western Basin. The draft master plan was released for public comment from 8 August to 4 September 2009.

2. Project proponent

The proponent for the WBD project is the Gladstone Ports Corporation Limited (GPC).

The contact details for the project proponent are:

Mr Gary Carter
Gladstone Ports Corporation Limited
Port of Gladstone
PO Box 259
Gladstone QLD 4680
tel (07) 4976 1333
fax (07) 4972 3045

carterg@gpcl.com.au

www.gpcl.com.au

3. Legislative framework

The project has been declared by the Coordinator-General (CG) to be a 'significant project for which an EIS is required' under section 26(1)(a) of the *State Development and Public Works Organisation Act 1971* (SDPWO Act).

The project has been declared by the Australian Government Minister for the Environment, Water, Heritage and the Arts to be a 'controlled action', which requires assessment and approval under the EPBC Act.

The controlling provisions are:

- World Heritage Area (sections 12 and 15A)
- National Heritage Places (sections 15B and 15C)
- listed threatened species and communities (sections 18 and 18A)
- listed migratory species (sections 20 and 20A).

The Australian Government has accredited the EIS process to be conducted under the SDPWO Act under the bilateral agreement between the Australian and Queensland Governments. The project will require approval from the Australian Government Minister for the Environment, Water, Heritage and the Arts under Part 9 of the EPBC Act before it can proceed.

Consequently, the term EIS used in these TOR should be interpreted as satisfying the impact assessment requirements of all relevant state and Commonwealth statutes for this project (which include, but are not limited to, the SDPWO Act, the *Environment Protection Act 1994* (EP Act), the *Integrated Planning Act 1997* (IPA), *Transport Infrastructure Act 1994* and the EPBC Act).

DIP is coordinating the environmental impact assessment process on behalf of the CG. Relevant Australian, state and local government authorities will be invited to participate in the EIS process as advisory agencies. These advisory agencies, in addition to members of the community, are invited to comment on this draft TOR prior to finalisation by the CG. When GPC has prepared the EIS and the CG is satisfied that it substantially addresses the TOR, it will be made available for public and Advisory Agency review and comment. DIP will coordinate the consultation process between GPC, the Advisory Agencies and members of the public.

Additionally, GPC may be required to prepare a supplementary EIS to address comments submitted by advisory agencies and members of the public. At the conclusion of these processes, the CG will prepare a report (CG's report) evaluating the EIS. The CG report will be provided to GPC, the IPA Assessment Manager and the Australian Government Minister

for the Environment, Water, Heritage and the Arts (under the EPBC Act). The CG's Report will also be publicly notified by placing it on the Department of Infrastructure and Planning website at www.dip.qld.gov.au/eis

Finally, if the project involves development requiring an application for a Development Approval under IPA, the CG's report may, under s.39 of SDPWO Act, state for the assessment manager one or more of the following:

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

Alternatively, the report must state for the assessment manager:

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

4. EIS objectives

The objective of the EIS is to ensure that all potential environmental, social and economic impacts of the project are identified and assessed and, where possible, how any adverse impacts would be avoided or mitigated. If project impacts cannot be avoided or mitigated, offsets should be proposed in accordance with the *Queensland Government environmental offsets policy* (EPA, 2008) and specific issue offsets policies requirements. Direct, indirect and cumulative impacts must be fully examined and addressed. The project should be based on sound environmental protection and management criteria.

The EIS should be a self-contained and comprehensive document that provides sufficient information for an informed decision on the potential impacts of the project and the management measures employed to avoid, mitigate and/or offset adverse impacts. The EIS document should provide information for the following persons and groups, as the project stakeholders:

- interested bodies and persons: a basis for understanding the project, prudent and feasible alternatives, affected environmental values, impacts that may occur, and the measures to be taken to mitigate all adverse impacts
- groups or persons with rights or interests in land (as defined under section 38 of the EP Act) an outline of the effects of the proposed project on that land including access arrangements
- government agencies and referral bodies: a framework for decision-makers to assess the environmental aspects of the proposed project with respect to legislative and policy provisions, and based on that information, to make an informed decision on whether the project should proceed or not, and if so, subject to what conditions, if any
- the proponent: a mechanism by which the potential environmental impacts of the project are identified and understood, including information to support the development of management measures, such as an environmental management plan, to mitigate the effects of adverse environmental impacts of the development.

The proponent is required to address the TOR to the satisfaction of the CG before the EIS is made publicly available. It should be noted that the evaluation of the EIS is not undertaken until public notification is completed and all relevant material, including additional information or comment about the EIS and the project is available. Completion of the EIS in accordance with the final TOR does not mean the project will be approved.

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

5. General EIS guidelines

The EIS is to provide stakeholders with sufficient information to understand the type and nature of the project, the potential environmental, social and economic impacts, and the measures proposed by the proponent to mitigate all adverse impacts on the natural, social and economic environment. It should be recognised that Australian, Queensland and local governments, special interest groups and the general public will have an interest in the EIS.

The pre-construction and construction phases of the project should be described in the EIS. Direct, indirect and cumulative impacts should be identified and assessed with respect to environmental values and potential extent of impacts. Cumulative impacts include local and regional impacts accumulating over time and impacts exacerbated by intensity or scale or frequency or duration of impacts, either in isolation or by combination with other known existing or planned impacts, both at project sites and areas remote from these.

Specifically, the EIS should provide:

- an executive summary of the potential environmental impacts of the project
- an overview of the proponent and its existing operations
- a description of the project's objectives and rationale, as well as its relationships to strategic policies and plans
- a description of the entire project, including associated infrastructure requirements
- a description of feasible alternatives capable of substantially meeting the proposal's objectives
- an outline of the various approvals required for the project to proceed
- descriptions of the existing environment, particularly where this is relevant to the assessment of impacts
- measures for avoiding, minimising, managing and monitoring adverse impacts, including a statement of commitment to implement the measures
- environmental, economic and social offsets to offset unavoidable project impacts that cannot otherwise be avoided, managed or mitigated
- rigorous assessment of the risks of adverse and beneficial environmental impacts arising from the project and relevant alternatives on environmental, social and economic values, relative to the 'no project' scenario
- any information derived from baseline and predictive studies, the required extent of which will be commensurate to risks
- a description of stakeholder consultation undertaken
- responses to issues raised during public and stakeholder consultation.

The main EIS report needs to be supported by appendices containing relevant data, technical reports and other sources of the EIS analysis. In preparing the EIS, the approach to be adopted requires that:

- predictions of environmental impacts are based on scientifically supported studies
- the EIS is to present all technical data, sources or authority and other information used to assess impacts
- the methods used to undertake any specialist studies are outlined, together with any relevant assumptions and professional or scientific judgements
- the scientific reliability of investigations and predictions is indicated, including the estimated degree of certainty or, if possible, statistical confidence wherever appropriate
- proposed measures to mitigate and manage identified issues are described and evaluated

- residual impacts that are not quantifiable are described qualitatively, in as much detail as reasonably practicable.

The assessment of all environmental impacts needs to encompass both potential impacts on, and uncertain risks to the environment. The level of investigation of potential impacts or particular risks needs to be proportionate to both the severity of the potential consequences of possible events and the likelihood of those events occurring.

Specific types of relevant impacts requiring investigation are set out in Part B. However, these TOR are not intended to be exhaustive and the EIS will need to address other issues or aspects that may emerge during the investigations and preparation of the EIS. Ultimately, it is the proponent's responsibility to identify all the relevant matters to be addressed and to ensure that adequate studies are undertaken and reported.

The EIS should state the criteria adopted in assessing the proposed project and its impacts, such as compliance with relevant legislation, policies, standards, community acceptance and maximisation of environmental benefits and minimisation of risks.

The level of analysis and detail in the EIS should reflect the level of significance of the expected impacts on the environment. Any prudent and feasible alternatives should be discussed and treated in sufficient detail, and reasons for selection of the preferred option should be clearly identified.

Where possible, information provided in the EIS should be clear, logical, objective and concise, so that non-technical persons may easily understand it. Where appropriate, text should be supported by maps and diagrams. Factual information contained in the document should be referenced wherever possible. Where applicable, aerial photography and/or digital information (e.g. of project site, etc) should be presented.

The EIS should also contain an indexed guide to the content of the EIS to allow readers to readily identify information of interest.

The term 'detail' and 'discuss' should be taken to include both quantitative and qualitative matters as practicable and meaningful. Similarly, adverse and beneficial effects should be presented in quantitative and/or qualitative terms as appropriate. Should the proponent require any information in the EIS to remain confidential, this should be clearly indicated, and separate information should be prepared on these matters.

6. Stakeholder consultation

The proponent should undertake a comprehensive and inclusive program of consultation with the stakeholders identified in section 4, EIS objectives (above). The consultation program should provide stakeholders with the opportunity to obtain information about the project, to raise issues and express their concerns and to receive feedback on how the proponent intends to address the issues and mitigate all adverse impacts of the project.

Consultation with the advisory agencies should be the principle forum for identifying legislation, regulations, policies and guidelines relevant to the project and EIS process.

Where appropriate, information bulletins can be used to disseminate information to a wider audience. These bulletins can also be used to inform stakeholders of the proponent's progress in the EIS process and on specific investigations.

The proponent is encouraged to provide opportunities for the general public to obtain information about, and comment on, the project through public information sessions. Where appropriate, information bulletins can be used to disseminate information to a wider audience. These bulletins can also be used to inform stakeholders of the proponent's progress in the EIS process and on specific investigations.

As part of this EIS process, consultation should also be undertaken to better understand the social impacts of the proposed project and opportunities for mitigation of those impacts (refer to Part B – section 1.5 Socio-economic costs and benefits of the project).

7. EIS format and copy numbers

The EIS should generally be presented in a format consistent with that outlined in Part B.

The documentation is to include appendices containing:

- a copy of the TOR
- a cross reference between the TOR and relevant sections of the EIS
- a list of development approvals required for the project
- an explanation as to how the EIS satisfies the standard criteria
- copies of specialist studies performed as part of the EIS
- any proposals for researching alternative environmental management strategies or for obtaining any further necessary information
- a list of persons, interest groups and agencies consulted during the EIS
- a list of advisory agencies consulted with an appropriate contact
- the names of, and work done by, all personnel involved in the preparation of the EIS
- a list of all commitments made by the proponent in the EIS
- a copy of the proponent's corporate environment policy.

Maps, diagrams and other illustrative material should be included in the EIS to assist in the interpretation of the information.

The EIS should be produced on A4 size paper capable of being photocopied, with maps and diagrams on A4 or A3 size. The EIS document should not contain watermarks across the body of the text. The EIS should also be produced on CD-ROM/DVD.

Two separate CD-ROM/DVD copies should be provided:

- CD-ROM/DVD – resolution equivalent to the printed document for distribution to the stakeholders
- CD-ROM/DVD – for placement on the internet: Copies should be in Adobe® PDF format for placement on the internet. All compression must be down-sampled to 72 dpi. PDF documents should be no larger than 1 MB in file size. The executive summary should be supplied in html 3.2 format with jpg graphics files. 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 1 MB file size.

The final nature and number of EIS copies required to be submitted and made available, should be discussed and agreed with the Coordinator-General in the early stages of the EIS process.

8. Further information

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

EIS Project Manager – Western Basin Dredging project
Significant Projects Coordination
Department of **Infrastructure and Planning**
PO Box 15009
Brisbane City East QLD 4002
tel (07) 3224 2748
fax (07) 3225 8282

wbdp@dip.qld.gov.au

www.dip.qld.gov.au

Mr Gary Carter
Gladstone Ports Corporation Limited
Port of Gladstone
19 Yarroon Street
PO Box 259
Gladstone QLD 4680
tel (07) 4976 1333
fax (07) 4972 3045

carterg@gpcl.com.au

www.gpcl.com.au

Part B—specific requirements and structure of the EIS

It is preferred that the EIS generally follows the format and content outlined in this Part of the TOR. If this is not possible, guidelines describing how the EIS responds to the TOR should be included in the appendices.

Executive summary

The function of the executive summary is to convey the most important aspects and options relating to the project to the reader in a concise and readable form. It should use plain English and avoid the use of jargon and obscure terms. The executive summary should be written as a stand alone document, able to be reproduced on request and distributed to interested parties who may not wish to read or purchase the EIS as a whole.

The structure of the executive summary should follow that of the EIS, and focus strongly on the key issues to enable the reader to obtain a clear understanding of the project and its potential adverse and beneficial environmental, social and economic impacts and the management measures to be implemented by the proponent to mitigate all residual impacts.

The executive summary should include:

- the title of the project
- name and contact details of the proponent, and a discussion of previous projects undertaken by the proponent and their commitment to effective environmental management
- a concise statement of the aims and objectives of the project
- the legal framework, decision-making authorities and advisory agencies
- an outline of the background and need for the project, including the consequences of not proceeding with the project
- a description of alternative options considered and reasons for the selection of the proposed development option
- a brief description of the project (pre-construction and construction activities) and the existing environment, utilising visual aids where appropriate
- an outline of the principal environmental impacts predicted and the proposed environmental management strategies (including waste minimisation and management) and commitments to minimise the significance of these impacts
- detailed maps of the proposed project location.

Glossary of terms

A glossary of technical terms, acronyms and abbreviations used in the EIS should be provided.

1 Introduction

The introduction should clearly explain the function of the EIS, why it has been prepared and what it sets out to achieve. It should also define the audience to whom it is directed, and contain an overview of the structure of the document.

1.1 Project proponent

This section should describe the experience of the project proponent, including the nature and extent of business activities, experience and qualifications, and environmental record, including the proponent's environmental, health, safety and community policies.

1.2 Project description

This section should provide a brief description of the key elements of the project as well as associated infrastructure requirements. The location of the project and its infrastructure requirements should be described and mapped. Detailed descriptions of the project should follow in section 2 Description of the project.

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

1.3 Project rationale

This section should provide a statement of the objectives of the project and a brief outline of the events leading up to the project's formulation, envisaged time scale for implementation and project life, anticipated establishment costs and actions already undertaken within the project area.

This section should summarise the rationale for the project in a local, regional, state and national context:

- expected local, regional, state or national benefits
- strategic, economic, environmental and social implications of the project
- the project's technical feasibility and commercial viability
- the rationale and justification for the project in relation to any relevant published policy or regulatory framework.

This discussion should examine the infrastructure needs of the state and Central Queensland economies and the project's role in supporting state development and environmental policies and strategies.

1.4 Relationship to other projects

This section should describe how the project relates to any other projects, which the proponent should reasonably be aware of, that have been or are being undertaken or that have been approved in the area affected by the project. In particular, mention should be made of any modifications needed or interaction between any existing facilities/infrastructure and any interdependency between these projects and the WBD project.

In particular, the EIS should clearly define the WBD project in the context of the proposed expansion of the Fishermans Landing reclamation area; dredging required for the various LNG projects proposed for Port Curtis, Curtis Island and the Western Basin, including dredging for materials offloading facilities (MOFs) and pipelines; and the Draft Port of Gladstone Western Basin Master Plan (Coordinator-General, draft August 2009).

Dredging associated with the MOFs specific to the individual LNG project proposals for the Western Basin will be considered by the Western Basin Dredging project EIS. Certain other matters specific to the individual LNG project proposals for the Western Basin, such as the disposal of dredge spoil associated with possible pipelines crossing The Narrows from Friend Point to Laird Point, should be addressed in detail by the EISs for those proposals.

1.5 Socio-economic cost and benefits of the project

Section 3.9 deals with social values, impacts and their management and section 3.10 deals with economic impacts and their management. This section should summarise the short and long-term:

- economic costs and benefits of the project to businesses and the wider community, including direct and indirect employment and local business involvement
- direct social costs and benefits, including community disruption, related land use changes, employment and skills development
- any increased demand for natural resources as a result of the project
- increased demands on local and regional community services and facilities.

1.6 Alternatives to the project

This section should describe feasible alternatives, including conceptual, technological and locality alternatives to the project (including offshore, foreshore and terrestrial dredge spoil disposal options), and discussion of the consequences of not proceeding with the project. Alternatives should be discussed in sufficient detail to enable an understanding of the reasons for preferring certain options and courses of action and rejecting others. Where relevant, comparative environmental impacts of each alternative should be summarised.

The reasons for selecting the preferred options should be outlined and include technical, commercial, social and environmental aspects where relevant. In particular, the principles of environmentally sustainable development (ESD) should be examined.

Alternatives to the project should include sufficient detail on the non-preferred options of infrastructure to enable an evaluation of the reasons for selecting the chosen option.

1.7 The environmental impact assessment process

This section should provide an outline of the approvals process, including the environmental impact assessment process, and any associated licence or permit application processes. It should include information on the relevant stages of the approvals process, statutory and public consultation requirements and any interdependencies that exist between the approvals.

This section should also make clear the objectives of the EIS process under the SDPWO Act and development approval under IPA in accordance with the SDPWO Act.

1.7.1 Methodology of the EIS

This section should outline the stages of the EIS process under the SDPWO Act, including information on the relevant stages of the approvals process; Australian Government referrals; statutory and public consultation requirements; any associated licence or permit application processes; and any interdependencies that exist between approvals (details of specific approvals should be presented under section 1.9 Project approvals).

The information in this section is required to ensure:

- stakeholders are informed of the EIS process to be followed
- stakeholders understand the relationships between the EIS and other associated approvals
- stakeholders are aware of any opportunities for input and participation
- relevant legislation is addressed.

1.7.2 Objectives of the EIS

This section should provide a statement of the objectives of the environmental impact assessment process. The structure of the EIS can then be outlined as an explanation of how the EIS will meet its objectives. The purpose of the EIS is to:

- provide public information on the need for and likely effects of the project on the natural, social and economic environment
- set out acceptable standards and levels of impacts (both beneficial and adverse) on environmental values
- demonstrate the relationship of environmental management, planning documentation, conditions, approvals and environmental authorities to the project
- demonstrate how unavoidable environmental impacts can be managed and/or offset through the protection and enhancement of the environmental values.

The role of the EIS in providing information for the formulation of an environmental management plan (EMP) for the project should be discussed. The EIS should also explain how the content details of the EMP forms the basis of a Dredge Management Plan. Discussion of options and alternatives is a key aspect of the EIS.

1.7.3 Submissions

The reader should be informed as to how and when public submissions on the EIS will be addressed and taken into account in the environmental assessment and decision-making processes. The EIS should inform the reader on how to make submissions, what form the submissions should take and when submissions should be made.

1.8 Public consultation process

An appropriate public consultation program is an important component of the EIS process. The public consultation program should provide opportunities for community involvement and education. It may include interviews with individuals, public communication activities, interest group meetings, production of regular summary information and updates, and other consultation mechanisms to encourage and facilitate active public consultation.

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

The key objectives of the consultation program should be to:

- inform the different interest groups about the project proposal
- seek an understanding of interest group concerns about the project
- explain the impact assessment research methodology, and how public input might influence the final recommendations for the project
- provide an understanding of the regulatory approval process

- seek local information and input into the project.

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

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

Any Indigenous component of the public consultation program should be guided by engagement that:

- is geographically specific
- uses appropriate language and media
- takes into account the communication skill level of participants.

This section should outline the methodology adopted to:

- identify stakeholders and how their involvement was facilitated
- identify the process conducted to date and future consultation strategies and programs, including during the operational phase of the project
- indicate how consultation involvement and outcomes were integrated into the EIS process and future site activities, including opportunities for engagement and provision for feedback and action if necessary.

Detailed results of the consultation process should be provided as a consultation report and presented as an appendix to the EIS. A summary of the key processes and outcomes should be provided in this section.

1.9 Project approvals

1.9.1 Relevant legislation and policy requirements

This section must describe and list Commonwealth, state and local legislation and policies relevant to the planning, approval, construction and operation of the project. The EIS should identify all approvals, permits, licences and authorities (e.g. for prescribed environmentally relevant activities) that will need to be obtained for the proposed project. Triggers for the application of each of these should be outlined and relevant approval requirements identified.

The EIS should describe the assessment process resulting from the gazettal of the project as a significant project pursuant to the SDPWO Act and outline the linkage to other relevant state and Australian Government legislation. This outline should describe the public notification processes and appeal rights that will be available in the anticipated assessment and decision processes.

The information provided in the EIS should be sufficient to allow assessment against the relevant legislation and policies, and the development of reasonable and relevant conditions of approval to be included in the CG's report. Guidance on the extent and nature of information required should be obtained from each administering authority.

Key pieces of legislation that will need to be addressed in terms of implications for project approval include but are not limited to:

Australian Government

- *Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)*
- *Great Barrier Reef Marine Park Act 1975 (Cwlth)*
- *Native Title Act 1993 (Cwlth)*

Queensland Government

- *Aboriginal Cultural Heritage Act 2003*
- *Coastal Protection and Management Act 1995*
- *Environmental Protection Act 1994*
- *Fisheries Act 1994*
- *Integrated Planning Act 1997*
- *Land Act 1994*
- *Marine Parks Act 2004*
- *Mineral Resources Act 1989*
- *Nature Conservation Act 1992*
- *Queensland Heritage Act 1992*
- *State Development and Public Works Organisation Act 1971*
- *Transport Infrastructure Act 1994*
- *Transport Operations (Marine Safety) Act 1994*
- *Transport Operations (Marine Pollution) Act 1995*
- *Vegetation Management Act 1999*
- *Water Act 2000*

1.9.2 Relevant plans

This section should outline the project's consistency with the existing national, state, regional and local planning framework that applies to the project location. This should include reference to all relevant statutory and non-statutory plans, planning policies, guidelines, strategies and agreements.

1.9.3 Accredited process for controlled actions under legislation

The project is a controlled action under the Australian Government's EPBC Act and a significant project under the SDPWO Act. The EIS will be developed pursuant to the Bilateral Agreement between the Australian and Queensland governments for the purposes of the Australian Government's assessment under Part 8 of the EPBC Act.

The EIS should address potential impacts on the Matters of National Environmental Significance (MNES) that were identified in the controlling provisions when the project was determined to be a controlled action. Refer section 3.5.3 Matters of National Environmental Significance.

2 Description of the project

The objective of this section is to describe the project through its lifetime of construction. This information is required to allow assessment of all aspects of the project, including which approvals may be required and how they may be managed through the life of the project.

The information provided in this section should be in accordance with relevant legislation, standards, codes and/or guidelines.

2.1 Overview of project

The EIS should provide an overview of the project. This section should include but is not limited to:

- a description of the key components of the project
- the expected cost and overall duration and timing of the project
- a summary of any environmental design features of the project
- the employment benefits from the construction and operational phases of the project.

Text and design plans should be used where applicable.

2.2 Location

This section should describe the regional and local context of each element of the project and associated infrastructure, illustrated on maps at suitable scales. Real property descriptions of project sites should be provided. Maps should show the precise location of project areas and in particular, but should not be limited to the following:

- the location of the project
- the location and boundaries of land tenures, in place or proposed, to which the project is or will be subject
- the location and boundaries of the project footprint showing areas to be dredged and proposed reclamation area(s)
- the location of any proposed buffers surrounding working areas
- the identification of all site access points to, from and within the project on maps, to assist in the assessment of emergency planning
- the location and boundaries of the site offices for the project
- illustrate the total area of land and vegetation to be disturbed, providing measurements of those areas
- illustrate areas of endangered ecological communities and other environmentally sensitive areas to be disturbed, providing measurements of those areas.

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

2.3 Construction

Proposed pre-construction activities should be described for each element of the project. This section should set out:

- up-grade, relocation, realignment or deviation of roads and other infrastructure

- extent of vegetation clearing and its disposal. This information should indicate where vegetation to be cleared has significant conservation value (such as sensitive environmental areas, waterway crossings and tidal lands), and should also reference where in the EIS the impacts on such vegetation have been addressed
- implications of transporting any quarry material to the dredge spoil disposal site
- material characteristics of any quarry material brought to the dredge spoil site that may impact upon the marine environment
- any land acquisitions required, be it in full or as easements, leases etc.
- an assessment of expected physical and chemical properties and quantities of bund armour and bund core material to be used in bund wall construction and capping material for the final reclamation surface
- details of any potential disruption to flows of waterways during construction and any diversion works required
- details of any potential disruptions to harbour traffic from dredging and dredge spoil disposal
- site establishment requirements for construction facilities including provision of site access, power, telecommunications, water supply and other infrastructure.

The extent and nature of the project's construction phase should be described, including any staging of the project with illustrations showing site boundaries, development sequencing and timeframes. For all the components of the project, the general description should include, but should not be limited to the following:

- general construction requirements including supply and storage of materials, types, sources, quantity and method of transport of construction materials
- the number and type of vehicles, machinery and equipment used for construction activities
- chemicals and hazardous goods to be utilised (if any)
- timetable for the construction phase, including hours of construction particularly noting seasonal rainfall or flows
- licensing/permit requirements for the construction works
- general construction standards and site management including public safety and emergency aid/medical facilities to be provided on site and environmental management
- allowance for provision of power back-up in an emergency
- cleanup and restoration (rehabilitation) of areas used during construction including any storage areas
- crossing techniques including restoration works that would be used at creek crossings, and road, rail, and other service corridor crossings
- security.

The methods proposed for the dredging of the new berth pockets, swing basins, aprons and channels should be described including:

- the type and method of dredging proposed
- the dredge equipment, including number and type of vessels, any marine flora and fauna protection measures proposed
- the expected duration, timing and operation hours of the dredging campaign
- expected vessel movement patterns
- the amount of dredged material to be relocated

- a plan of the land to be reclaimed drawn to a scale of not less than 1:1500, showing the following information:
    - the boundary of the land to be reclaimed defined by metes and bounds, tied to real property boundaries
    - the location of the line of mean high water spring tide and highest astronomical tide in relation to the area of reclamation
    - existing levels of the land and proposed final levels of reclamation in relation to Lowest Astronomical Tide (LAT) or Australian Height Datum (AHD)
    - location of marine plants and existing and proposed bunds
    - typical cross sections across the land to be reclaimed showing the proposed finished levels and method of protecting the seaward boundary of the reclamation from erosion.

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

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

Note: Dredging with disposal of spoil on land (above MHWS) requires an allocation of quarry material or dredge management plan, under the provisions of the *Coastal Protection and Management Act 1*995 (CPM Act), prior to application for tidal works approval under IPA.

2.4 Infrastructure requirements

This section should provide descriptions, with concept and layout plans, of requirements for constructing all infrastructure with the project.

2.4.1 Transport

Describe arrangements for the transport of plant, equipment, products, wastes and personnel during the construction of the project. The description should address the use of existing local and regional facilities and all requirements for the construction, upgrading or relocation of any transport related infrastructure. Provision of transport infrastructure information applies to land /shoreside and marine based aspects.

2.4.2 Water supply and storage

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

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

2.4.3 Stormwater drainage

A description should be provided of stormwater drainage systems and the proposed disposal arrangements, including any off-site services. The EIS should identify and show the location of any stormwater infrastructure in relation to wetlands, waterways and marine or estuarine areas. The quality and volume of the stormwater should be described. The EIS should demonstrate how stormwater drainage systems would comply with any approval requirements including DERM's guidelines for operational works on state coastal land.

2.4.4 Sewerage

This section should describe, in general terms, the proposed method for disposal of all effluent generated during the construction phase. The quality and volume of the effluent should be described.

2.4.5 Energy

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

3 Environmental values and management of impacts

The functions of this section of the EIS are to:

- describe the existing environmental values of the area which may be affected by the project. Environmental values should be described by reference to background information and studies, which should be included as appendices to the EIS
- describe the potential adverse and beneficial impacts of the project on the identified environmental values. Any likely environmental harm to the environmental values should be described
- describe any cumulative impacts on environmental values caused by the project, either in isolation or by combination with other known existing or planned sources of impact
- present environmental protection objectives and the standards and measurable indicators to be achieved
- examine viable alternative strategies for managing impacts. These alternatives should be presented and compared in view of the stated objectives and standards to be achieved. Available techniques, including best practice, to control and manage impacts to the nominated objectives should be discussed
- describe any likely residual environmental harm on environmental values, why it cannot be avoided and discuss potential offsets in accordance with Queensland Government specific-issue offsets policies. Offsets must be discussed with regard to impacts on EPBC Act matters, reference should be made to the eight principals set out in the DEWHA's *draft policy statement: Use of environmental offsets under the Environment Protection and Biodiversity Conservation Act 1999* and its accompanying Discussion Paper, August 2007.

This section should detail the environmental protection measures incorporated in the planning and construction of the project. Measures should prevent, or where prevention is not possible, minimise environmental harm and maximise socio-economic and environmental benefits of the project. Preferred measures should be identified and described in more detail than other alternatives.

This section should address all elements of the environment, such as land, water, coast, air, noise, nature conservation, cultural heritage, social and community, economy, waste, health and safety, hazards and risk, in a way that is comprehensive and clear.

This section should demonstrated how the EIS is consistent with the relevant statutory and non-statutory plans, planning policies, guidelines, strategies and agreements that apply to the project.

It is recommended that the EIS follow the heading structure shown below. The mitigation measures, monitoring programs, etc., identified in this section of the EIS should be used to develop the environmental management plan (EMP) for the project (see section 7 Environmental management plan).

3.1 Climate and climate change

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. Therefore, it is important that the project design be adaptive to climate change so that community resources are not depreciated by projects that could be abandoned or require costly modification before their potential to provide a full return to the community is realised.

It is recognised 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. Proponents should however, use their best efforts to incorporate adaptation to climate change in their EIS and project design.

3.1.1 Description of environmental values

This section should describe the rainfall patterns (including magnitude and seasonal variability of rainfall), air temperatures, humidity, wind (direction and speed) and any special factors (e.g. temperature inversions) that may affect management of the project.

Extremes of climate that could impact on the works (floods, cyclones, storm surge etc.) should be discussed. The vulnerability of the area to natural or induced hazards should also be addressed. The relative change to frequency and magnitude of these events should be considered together with the risk they pose to management of the project.

3.1.2 Potential impacts and mitigation measures

The EIS should provide an assessment of the project's vulnerabilities to climate change and describe possible adaptation strategies for the activity including:

- a risk assessment to the project from climate change impacts including 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
- commitments to undertaking, where practicable, a cooperative approach with government, other industry and other sectors to address adaptation to climate change.

The potential impacts due to climatic factors should be addressed in the relevant sections of the EIS. The impacts of rainfall on soil erosion should be addressed in section 3.2 Land. The impacts of storm events on the capacity of waste containment systems (e.g. site bunding/ stormwater management and tailings dams) should be addressed in section 3.7 Waste. The impacts of wind, rain, humidity and temperature inversions on air quality should be addressed in section 3.6 Air quality, noise and vibration.

Current tidal / datum data should be used to support all technical assessments on climate change.

3.2 Land

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

3.2.1 Geology

3.2.1.1 Description of environmental values

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

Provide geotechnical details of the strata below the proposed area to be reclaimed.

Investigations into the physical, geo-mechanical and chemical properties of bund wall rock in both fresh and weathered forms needs to be determined for possible acid generation.

3.2.2 Soils and quarry materials

3.2.2.1 Description of environmental values

A soil survey of the sites affected by the project is to be conducted at a suitable scale, with particular reference to the physical and chemical properties of the materials that will influence erosion potential and storm water run-off quality.

An appraisal is to be undertaken of the physical and chemical properties of marine muds (including location and depth of these muds across the entire site) that will influence dewatering rates, sediment settling rates/suspended solids content of discharge water, displacement by bund walls, erosion potential, storm water run-off quality and site stability.

Describe the source and location of proposed reclamation area bund wall and capping material. Describe the physical and chemical properties of proposed bund wall and capping materials that will influence erosion potential and storm water run-off quality. Information should also be provided on soil stability and suitability for construction of project facilities.

The State Planning Policy 2/02: *Planning and management of development involving acid sulfate soils* should be addressed (e.g. identification and management of ASS and PASS and format of EMPs).

3.2.2.2 Potential impacts and mitigation measures

Possible erosion rates and management techniques should be described for all permanent and temporary landforms / capped reclamation areas. The erosion potential (wind and water) and erosion management techniques should be outlined for each type of capping material identified. An erosion-monitoring program, including rehabilitation measures for erosion problems identified during monitoring, should also be outlined.

The physical and chemical impact upon the marine environment of any quarry material brought to the dredge spoil site should be described and impact mitigation and management measures should be outlined.

Mitigation strategies should be developed to achieve acceptable soil loss rates, levels of sediment in rainfall runoff and wind-generated dust concentrations.

3.2.3 Land use and tenure

3.2.3.1 Description of environmental values

The EIS should provide a description of current land tenures and land uses (both terrestrial and marine), including Native Title in the entire project area, with particular mention of land with special purposes such as protected areas. A map at a suitable scale showing existing land uses and tenures should be provided for the entire project area and surrounding land that could be affected by the development. This map should identify areas of conservation value and marine areas in this zone.

3.2.3.2 Potential impacts and mitigation measures

The potential for the construction and operation of the project to change existing and potential land uses of adjacent areas should be detailed.

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

3.2.4 Topography and landscape character

3.2.4.1 Description of environmental values

This section should describe, in general terms, the existing character of the landscape that will be affected by the project. The description should include existing landscape features, panoramas and views that have, or could be expected to have, value to the community whether of local, regional, statewide, national or international significance.

The topography of the project site and any other potentially impacted area should be detailed with contours at suitable increments, shown with respect to Australian Height Datum (AHD) and drafted to the GDA94 datum. Significant features of the locality should be included on the maps. Such features would include any locations subsequently referred to in the EIS (e.g. the nearest noise sensitive locations) that are not included on other maps in section 3.2. Commentary on the maps should be provided highlighting the significant topographical features.

3.2.4.2 Potential impacts and mitigation measures

The potential impacts of the project on the landscape character of the site and the surrounding area should be described. Particular mention should be made of any changes to the broad-scale topography and vegetation character of the area. Details should be provided of measures to be undertaken to mitigate or avoid the identified impacts.

Discuss the visual impact of the project on particular panoramas and outlooks. It should be written in terms of the extent and significance of the changed skyline as viewed from both land and water as it relates to the surrounding landscape. The assessment is to address the visual impacts of any project structures and associated infrastructure, including the dredge spoil disposal site. Sketches, diagrams, computer imaging and photos are to be used where possible to portray the near views and far views of the completed landform and its surroundings from visually sensitive locations. Special consideration is to be given to public roads and places of work, which are within the line-of-sight of the project.

Details of management of lighting for all stages of the project should be provided, with particular reference to the objectives and proposed management regime to mitigate or avoid:

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

3.2.5 Land contamination

3.2.5.1 Description of environmental values

This section should discuss the potential for land contamination within the project area from existing and past uses, based on land use history and the nature and quantity of any contaminants.

3.2.5.2 Potential impacts and mitigation measures

The EIS should discuss the management of any contaminated land and potential for contamination from construction. Methods proposed for preventing, recording, containing and remediation of any contaminated land should be outlined. Intentions should be stated concerning the classification (in terms of the Queensland Contaminated Land Register and Environmental Management Register) of land contamination on the land after project completion.

3.2.6 Transport

3.2.6.1 Description of existing environment

Describe arrangements for the transport of plant, equipment, construction materials, quarry materials and wastes during construction of the project. The description should address the use of existing local and regional facilities and any requirements for the construction, upgrading or relocation of any transport related infrastructure (both land-based and marine). This includes the provision of maritime related transport infrastructure such as Aids to Navigation (AtoN) which covers buoys, beacons and Vessel Traffic Services (VTS) technology equipment (e.g. radars).

Full details of land-based and marine transport volumes, modes and routes is to be provided. The EIS should describe (including with the use of maps and data tables) transport methods and routes for all aspects of the transport task associated with the construction of the project. Information should include:

- any proposed new, or alterations to, transport-related infrastructure required by the project (as distinct from impact mitigation works). This includes modifications to roads for access works, supply of quarry materials and realignments and rail lines (including level crossings and services)
- details of hazardous material transport, including fuel or other combustible material. This should be considered in relation to the *Transport Operations (Road Use Management – Dangerous Goods) Regulation 2008* and *Transport Infrastructure (Dangerous Goods by Rail) Regulation 2008*
- the construction of any project-related plant and utilities, within or impacting on the jurisdiction of any transport authority
- existing traffic volumes on the proposed transport routes
- volumes, tonnage, and composition of construction inputs
- hazardous or dangerous material that may be transported
- method of transport (e.g. sea, rail, road) and the type and number of vehicles most likely to be used for transport
- the type and likely size of dredge/s to be used in dredging operations
- the expected berth location for dredge/s when not in use
- traffic generated by workforce personnel including visitors (volume, composition, timing and routes)
- number of trips generated (both light and heavy vehicles)
- origin and destination of inputs and outputs and transport routes proposed (with the use of maps)
- likely heavy and oversize/indivisible loads (volume, tonnage, composition, timing and routes) highlighting any vulnerable structures or deficient road width or geometry along proposed routes
- timing and duration of transport activities.

3.2.6.2 Potential impacts and mitigation measures

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.

Information about the impacts and proposed measures for dealing with those impacts should be prepared by the proponent in close consultation with the Gladstone Regional Council and local District Office of the Department of Transport Main Roads. Reference should be made to the Main Road's *Guidelines for Assessment of Road Impacts of Development*, available on the DTMR website www.mainroads.qld.gov.au

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.

For marine aspects of this assessment reference will be made to the *Transport Operations (Marine Pollution) Act 1995*, the *Transport Operations (Marine Pollution) Regulation 2008*, and the National Plan (The National Plan to Combat Pollution of the Sea by Oil and other Noxious and Hazardous Substances) as they apply to this project.

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

3.3 Nature conservation

This section of the EIS should describe the existing environmental values for nature conservation for the areas (including The Narrows) that may be affected by the project in terms of:

- integrity of ecological processes, including habitats of rare and threatened species and ecological communities
- conservation of resources
- biological diversity, including habitats of rare and threatened species
- integrity of landscapes and places including wilderness and similar natural places
- aquatic and terrestrial ecosystems
- coastal values identified in *State of the Coastal Zone Reports* and environmental values as defined by the EP Act and environmental protection policies.

The flora and fauna communities which are rare or threatened, environmentally sensitive localities including waterways, wetlands, riparian zone, wilderness and habitat corridors should be described. The description should include a plant species list, a terrestrial and marine vegetation map at appropriate scale and an assessment of the significance of native vegetation, from a local and regional and state perspective. The description should indicate any areas of state or regional significance identified in an approved biodiversity planning assessment produced by the DERM.

The EIS should demonstrate how the project (including all associated infrastructure requirements such as access tracks) would comply with the following hierarchy:

- avoiding impact on areas of conservation value, rare and threatened species, and coastal wetlands, water quality, biodiversity values, connectivity and supporting ecological processes
- where avoidance is not possible, mechanisms to minimise impacts
- mitigation of impacts through rehabilitation and restoration
- measures to be taken to replace or offset the loss of conservation values where avoidance and mitigation of impacts cannot be achieved
- explanation of why measures above would not apply in areas where loss would occur.

Where relevant, these sections should discuss environmental offset requirements in accordance with the *Queensland Government environmental offsets policy* (EPA, 2008) and taking into account the applicable specific-issue offset policies, as follows:

- *Policy for vegetation management offsets* (NRW, 2007)
- *Mitigation and compensation for works or activities causing marine fish habitat loss* (DPI&F, 2002)
- *Consultation draft policy for biodiversity offsets* (EPA, 2008).

The boundaries of the areas impacted by the project within or adjacent to an endangered ecological community, including details of footprint width should be discussed. Where the project area would impact upon a threatened community, the discussion should include reasons for the preferred location or alignment and the viability of alternatives.

3.3.1 Sensitive environmental areas

3.3.1.1 Description of environmental values

The EIS should identify environmentally sensitive areas that are in proximity to the project. Environmentally sensitive areas should also include areas classified as having national, state, regional or local biodiversity significance. Consideration should be given to the Great Barrier Reef World Heritage Area, marine parks, national parks, conservation parks, nature refuges, declared fish habitat areas, important wetlands, wilderness areas, heritage/historic areas or items relating to biodiversity, national estates, world heritage listings and sites covered by international treaties or agreements (e.g. Ramsar, Japan-Australia Migratory Bird Agreement (JAMBA), China-Australia Migratory Bird Agreement (CAMBA), Republic of Korea-Australia Migratory Bird Agreement), areas of cultural significance relating to biodiversity and scientific reserves.

The proximity of the project to any environmentally sensitive areas should be shown on a map of suitable scale. Areas that would be regarded as sensitive with respect to flora and fauna have one or more of the following features:

- important habitats of species listed under the *Nature Conservation Act 1992* (NC Act) and/or the EPBC Act as presumed extinct, critically endangered, endangered, vulnerable or rare
- regional ecosystems recognised by the DERM as 'endangered' or 'of concern' or 'not of concern' but where permits are no longer granted due to being at threshold levels, and/or ecosystems listed as 'presumed extinct', 'critically endangered' 'endangered' or 'vulnerable' under the EPBC Act
- ecosystems that provide important ecological functions, such as riparian vegetation, important buffer to a protected area, refugia or important habitat corridor between areas
- protected areas which have been proclaimed under the NC Act or are under consideration for proclamation
- Rodds Bay Dugong Sanctuary (a Dugong Protection Area)
- Wetlands listed in the Directory of Important Wetlands in Australia.

3.3.1.2 Potential impacts and mitigation measures

This section should discuss the following:

- the impact of the project on species, communities and habitats of local, regional, state or national significance
- proposals to mitigate impacts (e.g. timing of works, minimise width of disturbance, proposed rehabilitation of in-stream and floodplain disturbances)
- planned rehabilitation of vegetation communities and any relevant previous experience/experiments rehabilitating these communities
- action plans for protecting rare or threatened species and vegetation types identified as having high conservation value should be described and any obligations imposed by

state or federal government biodiversity protection legislation or policy should be discussed

- appropriate mitigation measures for remnant ecosystems that may be affected by the project should refer to the relevant *regional vegetation management codes* for *South East Queensland Bioregion* (NRW, 2006) and *Brigalow Belt and New England Tablelands Bioregions* (NRW, 2006),
- environmental offset requirements, in accordance with (where relevant):
    - the *Queensland Government environmental offsets policy* (EPA, 2008)
    - *Policy for vegetation management offsets* (NRW, 2007)
    - *Policy for mitigation and compensation for works or activities causing marine fish habitat loss* (DPI&F, 2002)
    - Consultation draft *policy for biodiversity offsets* (EPA, 2008)
    - program assistance offered by Ecofund Queensland
    - the draft policy statement on the use of environmental offsets under the EPBC Act
- where relevant, MNES identified under the EPBC Act.

Potential impacts and associated mitigation measures should be discussed further under section 3.3.2 Terrestrial flora; section 3.3.3 Terrestrial fauna; and section 3.3.4 Marine flora and fauna.

3.3.2 Terrestrial flora

3.3.2.1 Description of environmental values

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

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

Provide vegetation mapping for all relevant project sites, including new transport and water infrastructure, if relevant. Adjacent areas may also require mapping if significant impacts are to be expected.

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

- location, extent, biodiversity status and conservation status of vegetation types using the DERM's regional ecosystem type descriptions in accordance with Queensland Herbarium (2003), *Regional Ecosystem Description Database* (Version 4.2, March 2005), and *The Conservation Status of Queensland's Bioregional Ecosystems*, Sattler P.S. & Williams R.D. (eds.) (1999) or other more recent updates
- location of vegetation types of conservation significance based on DERM's regional ecosystem types and occurrence of species listed as protected plants under the *Nature Conservation (Wildlife) Regulation 2006* and subsequent amendments, as well as areas subject to the *Vegetation Management Act 1999*

- the current extent (bioregional and catchment) of protected vegetation types of conservation significance within the protected areas such as the National Reserve System and other protected areas under the *Nature Conservation Act 1992* (e.g. national parks, conservation parks, resource reserves, nature refuges etc.)
- the distribution and abundance of significant exotic and weed species
- any plant communities of cultural, commercial or recreational significance.

For each significant natural vegetation community likely to be impacted by the project, vegetation surveys should be undertaken at an appropriate number of sites, allowing for seasonal factors, as follows:

- site data should be recorded in a form compatible with the Queensland Herbarium CORVEG database
- appropriate minimum site sizes should be selected, observing recognised sampling approaches and to provide an adequate sample of surveyed communities
- a complete list of species present at each site should be recorded
- the relative abundance of plant species present should be recorded
- any plant species of conservation, cultural, commercial or recreational significance should be identified
- specimens of species listed as 'protected plants' under the *Nature Conservation (Wildlife) Regulation 2006,* other than common species, are to be submitted to the Queensland Herbarium for identification and entry into the HERBRECS database
- vegetation mapping and data should be submitted to the Queensland Herbarium to assist the updating of the CORVEG 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 should be specified in the appendices to the EIS. Any existing information should be revised and comments provided on whether the areas are degraded, cleared or affected in ways that would affect their environmental value.

The occurrence of pest plants (weeds), particularly declared plants under the *Land Protection (Pest and Stock Route Management) Act 2002* should be shown on a map at an appropriate scale. Any survey to identify the presence of such plants will need to occur after significant summer rainfall events to allow germination.

3.3.2.2 Potential impacts and mitigation measures

This section should discuss all foreseen direct and indirect effects on terrestrial flora and vegetation and the potential level of environmental impact identified. Consideration of impacts including the quantity of vegetation to be removed (in terms of the total area), whether the proposal will bisect remnants and the magnitude of edge effects. Action plans for protecting rare or threatened species and vegetation types identified as having high conservation value should be described and any obligations imposed by Queensland or Australian government biodiversity protection legislation or policy should be discussed.

Construction of the project involving clearing, or translocation of vegetation should be described, and indirect impacts on vegetation not cleared (such as edge effects of infrastructure in close proximity to riparian vegetation and fauna movement corridors) should be discussed.

The description needs to include the potential for impacts on protected areas (e.g. nature reserves, national parks, conservation parks, resource reserves, nature refuges); identifying the amount of vegetation to be removed from these protected areas; and impacts on other environmental values of these protected areas.

Measures to mitigate the impacts of the project on vegetation types identified as having high conservation values, listed species and sensitive habitat or the inhibition of propagation should be described. This should also include the identification of potential offset areas, in an 'offset strategy', consistent with Queensland Government specific-issues offsets policies, to compensate for any loss of vegetation (see also S.3.3.4 *Marine flora and fauna*). Offsets must be discussed with regard to impacts on EPBC matters, reference should be made to the eight principles set out in the DEWHA's draft policy statement: *Use of environmental offsets under the Environment Protection and Biodiversity Conservation Act 1999* and its accompanying Discussion Paper, August 2007.

With regard to the project area, this section should include:

- the significance of impacts at local, catchment, bioregional, state or national levels
- impact on any plants of potential or recognised environmental or economic significance
- a discussion of the ability of identified stands of vegetation to withstand any increased pressure resulting from the project and measures proposed to mitigate impacts
- a description of the methods to ensure progressive rehabilitation of disturbed areas following construction, including the species chosen for revegetation which should be consistent with the surrounding associations. Details should be provided of the proposed completion criteria and indicators to measure the success of the rehabilitation objectives. Monitoring programs must also be outlined which can validate and/or demonstrate the long-term sustainability of the rehabilitation. Consideration should be given to the establishment of reference sites within the same sub-catchment if possible (at least two for each ecosystem type being rehabilitated) that could be monitored to provide benchmarking against rehabilitation completion criteria and indicators
- a description of the potential for the introduction and/or spread of weeds or plant disease, including:
    - identification of the origin of construction materials, machinery and equipment
    - staff/operator education programs
    - determination of the potential for the introduction of, or facilitation of, exotic, non-Indigenous and noxious plants.
- a weed management plan should be developed to address the management of weeds and other exotic species related to the project site.

The above assessment should also include, where relevant, MNES identified under the EPBC Act.

3.3.3 Terrestrial fauna

3.3.3.1 Description of environmental values

The terrestrial and riparian fauna occurring in the areas affected by the project should be described, noting the broad distribution patterns in relation to vegetation, topography and substrate. Targeted surveys should be undertaken for EPBC listed fauna likely to be impacted upon by the proposal and include opportunistic surveys for any other potentially occurring fauna.

The description of the fauna present or likely to be present in the area should include:

- species diversity (i.e. a species list) and relative abundance of animals, including birds, reptiles and mammals (including bats)
- any species that are poorly known but suspected of being rare or threatened
- habitat requirements and sensitivity to changes; including movement corridors and barriers to movement

- existence of any rare, threatened or otherwise noteworthy species/communities in the study area, including discussion of range, habitat, breeding, recruitment, feeding and movement requirements, and current level of protection (e.g. any requirements of protected area management plans)
- use of the area by migratory birds, nomadic birds and terrestrial fauna
- the existence of feral or exotic animals, with reference to the *Land Protection (Pest and Stock Route Management) Regulation 2003*.

The EIS should indicate how well any affected communities are represented and protected elsewhere in the sub-region where project sites occur.

The EIS should contain results from surveys for these species. Surveys should be conducted at the appropriate time of the year when the species is known to be present on the areas to be affected by the project, so that identification and location of these species is optimal.

Methodology used for fauna surveys should be discussed with the DERM's regional office prior to carrying out the survey and be specified in the appendices to the report. The EIS should also indicate how well any affected significant communities and species are represented and protected elsewhere in the region where the site of the project occurs. Relevant site data should be provided to the DERM in a format compatible with the EPA WildNet database for listed threatened species.

3.3.3.2 Potential impacts and mitigation measures

This section should discuss all foreseen direct and indirect effects on EPBC Act and state listed terrestrial fauna identified as affected through the additional surveys. Strategies for protecting rare or threatened species should be described and any obligations imposed by Queensland or Australian government threatened species legislation or policy should be discussed.

Any EPBC Act or state recovery plans for potentially affected threatened species should be outlined, and strategies for complying with the objectives and management practices of relevant recovery plans should be described. Measures to mitigate the impact on habitat or the inhibition of normal movement, breeding or feeding patterns, and change to food chains should be described. Any provision for buffer zones and movement corridors, or special provisions for migratory or nomadic animals should be discussed.

With regard to terrestrial and riparian fauna, the assessment of potential impact should consider:

- impacts the project may have on terrestrial fauna, relevant wildlife habitat and other fauna conservation values, including:
    - direct and indirect impacts due to loss of range/habitat, food supply, nest sites, breeding/recruiting potential or movement corridors
    - impacts on rare and threatened or otherwise noteworthy animal species
    - identification of the conservation importance of identified populations at the regional, state and national levels
    - cumulative effects of direct and indirect impacts
    - whether the proposal will fragment habitat areas
    - risks associated with edge effects
- measures to minimise wildlife capture and mortality during construction
- details of the methodologies that would be used to avoid injuries to native fauna as a result of the project's construction works, and if accidental injuries should occur the methodologies to assess and handle injuries
- methods for minimising the introduction of feral animals, and other exotic fauna. The study should develop strategies to ensure that the project does not contribute to

increased encroachment of feral animal species. Reference should be made to the *Land Protection (Pest and Stock Route Management) Regulation 2003* and the local government authorities' pest management plan when determining control strategies. The strategies for management of pest fauna should be discussed and provided in a working form in a pest management plan as part of the overall EMP for the project.

These would also include, where relevant, MNES identified under the EPBC Act.

3.3.4 Marine flora and fauna

3.3.4.1 Description of environmental values

Marine flora and fauna (including all EPBC Act and state listed species) occurring in the areas affected by the proposal should be described noting the patterns and distribution in coastal waters and estuaries. The description of the fauna and flora present in the areas, and its values and significance, should include:

- fish species, mammals, reptiles, fish, invertebrates and crustaceans occurring in marine and estuarine waters, including pest species
- marine plants, including seagrass, saltmarsh and mangroves
- benthic, rocky shore and reef habitats
- uses for commercial, recreational and indigenous fisheries
- reference habitat of any rare or threatened species, particularly the dugong
- proximity to declared fish habitat areas
- proximity to spawning, feeding, nursery, recruitment, migration and other critically important habitats
- bathymetry and water temperature
- presence of marine mammals and marine turtle foraging areas and nesting areas
- sea floor habitat and benthic macroinvertebrate communities in the vicinity of the reclamation area

A description of significant marine fauna including distribution, habitat, feeding (patterns and food sources), reproductive cycles, threatening processes and current level of disturbance should also be provided. This section should also list marine plant species and location within the project area.

3.3.4.2 Potential impacts and mitigation measures

The potential impacts of the project on benthic habitat and marine fauna and flora, including seagrass beds, marine plants, saltpan, saltmarsh and mangrove communities, other fish habitats and other rare or threatened species should be assessed. The EIS should also discuss the potential for damage or disturbance to these ecosystems (including dependent faunal species) and other direct impacts such as physical collision of the dredge with marine fauna, and the introduction of marine pests from dredges or other vessels.

Modelling should be presented of sediment plumes extending from dredging and any proposed spoil dumping activities, including estimated off-target deposition of suspended solids. Modelling should also consider temporary decreases in water transparency; increased concentrations in suspended matter; increased rates in sedimentation; disposal of sediments with high organic matter; changes to bathymetry; changes to sediment composition; removal or burial of sessile and motile organisms that are unable to burrow through the deposited layer; and introduction of marine pests. Cumulative impacts should also be considered, such as reduction in light penetration; changes to benthic structure; alteration in current regimes; or reductions in dissolved oxygen.

Mitigation methods to reduce impacts on identified environmental values should be outlined. Restoration of the disturbed area (especially where marine plants have been removed) should also be outlined.

Measures to mitigate the impacts of the project on marine vegetation types identified as having high conservation values, listed species and sensitive habitat or the inhibition of propagation should be described. This should also include the identification of potential offset areas, in an 'offset strategy', consistent with Queensland Government specific-issues offsets policies, to compensate for any loss of marine vegetation (see also S.3.3.2 *Terrestrial flora*). Offsets must be discussed with regard to impacts on EPBC matters, reference should be made to the eight principles set out in the DEWHA's draft policy statement: *Use of environmental offsets under the Environment Protection and Biodiversity Conservation Act 1999* and its accompanying Discussion Paper, August 2007.

3.4 Water resources

This section describes the existing environment for water resources that may be affected by the project in the context of environmental values as defined in such documents as the *Environmental Protection Act 1994*, *Environmental Protection (Water) Policy 1997* (EPP (Water)), the *National Water Quality Management Strategy* policies and guidelines, the EPA guideline*: Establishing draft environmental values and water quality objectives*, and the *Queensland Water Quality Guidelines* (EPA, 2006). The definition of 'waters' in the EPP (Water) includes the bed and banks of waters so this section should address impacts on benthic environment as well as the water column.

3.4.1 Surface water and watercourses

3.4.1.1 Description of environmental values

The environmental values of the surface waterways (e.g. rivers, creeks, streams and other water bodies including drainage lines and wetlands) of the affected area should be described in terms of:

- values identified in the EPP (Water)
- sustainability, including both quality and quantity
- physical integrity, fluvial processes and morphology of watercourses, including riparian zone vegetation and form
- any plans relevant to the affected catchment such as water resource plans, land and water management plans, including the *Water Resource (Calliope River Basin) Plan 2006* and the *Water Resource (Boyne River Basin) Plan 2000*, and the Reef Water Quality Protection Plan (2003)
- *Australia and New Zealand Water Quality Guidelines for Fresh and Marine Waters* (ANZECC, 2000).

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

Details provided should include a description of existing surface drainage patterns and existing and historical flow regimes in major waterways, wetlands and the harbour.

Details should also be provided of the likelihood of flooding, history of flooding, including extent, and levels and frequency. Flood studies should include a range of annual exceedance probabilities for affected waterways, based on observed data if available, or use appropriate modelling techniques and conservative assumptions if there are no suitable observations. The flood assessment should include local flooding due to short duration events from contributing catchments on site, as well as larger scale regional flooding including waterways downstream.

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

An assessment is required of existing water quality in surface waters and wetlands likely to be affected by the project. The water quality should be described, including seasonal variations or variations with flow where applicable. A relevant range of physicochemical (refer to the *Queensland Water Quality Guidelines* (2007)), chemical and biological parameters (refer to the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC, 2000)) should be measured to benchmark the extent of any potential future environmental harm on any potentially affected waterway or wetland system. All sampling should be performed in accordance with the Water Quality Sampling Manual (EPA, 1999) or the most current edition.

3.4.1.2 Potential impacts and mitigation measures

The potential environmental harm to the flow and the quality of surface waters from all phases of the project should be discussed, with particular reference to their suitability for the current and potential uses, including the requirements of any affected riparian area, wetland, estuary, littoral zone, and any marine and in-stream biological uses.

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

Quality characteristics discussed should be those appropriate to the downstream and upstream water uses that may be affected. Having regard for the requirements of the EPP (Water), the EIS should present the methods to avoid stormwater contamination and present the means of containing, recycling, reusing, treating and disposing of stormwater. Consideration should be given to impacts on seawater quality due to discharge from the site.

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

3.4.2 Groundwater

3.4.2.1 Description of environmental values

The EIS should review the quality, quantity and significance of groundwater resources within the project area.

The environmental values of the underground waters of the affected area should be described in terms of:

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

3.4.2.2 Potential impacts and mitigation measures

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

The impact assessment should define the extent of the area within which groundwater resources are likely to be affected by the proposed operations and the significance of the project to groundwater depletion or recharge.

An assessment should be undertaken of the impact of the project on the local ground water regime caused by any land disturbance, and propose management options available to

monitor and mitigate these effects. The response of the groundwater resource to the progression and finally cessation of the project should be described.

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

3.5 Coastal environment

This section should 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.

3.5.1 Marine water and sediment

3.5.1.1 Description of environmental values

Information should be provided on water quality in the sea and in estuaries below the limit of tidal influence, including heavy metals, acidity, turbidity, dissolved oxygen, nutrients and oil in water. Interaction of freshwater flows with marine waters, its significance in relation to marine flora and fauna in and adjacent to the project area, should be discussed.

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

- declared fish habitat areas
- values identified in the EPP (Water)
- the State Coastal Management Plan
- Curtis Coast Regional Coastal Management Plan
- the Great Barrier Reef Coastal Marine Park (State).

An assessment of physical and chemical characteristics of sediments should be provided for the area to be disturbed by dredging or vessel movements including contaminants (such as heavy metals, nutrients, pesticides), the presence of fines and/or indurated layers and acid sulfate potential (for land based disposal). This information should be presented as a map of sediment types based on their physical and chemical properties and include depth profiles.

Assessment of marine sediments should be undertaken in accordance with the *National Assessment Guidelines for Dredging* (DEWHA, 2009).

3.5.1.2 Potential impacts and mitigation measures

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

This section should also describe the local water quality objectives used (including how they were developed), and how predicted activities will meet these objectives, (refer to the *Queensland Water Quality Guideline*s (EPA, 2007) and the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC, 2000)).

The potential environmental harm caused by the project on coastal resources and processes should be described in the context of controlling such effects. State Planning Policy 2/02: *Planning and managing development involving acid sulfate soils* should be addressed as should the State Coastal Management Plan 2001 and DPI&F Fish Habitat Guideline: FHG002: *Restoration of fish habitats* (DPI&F, 1998).

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

Impacts on water quality due to increased water turbidity, suspended solids and nutrients from the sediment due to dredging and sea disposal of material, if required, should be addressed through means such as modelling of sediment plumes extending from dredging and spoil dumping activities and strategies developed to address potential impacts.

Describe the proposed management of the quality of the discharge water throughout the entire dredging and reclamation works, and for future maintenance dredging, including:

- retention time required to achieve discharge water quality requirements for dredge spoil and contaminated waters
- designed retention period prior to discharge (available storage capacity) at all stages, including provision for high intensity rainfall events and sea water intrusion by wave action
- design of settling ponds to prevent leakage, re-suspension, or short-circuiting of flow.

The potential impacts of sediment quality on the marine environment should be discussed.

Describe monitoring, reporting, and corrective action/contingency plans to prevent exceedance of discharge and marine water quality limits.

A long-term dredge spoil disposal strategy should be described to ensure the protection and enhancement of environmental values. The duration of the strategy should be greater than 20 years of the design life of the proposal. The strategy should incorporate the other findings of section 3.5 Coastal environment. Appropriate beneficial use should be investigated in accordance with section 3.7 Waste.

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

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

3.5.2 Coastal processes

3.5.2.1 Description of environmental values

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

Describe the physical processes of the project area and the adjacent tidal waterways in terms of water levels and current velocities and directions at different tidal stages. Two and/or three-dimensional modelling should be undertaken, providing details of water levels and flows associated with historical and predicted storm surges.

Describe the wave climate in the vicinity of the project area and the adjacent beaches including a description of inter-annual variability and details of historical and predicted extreme wave conditions generated by tropical cyclones or other severe storm events.

Describe the hydrology of the adjacent estuarine catchment areas, including freshwater inflows to tidal waterways in terms of water levels and discharges. The interaction of freshwater flows with different tidal states, including storm tides, should also be provided. Provide a description of inter-annual variability and details of historical and predicted floods including extent, levels and frequency. Flood studies should include a range of annual exceedance probabilities for affected waterways, where data permits.

The tidal hydrodynamics need to be assessed in relation to dredge spoil plumes and potential impact on marine life for both the capital and maintenance dredging programs. These impacts need to be evaluated for volumes estimated to be disposed, the type of dredge plant to be used and the time of year dredging is likely to occur. The impacts on nearby marine habitat needs to be assessed in terms of the frequency, extent and duration of increased turbidity.

The relationship of these processes to marine flora and fauna and biological processes within the study area should also be discussed.

3.5.2.2 Potential impacts and mitigation measures

The impacts of development of the reclamation area on hydrodynamic processes in the port area including The Narrows should be described. In particular, the effects of the reclamation area on coastal processes, including sediment transport patterns, longshore sediment transport/deposition rates and erosion rates down drift of the structure including a discussion of alternative design layouts of the reclamation areas to minimise impact on coastal processes

Impacts on water quality due to increased water turbidity, suspended solids and nutrients from the sediment due to dredging and sea disposal of material, if required, should be addressed through means such as two or three dimensional hydrodynamic modelling, as appropriate, of sediment plumes extending from dredging and spoil dumping activities and strategies developed to address potential impacts.

Impacts on siltation and any implications for marine flora and fauna and/or biological processes should be discussed, including generation and migration of turbid plumes. Information on currents in the region should be used to predict impacts, including an assessment of these impacts on marine environmental values.

Describe management of storm tide and sea level rise impacts, including storm tide and wave action on the reclamation area during construction and management of potential mud displacement associated with the reclamation works.

The EIS should discuss strategies to mitigate potential impacts on coastal processes, as a consequence of the project.

3.5.3 Matters of National Environmental Significance

The controlling provisions under the EPBC Act have been determined as:

- Sections 12 and 15A (World Heritage properties)
- Sections 15B and 15C (National Heritage place)
- Sections 18 and 18A (Listed threatened species and communities)
- Sections 20 and 20A (Listed migratory species).

A separate chapter of the EIS should bring together the assessment of impacts on Matters of National Environmental Significance (MNES) within the other chapters of the EIS (e.g. water resources, flora and fauna, cultural heritage, cumulative impacts) to enable an assessment of the matters protected under the EPBC Act.

3.5.3.1 Description of environmental values

Describe the current world heritage and marine park zonings in the vicinity of the project area and the implications for the project referring to the limits, restrictions and conditions associated with such designations.

It is expected that this chapter will describe:

- the environment relevant to MNES matters
- relevant impacts on MNES matters from the project, including cumulative impacts

- proposed safeguards and mitigation measures
- proposed offsets.

Predictions of the extent of threat (risk), impact and the benefits of any mitigation measures proposed, should be based on sound science and quantified where possible. All sources of information relied upon should be referenced and an estimate of the reliability of predictions provided. Any positive impacts should also be identified and evaluated.

Further guidance for addressing the controlling provisions is provided below.

3.5.3.2 Potential impacts and mitigation measures

World Heritage properties and National Heritage places

The EIS should consider and assess the impacts of the project on the Great Barrier Reef World Heritage Area (GBRWHA) and National Heritage place. The EIS should include:

- a description of the values of the GBRWHA and National Heritage place that are within the area likely to be impacted by the proposal
- potential direct, indirect and consequential impacts on World and National Heritage values, including, but not limited to:
    - vegetation clearance due to reclamation activities
    - elevated turbidity levels
    - altered hydrodynamic regimes
    - increased lighting during dredging and reclamation operations
    - increased noise and vessel activity
    - increased risks from introduced marine pest species
    - impacts of habitat modification affecting food availability or other resources used by species that form part of the values of the GBRWHA and National Heritage place
    - consequential impacts from increased vessel activity following each stage of the dredging campaigns
    - any positive impacts the project may have
- a description of any mitigation measures proposed to reduce the impact on the values of the GBRWHA and National Heritage place
- a summary of consistency with the National Assessment Guidelines for Dredging (DEWHA, 2009)
- a description of any proposed offsets for the values of the GBRWHA and National Heritage place.

Listed threatened species and ecological communities and listed migratory species

The EIS should consider and assess the impacts of the project on listed threatened species and ecological communities and listed migratory species. The EIS should include:

- Identification of the listed threatened species and ecological communities and listed migratory species that are known, likely, or have potential to inhabit or utilise the areas that may be impacted by the Project. A description of the surveys and studies undertaken to define the species should be included in this chapter, and cross-references should be provided to any further discussion of these surveys or studies in other chapters or appendices of the EIS.

- Identification of habitat that may be impacted by the project, including identification of the function of the habitat for the lifecycle of specific listed threatened and migratory species and listed ecological communities. A description of the surveys and studies undertaken to define the habitat should be included in this chapter, and cross-references should be provided to any further discussion of these surveys or studies in other chapters or appendices of the EIS.
- Potential direct, indirect and consequential impacts on listed threatened species and communities and listed migratory species, including, but not limited to:
    - impacts on the size of a population (e.g. due to habitat removal/alteration, displacement, water quality impacts, direct impacts of dredging and vessel operations, etc.)
    - impacts on the breeding cycle of species and communities (e.g. due to noise, lighting and habitat disturbance during critical behaviours, due to population size reduction/displacement, etc.)
    - direct and indirect modification, removal or isolation of habitat
    - reduction in quality or availability of habitat
    - fragmentation of populations of species and/or communities
    - increased risk of invasive marine pest species
    - any positive impacts the project may have.
- The EIS should also identify which part of the Project (including stage of dredging) is of relevance to the impacts on each species or community.
- A description of any mitigation measures proposed to reduce the impact on listed threatened species and ecological communities and listed migratory species.
- A description of any proposed offsets for listed threatened species and ecological communities and listed migratory species.

3.6 Air quality, noise and vibration

3.6.1 Description of environmental values

This section should describe the existing air environment that may be affected by the project in the context of environmental values as defined by the EP Act and *Environmental Protection (Air) Policy 2008 (*EPP (Air)). It also should describe the existing environment values that may be affected by noise and vibration from project activities.

A description of the existing air shed environment should be provided having regard for particulates and gaseous and odorous compounds. The background levels and sources of suspended particulates and any other major constituent of the air environment that may be affected by the project should be discussed.

If the proposed activity could adversely impact on the noise environment, baseline monitoring should be undertaken at sensitive receptors for the acoustic environment affected by the proposal. Environmental values and the respective sensitive receptors for the acoustic environment are defined in the *Environmental Protection (Noise) Policy 2008*. Measured background noise levels that take into account seasonal variations are required. The locations of sensitive sites should be identified on a map at a suitable scale. The results of any baseline monitoring of noise and vibration in the proposed vicinity of the proposal should be described.

Comment should 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.).

3.6.2 Potential impacts and mitigation measures

The EIS should state the objectives for air emissions in respect of relevant standards (ambient and ground level concentrations), relevant emission guidelines, and any relevant legislation. The quantity and quality of all air emissions, including particulates from all components of the project during construction should described.

The proposed levels of emissions should be compared with the *National Environmental Protection Measures for Ambient Air Quality* (1998), the National Health Medical Research Council ambient air quality standards setting: *An approach to health based hazard assessment*, and the EPP (Air).

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

- the features of the project designed to suppress or minimise emissions, including dust (PM10 fraction of particulates)
- emissions of dust during both normal and upset conditions and the potential impacts of such emissions on surrounding land uses and nearest sensitive receptors
- identification of climatic patterns that could affect dust generation and movement
- impact on terrestrial flora and fauna
- predicted changes to existing air quality from vehicle emissions and dust generation along haulage routes (internal and external to construction sites).

Proposed dust mitigation measures to achieve air quality goals should be described.

The potential environmental harm of noise and vibration at all potentially sensitive places, in particular, any place of work or residence should be quantified in terms of objectives, standards and indicators to be achieved and measurable indicators. Particular consideration should be given to emissions of low-frequency noise; that is, noise with components below 200 Hz.

The need or otherwise for noise modelling should take into account the distance of relevant project sources of noise from neighbouring sensitive receptors such as residential and commercial developments believed to be sensitive to the effects of noise.

If underwater blasting is required, potential underwater noise impacts will need to be investigated which may include modelling. The proponent must consult with DERM and DEWHA in relation to any proposed underwater blasting.

3.6.3 Greenhouse gas emissions and abatement

This section of the EIS should:

- provide an inventory of projected annual emissions for each relevant greenhouse gas, with total emissions expressed in CO_2 equivalent terms
- estimate emissions resulting from proposed project activities, including transportation of products and consumables and fossil fuel based energy consumption
- briefly describe method(s) by which estimates were made.

The Australian Government Department of Climate Change *National Greenhouse Accounts Factors* can be used as a reference source for emission estimates and supplemented by other sources where practicable and appropriate.

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

- a description of the proposed measures (alternatives and preferred) to avoid and/or minimise greenhouse gas emissions directly resulting from activities of the project, including such activities as transportation of products and consumables, and energy use by the project
- an assessment of how the preferred measures minimise emissions and achieve energy efficiency
- an indication of how the preferred measures for emission controls and energy consumption compare with practice in the relevant sector of industry with a view to achieving best practice environmental management
- a description of any opportunities for further offsetting greenhouse gas emissions through indirect means.

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

- commitments to the abatement of greenhouse gas emissions from the project with details of the intended objectives, measures and performance standards to avoid, minimise and control emissions
- commitments to energy management, including undertaking periodic energy audits with a view to progressively improving energy efficiency
- a process for regular review of new technologies to identify opportunities to reduce emissions and use energy efficiently, consistent with best practice environmental management
- any voluntary initiatives such as projects undertaken as a component of the National Greenhouse Challenge Plus program, or research into reducing the lifecycle and embodied energy carbon intensity of the project's processes or products
- opportunities for offsetting greenhouse emissions, including, if appropriate, carbon sequestration and renewable energy uses
- commitments to monitor, audit and report on greenhouse emissions from all relevant activities and the success of offset measures.

3.7 Waste

This section should provide technical details of waste generation, treatment, minimisation and management, with proposed emission, discharge and disposal criteria. Waste should be defined and considered in accordance with the EP Act, and the *Environmental Protection (Waste Management) Policy 2000* and include gas, liquid or solid, or any combination of them.

3.7.1 Waste generation and management

The EIS should identify and describe all sources of construction waste including:

- the amount and characteristics of solid and liquid waste produced including composition of dredge spoil
- handling/transport arrangements, disposal, containment and dewatering of dredge spoil
- hazardous materials to be stored and/or used during construction, including environmental toxicity data and biodegradability
- any waste treatment process involved, including site drainage and erosion controls
- specific details (using maps and plans as appropriate) of:
    - o generation points

- storage methods and facilities
- quantities.

The EIS should provide details of any waste water output including:

- volume estimates of industrial and domestic effluent that will be produced
- quality of effluent produced
- any mobile sewerage facilities to be used.

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

- the suitability of dredge spoil as fill and/or relocation into an active coastal system
- the impacts of storm events on the capacity of waste containment systems (e.g. site bunding/stormwater management and tailings dams)
- operational handling and fate of all wastes including storage
- proposed discharge/disposal criteria for liquid and solid 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 and the extent of use of local government facilities
- the potential level of impact on environmental values
- methods proposed to recycle waste oil and waste oil containers
- proposed waste minimisation techniques and processes.

The EIS may need to consider the following effects:

- rainfall directly onto disturbed surface areas
- run-off from roads, plant areas, chemical storage areas
- drainage (i.e. run-off plus any seepage or leakage)
- water usage for process use, dust suppression, and domestic purposes
- evaporation.

3.8 Cultural heritage

3.8.1 Description of environmental values

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

3.8.1.1 Indigenous cultural heritage

An Indigenous cultural heritage study must be undertaken in accordance with the requirements of Part 7 of the *Aboriginal Cultural Heritage Act 2003.*

A review of Aboriginal occupation and use of the project area should be undertaken, identifying areas where significant Aboriginal cultural heritage sites or places are likely to be identified.

A search of the Aboriginal and Torres Strait Islander Cultural Heritage Database and Register should be undertaken.

Note that details of cultural heritage material and sites should not be revealed in any public documentation except with the express permission of the relevant endorsed Aboriginal party.

Comments regarding cultural heritage material and sites should be respect Traditional Owners' sensitivities with regard to publicising such information and should recognise that Traditional Owners should determine cultural heritage significance. A process for including Traditional Owners in field surveys should be undertaken and any requirements by communities and/or informants relating to the selection of consultants should be discussed.

At a minimum, investigations and consultations should be undertaken in such a manner and detail to satisfy statutory responsibilities and duties of care, including those under the *Queensland Heritage Act 1992,* the *Aboriginal Cultural Heritage Act 2003,* and the *Commonwealth Aboriginal and Torres Strait Islander Heritage Protection Act 1984,* and to protect areas and objects of cultural heritage significance.

3.8.1.2 Non-Indigenous cultural heritage

The EIS should include a cultural heritage study that describes non-Indigenous cultural heritage sites and places, and their values. As a minimum, investigations and consultation should be undertaken in such manner and detail to satisfy statutory responsibilities and duties of care, under the EPBC Act and *Queensland Heritage Act 1992*.

3.8.2 Potential impacts and mitigation measures

This section defines and describes the objectives and practical measures for managing, protecting or enhancing cultural heritage values that may be affected by the project. It describes how practices may be implemented for the appropriate management of those values, and how the achievement of the objectives will be monitored, audited and managed.

3.8.2.1 Indigenous cultural heritage

The potential impacts on Indigenous cultural heritage values in the vicinity of the project must be managed under a cultural heritage management plan (CHMP) developed and approved under Part 7 of the *Aboriginal Cultural Heritage Act 2003*. Development of the CHMP should follow the guidelines gazetted under section 85 of the *Aboriginal Cultural Heritage Act 2003*. The development of the CHMP should be negotiated with DERM, the lead agency for Indigenous cultural heritage. DERM's EIS Coordinator must be made aware of the progress of the CHMP approval process and of any related issues that should be addressed in the EIS assessment report.

3.8.2.2 Non-Indigenous cultural heritage

The proponent should provide an assessment of any likely effects on sites of non-Indigenous cultural heritage values, including but not limited to the following:

- description of the significance of artefacts, items or places of conservation or non-Indigenous cultural heritage value likely to be affected by the project and their values at a local, regional and national level
- recommended means of mitigating any negative impacts on non-Indigenous cultural heritage values and enhancing any positive impacts
- strategies to manage places of historic heritage significance, taking account also of community interests and concerns.

4 Social values and management of impacts

4.1 Social

The social impact assessment (SIA) should be conducted in consultation with the DIP Social Impact Assessment Unit. Matters to be considered include the social and cultural area, community engagement, a social baseline study, a workforce profile, potential impacts and mitigation measures and management strategies.

4.1.1 Social and cultural area

The SIA should define the project's social and cultural area of influence taking into account:

- the potential for social and cultural impacts to occur at the local, district, regional and state level
- the location of other relevant proposals or projects within the local area, district, or region
- the location and types of physical and social infrastructure, settlement and land use patterns
- the social values of the local area, district, and region that might be affected by the project (e.g. including integrity of social conditions, visual amenity and liveability, social harmony and wellbeing, and sense of community)
- Indigenous social and cultural characteristics such as native title rights and interests and cultural heritage.

4.1.2 Community engagement

Consistent with national and international good practice and industry commitment to the concept of a 'social licence to operate', the proponent should engage, at the earliest practical stage, with likely affected parties to discuss and explain the project and to identify and respond to issues and concerns regarding social impacts. Consequently, this section should detail the community engagement processes the proponent conducted as open and transparent dialogue with stakeholders with an interest in the project's planning and design stages and future operations including affected local authorities and relevant state authorities. Engagement processes will involve consideration of social and cultural factors, customs and values, including relevant consideration of linkages between environmental, economic and social impact issues.

4.1.3 Potential impacts and mitigation measures

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

The assessment of impacts should describe the likely response of affected communities and identify possible beneficial and adverse impacts (both immediate and cumulative). The impacts of the project on local and regional residents, community services and recreational activities are to be analysed and discussed. The nature and extent of the community consultation program are to be described and a summary of the results incorporated into the EIS.

The social impact assessment should include sufficient data to enable affected local authorities and state authorities to make informed decisions about how the project may affect their business and plan for the continuing provision of public services in the region.

The EIS should address the following matters:

- the number of personnel to be employed, the skills base of the required workforce and the likely sources (i.e. local, regional or other) for the workforce during the construction of the project. Include an assessment of impacts on the local labour market. This information is to be presented according to occupational groupings of the workforce. In relation to the source of the workforce, information is required as to whether the proponent and/or contractors are likely to employ locally or through other means and whether there will be initiatives for local employment opportunities.
- an assessment of impacts on local residents, current land uses and existing lifestyles and enterprises
- the impacts of the construction workforce 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 cumulative impacts of the project and other major projects planned or occurring simultaneously in the region that influence the capacity of the existing housing and temporary accommodation markets to meet the need of projected numbers of both the construction and operational workforce
- the consequential impact and mitigation measures of increased demand for, and uptake of affordable accommodation, particularly rental accommodation, in the region including the reduction in available affordable housing in the local government areas and the potential displacement of existing residents who may no longer be able to afford accommodation
- a discussion on the potential environmental harm on the amenity of adjacent areas used for recreation, industry, aesthetics or scientific purposes. Describe the implications of the project for future developments in the local area including constraints on surrounding land uses.
- the assessment of impacts should take account of relevant demographic, social, cultural and economic profiles.

4.2 Health and safety

4.2.1 Description environmental values

The function of this section is to describe the existing community values for health and safety that may be affected by the project in the context of environmental values as defined by the EP Act and EPPs.

4.2.2 Potential impacts and mitigation measures

This section should define and describe the objectives and practical measures for protecting or enhancing health and safety community values, describe how nominated quantitative standards and indicators may be achieved and how the achievement of the objectives will be monitored, audited and managed.

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

Map(s) should be provided showing the locations of sensitive receptors. The EIS, illustrated by the maps, should discuss how planned discharges from the project could impact on public health in the short and long term and should include an assessment of the cumulative impacts

on public health values caused by the project, either in isolation or by combination with other known existing or planned sources of contamination.

The EIS should include a review of control measures to prevent increases in local populations and spread of biting insect species of pest and health significance associated with construction activities and disposal of construction wastes.

The EIS should address the project's potential for providing disease vectors. Measures to control and prevent mosquito and biting midge breeding sites during construction and operation should be described with reference to Queensland Health's *Guidelines to minimise mosquito and biting midge problems in new development areas.*

Any use of recycled water should be assessed for its potential to cause infection by the transmission of bacteria and/or viruses by contact, dispersion of aerosols and ingestion (e.g. via use on food crops). Similarly, the use of recycled water should be assessed for its potential to cause harm to health via the food chain due to contaminants such as heavy metals and persistent organic chemicals. Practical monitoring regimes should also be recommended in this section.

5 Management of impacts on state and local economies

5.1 Economy

5.1.1 Description of affected local and regional economies

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

- economic viability (including economic base and economic activity, future economic opportunities, current local and regional economic trends etc.)
- historical descriptions of large-scale resource developments and their effects in the region.

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

5.1.2 Potential impacts and mitigation measures

The potential impacts should consider regional, state and national perspectives as appropriate to the scale of the project.

The analysis should include the direct economic impacts on industry and the community including:

- industry output
- employment
- factor incomes.

The analysis should also assess:

- any forgone industry output from the project
- any forgone opportunities and impacts to households (e.g. recreation, increased travel times)
- the indirect impacts likely to flow to other industries and economies from the development of the project. This should also consider the implications of the project for future development.

5.2 Sustainable development

The EIS should provide a comparative analysis of how the project conforms to the objectives for 'sustainable development' (see the *National Strategy for Ecologically Sustainable Development* (AGPS, 1992)).

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

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

6 Hazard and risk

A preliminary hazard identification exercise should be conducted in order to identify the nature and scale of hazards that might occur during the construction and operation of the project. This would be expected to include hazards such as:

- construction accidents
- accidental release of hazardous goods or other materials
- fires associated with incidents arising from the project activities
- ship-sourced pollution
- vulnerability of the project area to flooding, cyclones and other natural disasters.

A set of representative incident scenarios (including worst cases) should be selected.

A risk assessment consistent with Australian/New Zealand Standard for Risk Management AS/NZS 4360, should be conducted. The study should assess risks during construction of the project and should be assessed in quantitative terms where possible. The analysis should be expressed in terms of safety, human health, injury and fatality.

In regard to the on-site handling and storage of explosive raw material, consultation is encouraged with the Department of Community Safety, Chemical Hazards and Emergency Management Services Unit.

Details should be provided on the safeguards that would be employed or installed to reduce the likelihood and severity of hazards, consequences and risks to persons, fauna and environmentally sensitive sites within and adjacent to the project area.

6.1 Emergency management plan

An outline of the proposed emergency management procedures should be provided for the range of situations identified in the above risk assessment where there are measurable risks. This should include an overview of the objectives and management principles to be adopted for the preparation of a detailed emergency plan (including emergency response and recovery/cleanup procedures) in consultation with the relevant emergency services. Planning should include reference to State Planning Policy 1/03: *Mitigating the adverse impacts of flood, bushfire and landslide*.

In particular, the following should be presented:

- contingency plans to deal with hydrocarbon (e.g. diesel, lubricating oils) oil spills during construction, operation and maintenance of the project
- contingency plans to account for natural disasters such as storms and cyclones during construction
- emergency planning and response procedures that have been determined in consultation with state and regional emergency service providers
- plans for involvement of the relevant state agencies (such as the Queensland Police Service and Department of Community Safety, which includes the Queensland Ambulance Service, Queensland Fire and Rescue Service and Emergency Management Queensland) in relation to emergency medical response, transport and first aid matters
- emergency response arrangements for maritime based activities with reference to the *Transport Operations (Marine Pollution) Act 1995*, the *Transport Operations (Marine Pollution) Regulation 2008*, and the National Plan to Combat Pollution of the Sea by Oil and other Noxious and Hazardous Substances arrangements.

7 Environmental management plan

This section of the EIS should detail the EMP developed for the project. Separate EMPs should individually address the discrete project elements. The EMPs should be developed from, and be consistent with, the preceding information in the EIS.

The EMP should be developed from the mitigation measures detailed in part 3 of the EIS. Its purpose is to set out the proponents' commitments to environmental management. That is, how environmental values will be protected and enhanced.

The EMP is an integral part of the EIS, but should be capable of being read as a stand-alone document without reference to other parts of the EIS.

An EMP should provide control actions in accordance with agreed performance criteria for specified acceptable levels of environmental harm.

In addition, the EMP should identify:

- potential impacts on environmental values
- mitigation strategies
- relevant monitoring parameters, site replication, monitoring frequency, equipment, methods, analysis, quality assurance procedures undertaken and qualifications of the personnel involved
- appropriate indicators and performance criteria
- reporting requirements
- appropriate corrective actions, should an undesirable impact or unforeseen level of impact occur
- the recording of and response to complaints.

The aims of the EMPs 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
- a detailed technical basis for a Dredge Management Plan
- local, Queensland and Australian government authorities, stakeholders and the proponent with a common focus for approvals conditions and compliance with policies and conditions
- the community with evidence that the environmental management of the project is acceptable.

An EMP should commit to manage, enhance or protect identified environmental values. The commitments should 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

- an action program to ensure the environmental protection commitments are achieved and implemented. This will include strategies in relation to:
  - communication
  - continuous improvement
  - environmental auditing
  - monitoring
  - reporting
  - staff training
  - a decommissioning program for land proposed to be disturbed under each relevant aspect of the project.

The recommended structure of each element of the EMP is:

Element/issue:	Aspect of construction or operation to be managed (as it affects environmental values).
Operational policy:	The operational policy or management objective that applies to the element.
Performance criteria:	Measurable performance criteria (outcomes) for each element of the operation.
Implementation strategy:	The strategies, tasks or action program (to nominated operational design standards) that would be implemented to achieve the performance criteria.
Monitoring:	The monitoring requirements to measure actual performance (i.e. specified limits to pre- selected indicators of change).
Auditing:	The auditing requirements to demonstrate implementation of agreed construction and operation environmental management strategies and compliance with agreed performance criteria.
Reporting:	Format, timing and responsibility for reporting and auditing of monitoring results.
Corrective action:	The action (options) to be implemented in case a performance requirement is not reached and the person(s) responsible for action (including staff authority and responsibility management structure).

8 Conclusions and recommendations

The EIS should make conclusions and recommendations with respect to the project based on the studies presented, the EMP and conformity of the project with legislative and policy requirements.

9 References

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

10 Recommended appendices

10.1 Final TOR for this EIS

A copy of these TOR should be included in the EIS.

10.2 TOR cross-reference table

A cross reference table should be provided which links the requirements of each section/subsection of the TOR with the corresponding section/subsection of the EIS where those requirements have been addressed.

10.3 Development approvals

A list of the development approvals required by the project should be presented, identifying the type of approval required from the Coordinator General under the SDPWO Act and any development approvals or other approvals that are required to be dealt with by other authorities.

10.4 EPBC report

A report addressing MNES and potential impacts of the project is required.

10.5 Consultation report

A list of advisory agencies and the individuals and groups of stakeholders consulted should be provided in a summary consultation report. A summary of the issues raised by these groups, and the means by which the issues have been addressed, should be provided in the text of the EIS.

The discussion should include the methodology used in the community consultation program including criteria for identifying stakeholders and the communication methods used.

Information about identifying affected parties (as defined by the EPBC Act) and interested and/or affected persons (as defined by the EP Act) should be included.

10.6 Study team

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

10.7 Glossary of terms

A glossary of technical terms and acronyms should be provided.

10.8 Specialist studies

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

- flora and fauna studies including subregional analysis of representativeness and adequacy of protection for the terrestrial / riparian vegetation communities and their component flora and fauna taxa within affected areas
- an integrated assessment of relative biodiversity/conservation values, based on the methodology outlined in EP Act
- noise and vibration
- hydrodynamics
- waterway hydrology
- groundwater
- geology
- economic studies and/or cost-benefit analyses
- hazard and risk studies
- social impact assessment

10.9 Corporate environmental policy

The proponent should attach a copy of its corporate environmental policy and planning framework document.

10.10 List of proponent commitments

A list of all commitments made by the proponent in the EIS should be provided together with a reference to the relevant section in the report.

Department of **Infrastructure and Planning**
PO Box 15009 City East Qld 4002 Australia
tel +61 7 3227 8548
fax +61 7 3224 4683
info@dip.qld.gov.au

www.dip.qld.gov.au