# Terms of reference for an environmental impact statement

## Gold Coast International Marine Precinct

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

**The Coordinator-General**
**March 2009**

Queensland the Smart State

Queensland Government
Department of Infrastructure and Planning

# Contents

## Synopsis

The proposed Gold Coast International Marine Precinct is located on Shipper Drive at Coomera. The proponent (proposed project developer) is Harbour Island Pty Ltd and is acting on behalf of the parent company, Property Solutions Group Australia and its partnership with Maritimo Pty Ltd.

On 24 April 2008, the Coordinator-General (CG) declared the project to be a significant project for which an environmental impact statement (EIS) is required under section 26(1)(a) of the *State Development and Public Works Organisation Act 1971* (SDPWO Act). The declaration does not indicate support for, or approval of, the project by the CG or the Queensland Government. Rather it is a requirement for the project to undergo a rigorous EIS process.

These terms of reference (TOR) set out the requirements, both general and specific, that the proponent should address in preparing an EIS. A draft TOR was released for public comment over the period from 15 October until 17 November 2008. The TOR has been finalised by considering comments provided on the draft TOR made by state and local government authorities (advisory agencies). No public submissions were received during the public comment period.

On completion of the EIS phase, the CG will prepare a report evaluating the EIS and other related material, pursuant to section 35 of SDPWO Act. The CG's report will include an evaluation of the environmental effects of the project and any related matters.

The Australian Government Department of Environment, Water, Heritage and the Arts has determined that the project constitutes a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) due to possible impacts on matters of national environmental significance. Under a bilateral agreement with the Australian Government, the CG's report will be used by the Australian Government Minister for the Environment, Water, Heritage and the Arts to make an assessment of the controlled action for the purposes of the EPBC Act.

## List of acronyms and abbreviations

The following abbreviations have been used in this document:

| | |
|---|---|
| CG | Coordinator-General |
| CG report | a report prepared by the CG evaluating the EIS, pursuant to section 35 of the SDPWO Act |
| DNRW | Department of Natural Resources and Water |
| EIS | Environmental impact statement |
| EMP | Environmental management plan |
| EP Act | *Environmental Protection Act 1994* (Qld) |
| EPA | Environmental Protection Agency |
| EPBC Act | *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) |
| SDPWO Act | *State Development and Public Works Organisation Act 197*1 (Qld) |
| TOR | Terms of reference |
| The project | Gold Coast International Marine Precinct |
| The proponent | Harbour Island Pty Ltd |

# Part A: General information and administrative procedures

## 1. Introduction

These TOR are for an EIS for the proposed Gold Coast International Marine Precinct; a master-planned industrial marine development. These TOR have been prepared in accordance with sections 29 and 30 of the SDPWO Act.

The objective of these TOR is to identify those matters that should be addressed in the EIS for the project.

## 2. Project background

Queensland has approximately 215 000 registered recreational boats and with current growth rates, is set to be Australia's leading recreational boating centre. Boat registrations have grown by approximately six per cent per annum over the last five years, with registrations of larger vessels growing at a faster rate. While some slowing of new vessel demand is expected due to the recent financial instability, the long term prospects for the marine industry remain positive. The Gold Coast, in particular, is experiencing high growth in demand for facilities for the manufacture, refit and maintenance of recreational and commercial vessels, including super yachts.

The Gold Coast International Marine Precinct is a major marine industrial centre dedicated to manufacture, servicing/repairs and refits of recreational boats. Encompassing a total area of approximately 250 hectares, it is located on the Coomera River with direct water access to Moreton Bay and the Pacific Ocean. To date, approximately 60 hectares of the precinct has been developed and an estimated $120 million invested by the private sector.

## 3. Project summary

The Gold Coast International Marine Precinct proposal comprises the development of an integrated industrial marina (the project) on the Coomera River. The project site is located on Shipper Drive at Coomera, and is bound on the northern and western sides by Oakey Creek and on the eastern side by the Coomera River. A State Reserve for recreational purposes, which is maintained by the Gold Coast City Council as trustee, is located on the southern boundary of the site (Refer to Appendix 1). Both the freehold land currently owned by the proponent, and the State Land Reserve, are zoned for marine industry under the Gold Coast Planning Scheme. Any application to acquire the State Reserve would be required to comply with the provisions of the *Land Act 1994*. The proposal includes:

- a 25.4 hectare marine industrial zone, including ship-lift facilities and boat and yacht manufacturers, repairers and associated businesses
- a stacked dry boat storage facility with gantry crane access for approximately 290 vessels
- an internal marina of approximately 110 berths, providing a calm water environment for the launch and retrieval of vessels and for on-water display of vessels by manufacturers and retailers onsite
- a mixed-use precinct comprising sales showrooms, display of marine parts, fittings and fixtures, corporate office space, small scale light industry and services such as a yacht club, restaurants and retail outlets
- a TAFE college comprising a 3000 square metre Centre of Excellence and a 1500 square metre workshop devoted to marine industry training
- a large external marina within the Coomera River incorporating 280 multiple sized berths. The external marina will be constructed through a seven hectare widening of the Coomera River.

Approximately 32 hectares of the site will be developed for marine industry use. The remaining area includes a 40 metre naturally vegetated setback along Oakey Creek and other public access facilities. Pedestrian and bikeway paths have been identified to connect with a proposed bridge over Oakey Creek linking the marine precinct to future residential communities at Coomera and to the Coomera Town Centre. In addition, a public access pedestrian zone will be constructed along the riverfront, providing a landscaped promenade alongside the marina.

The proposed site layout and surrounding land uses are shown on the locality map in Appendix 1.

## 4. Project proponent

Harbour Island Pty Ltd (Harbour Island) is acting as proponent on behalf of the parent company, Property Solutions Group Australia and its partnership with Maritimo Pty Ltd.

Property Solutions Group Australia is a Brisbane based company with a mix of industrial, commercial, retail and marina development, ownership and management experience. The company has developed retail and commercial projects including the Centro on James in Brisbane and the Yatala Enterprise Area.

Maritimo Offshore Pty Ltd is a large internationally renowned cruiser boat manufacturer, currently operating from two established sites, one in the Gold Coast International Marine Precinct and the other at Hope Island. The company has staff of approximately 350 and in 2007 produced 100 vessels attracting sales of more than $130 million per year.

The partnership between Maritimo and Property Solutions was formed specifically to develop the marine precinct land at Coomera, drawing from the respective expertise of the joint venture partners.

## 5. Legislative framework

On 18 April 2008, the CG declared the Gold Coast International Marine Precinct to be a 'significant project' under section 26 of the *State Development and Public Works Organisation Act 1971* (SDPWO Act). Matters considered by the CG in making this declaration included the information provided in an initial advice statement prepared by the proponent, the level of investment necessary for the project, employment opportunities provided by the project, potential impact on the environment, potential effects on relevant infrastructure and the significance of the project to the region and state. The declaration initiated the statutory environmental impact assessment procedure of Part 4 of the SDPWO Act, which requires the proponents to prepare an environmental impact statement (EIS) for the project.

The proponent referred the proposal to the Australian Government Department of Environment, Water, Heritage, and the Arts in accordance with the provisions of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The Australian Government Department of Environment, Water, Heritage and the Arts, decided on 27 April 2008, that the proposal constitutes a controlled action under section 75 of the EPBC Act. The controlling provisions for this project are wetlands of international significance, listed threatened species and communities and listed migratory species.

The statutory impact assessment process under the SDPWO Act is the subject of a bilateral agreement between the Queensland and the Australian Governments in relation to environmental assessment under the EPBC Act. On 6 May 2008 the Australian Government decided that the assessment of the project would be undertaken under the terms of the bilateral agreement.

## 6. Purpose of the terms of reference

The first step in the impact assessment process is the development of TOR for an EIS for the project to satisfy the requirements of the SDPWO Act.

The proponent will prepare an EIS to address these TOR. Once the EIS has been prepared to the satisfaction of the Coordinator-General, a public notice will be placed in relevant newspapers circulating nationally, in the district and the state. The notice will state where copies of the EIS are available for inspection and how it can be purchased, that submissions may be made to the Coordinator-General about the EIS, how those submission must be made and the submission period. The proponent may be required to prepare a supplementary report to address specific matters raised in submissions made on the EIS.

On completion of the EIS phase, the CG will prepare a report (CG report) evaluating the EIS and other related material, pursuant to section 35 of SDPWO Act. The CG report will include an evaluation of the environmental effects of the project and any related matters. The report will reach a conclusion about the environmental effects and any associated mitigation measures, taking into account all of the relevant material including: the EIS, all properly made submissions and other submissions accepted by the CG and any other material the CG considers is relevant to the project, such as a supplementary report, comments and advice from advisory agencies, technical reports on specific components of the project and legal advice.

The project involves development that will require an application for Development Approval for Material Change of Use and/or Impact Assessment under the *Integrated Planning Act 1997*. Consequently, the CG report may, under section 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 only of the development
- that the approval must be preliminary approval only.

Alternatively the report must state for the assessment manager:

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

Further, the report must:

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

Further to the above *Integrated Planning Act 1997,* other approvals or resource allocations are likely to be required under the following*: Coastal Protection and Management Act 1995; Nature Conservation Act 1992; Land Act 1994; Transport Operations (Maritime Safety) Act 1994*; and the *Dangerous Goods and Safety Management Act 2001.*

## 7. Finalising the terms of reference

The draft TOR was made available for public and advisory agency comment over the period from 15 October 2008 until 17 November 2008. Thirteen submissions were received on the draft TOR from the following advisory agencies:

- Department of Education, Training and the Arts
- Environmental Protection Agency (EPA)
- Department of Main Roads
- Department of Employment and Industrial Relations
- Department of Communities
- Department of Primary Industries and Fisheries (DPIF)
- Department of Emergency Services

- Department of Natural Resources and Water (DNRW)
- Queensland Transport
- Gold Coast City Council
- Department of Housing
- Queensland Health
- Queensland Treasury

No public submissions were received during the public comment period.

Regard was had to all comments received on the draft TOR in finalising these TOR.

## 8. General EIS guidelines

The purpose of the EIS is to identify and assess potential environmental, social and economic impacts of the project and, where possible, to identify how adverse impacts would be avoided or mitigated. Direct, indirect and cumulative impacts should be fully examined and addressed, where practical. 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. The information should be presented so that non-technical persons may easily understand it. The EIS should include:

- a description of the relevant aspects of the existing social, economic, natural and built environment
- a description of the development proposal and means of achieving the development objectives
- definition and analysis of the likely impacts of the development on the environment, including comprehensive description of the data used for providing baseline information to predict impacts of the development and associated activities
- a framework against which government decision-makers can consider the environmental aspects of the proposal and set conditions for approval to ensure environmentally sound development
- a consolidated list of measures proposed to mitigate adverse effects
- recommendations on the need for and contents of any environmental management plans (EMPs) and/or operational plans to mitigate adverse effects.

The main report should be supported by appendices containing relevant data, technical reports and other sources of the EIS analysis. In preparing the EIS, predictions of environmental impacts should be based on scientifically supported studies and technical data. A description of the methodology adopted for impact studies should be provided along with commentary on the scientific reliability and statistical validity of predictions. Any residual impacts that cannot be quantified should be described.

The EIS should state the criteria adopted in assessing the project, such as compliance with relevant legislation, policies, standards, community acceptance and minimization of risks.

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.

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.

Specific types of relevant impacts requiring investigation are set out in Part B of these TOR. However, the EIS may need to address other issues or aspects that emerge during investigations. It is the proponent's responsibility to ensure that adequate studies are undertaken and reported.

Within these TOR, the term 'project' includes all activities undertaken on lands covered by the proposed development, channel and other dredging or dredge material disposal, access required for construction purposes and supporting project infrastructure.

The EIS should explain how the EIS responds to these TOR. The EIS documentation is to include appendices containing at least the following:

- a copy of this TOR
- a list of persons and agencies consulted during the EIS
- a list of advisory agencies with an appropriate contact
- the names of, and work done by, all personnel involved in the preparation of the EIS.

## 9. EIS objectives

The objectives of the EIS are as follows:

- to provide information on the proposal and development process to the community and decision makers
- to comprehensively identify and evaluate all relevant issues associated with the proposal
- to evaluate the proposal with respect to appropriate policies, such as the South East Queensland Regional Plan and relevant state planning policies
- to identify all potential environmental, social and economic impacts of the proposal, and recommend design and operational measures required to minimise and manage adverse impacts and enhance benefits
- to engage with the community and relevant stakeholders in the process of identifying, assessing and responding to the impacts of the proposal
- to identify all necessary licences, planning and environmental approvals including approval requirements pursuant to the *Environment Protection and Biodiversity Conservation Act 1999 (Cwlth), Integrated Planning Act 1997, Environmental Protection Act 1994, Fisheries Act 1994, Nature Conservation Act 1992, Coastal Management and Protection Act 1995, Aboriginal and Cultural Heritage Act 2003* and other legislation and the Gold Coast Planning Scheme
- to provide an input to the decision-making process, assisting with the determination of whether to accept or modify the proposal, approve it with conditions or carry out further studies.

## 10. Stakeholder consultation

The proponent should undertake a comprehensive program of consultation with stakeholders identified through the EIS process. The program should provide an opportunity for interested parties to obtain adequate information about the project, to raise issues and to receive feedback from the proponent on how the proponent intends to address the issues and mitigate adverse impacts of the project. Consultation with advisory agencies should be the principal forum for identifying legislation, policies, regulations and guidelines relevant to the project and EIS process.

The proponent should provide opportunities for all stakeholders and the general public to obtain information about, and informed comment on, the project through such forums as public information sessions. As part of this EIS process, consultation will also be undertaken to better understand the social impacts of the proposed project and opportunities for mitigation of those impacts.

Culturally sensitive information should not be disclosed in the EIS or any associated documents and the disclosure of any such information should only be in accordance with the arrangements negotiated with the traditional custodians of the information. Confidential

information to be taken into consideration in evaluating the EIS should be marked as such and included as a separate attachment to the main report.

## 11. General EIS format

The EIS is to 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:

- with resolution equivalent to the printed document for distribution to the stakeholders
- as suitable for placement on the internet in Adobe® PDF format. 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 CG in the early stages of the EIS process.

## Part B: Specific requirements of the EIS

The EIS should include the following sections but need not be limited to these sections or inferred structure.

### Executive summary

The function of the executive summary is to convey the most important aspects and key findings of the EIS in a concise and readable form. It should use plain English and avoid the use of jargon. The executive summary should be written as a comprehensive 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 executive summary must 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 to and need for the project, including the consequences of not proceeding with the project
- an outline of the alternative options considered and reasons for the selection of the proposed development option
- a brief description of the project (pre-construction, construction and operational activities) and the existing environment, utilising visual aids where appropriate
- an outline of the principal environmental impacts predicted and the proposed environmental management and monitoring strategies (including waste minimisation and management) and commitments to avoid, or where avoidance is not possible, minimise and mitigate the significance of these impacts.

### Glossary

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

# 1 Introduction

The introduction should clearly explain the background and purpose of the EIS, to whom it is directed and should contain an overview of the structure of the document.

## 1.1 Proponent

This section should include details of the proponent, including information regarding joint venture partners, business structure, record of and expertise in similar projects it has carried out elsewhere.

## 1.2 Project description

A brief description of the key elements of the project should be provided and illustrated. Detailed descriptions of the project should follow in Section 3.

## 1.3 Project context

The EIS should discuss the project in a local and regional context, including providing a summary of marine industry developments within the project region and discuss the strategic directions of the marine industry.

## 1.4 Environmental impact assessment process

### EIS methodology

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

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

### Objectives of the EIS

This section should provide a statement of the objectives of the EIS process. The structure of the EIS can then be outlined as an explanation of how the EIS will meet its objectives.

The role of the EIS in providing information for the formulation of EMPs should be discussed.

### Public consultation process

An appropriate public consultation program is an important component of the EIS process. This section should outline the methodology that will be adopted to:

- identify stakeholders and how their involvement in the EIS process will be 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 will be integrated into the EIS process and future site activities, including opportunities for engagement and provision for feedback and action if necessary.

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 address issues from project planning through commissioning and project operations. A consultation plan should be prepared during the initial phase of the EIS process. This should identify:

- types of consultation activities to be undertaken
- consultation timing
- target stakeholders and community representatives
- integration with other EIS activities and project development processes
- communication protocols
- reporting and feedback arrangements.

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

### Submissions

Readers should be informed when submissions will be taken into account in the decision-making process. The EIS should inform the reader how to make submissions and what form the submissions should take.

## 1.5 Project approvals

### Relevant legislation and policy requirements

This section should explain the legislation and policies controlling the approvals process.

Reference should be made to the *Integrated Planning Act 1997* and other relevant Queensland laws particularly the *Environmental Protection Act 1994*, *Coastal Protection and Management Act 1995*, *Fisheries Act 1994* (and *Fisheries Regulation 1995*), *Vegetation Management Act 1999*, *Nature Conservation Act 1994*, *Marine Parks Act 2004*, *Land Act 1994*, *Water Supply (safety and reliability) Act 2008* and the *Transport Infrastructure Act 1994*. Any requirements of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* should also be included.

Local government planning controls, local laws and policies applying to the development should be described including the Gold Coast City Council Planning Scheme and relevant local plans, policies and codes.

This information is required to assess how the legislation applies to the proposal, which agencies have jurisdiction and whether the proposed impact assessment process is appropriate. A list of the approvals required for the project and the expected program for applications should be included.

### Planning processes and standards

This section should discuss the project's consistency with existing land uses or long-term policy frameworks for the area (e.g. as reflected in local and regional plans, such as the *South East Queensland Regional Plan 2009 - 2031*), and with legislation, standards, codes or guidelines available to monitor and control operations on site. This section should refer to all relevant state and regional planning policies. This information is required to demonstrate how the proposal conforms with state, regional and local plans for the area.

## Accredited process for controlled actions under Commonwealth legislation

This project has been determined to be a controlled action under the Australian Government *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). In this regard, the Australian Government has accredited the state EIS process for the purposes of the Australian Government assessment under Part 8 of the EPBC Act.

It is necessary for the EIS to address potential impacts on the matters of national environmental significance that have been identified in the 'controlling provisions' for the project. In this case the matters of national environmental significance are as follows:

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

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

### *A description of the affected environment relevant to the matters protected*

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

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

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

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

### *Assessment of relevant impacts and mitigation measures*

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

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

The discussion of impacts to the relevant matters protected should address all relevant impacts and provide sufficient justification for all conclusions reached on specific impacts.

In some cases impacts may be relevant to more than one protected matter, for example when the species is listed as both a migratory and threatened species under the EPBC Act. In such cases the impacts may be addressed together, clearly stating the relevance of the impact to the different matters protected.

The following potential impacts may need to be addressed in the EIS. The impacts are provided as a guide for specific matters of national environmental significance.

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

An action is likely to have a significant effect on wetlands of international importance if one or more of the following occur:

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

### *Impact on listed threatened species and communities:*

Potential impacts vary depending on whether the species is extinct in the wild, endangered or vulnerable but generally if one or more of the following occur:

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

### *Impact on a listed migratory species:*

Potential impacts would include direct impact on the species if one or more of the following occur:

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

# 2 Project need and alternatives

## 2.1 Project justification

The justification for the project should be described, with particular reference made to the economic and social benefits, including employment and spin-off business development which the project may provide. The status of the project should be discussed in a regional, state and national context. An overall assessment of the need for the various elements of the project is required with regard to the following matters:

- the implications of the project for the Queensland Government's commitment to expanding and supporting Queensland's recreational boat building and service industry and its implementation of the Queensland Super Yacht Strategy and Marine Industry Training and Skills Forum plan and other relevant policies or plans
- potential benefits for the regional tourism industry
- need for the project against existing and proposed marina facilities in the region
- potential benefits for the regional marine industry
- need for commercial and retail facilities as part of the project
- need for the proposed marine industry training facility
- expected community, regional, state or national economic benefits (including anticipated capital expenditure, peak construction and operational jobs on a FTE (full time equivalent) basis)
- identify the anticipated social benefits for the project in a 'balance sheet' against any perceived social detriments
- other expected benefits.

## 2.2 Alternatives

This section should:

- provide general information on any alternative locations or design options that were considered, including the option of not proceeding with the development. Feasible alternative uses of the site should also be outlined including existing use (considering its value as a coastal habitat resource). This section should consider alternative buffers to Oakey Creek and describe reasons for the chosen buffer and why others were rejected.
- discuss the options for dredge material disposal and reasons for choosing the preferred material disposal site. Indicate any constraints to the different options for disposal.
- describe the social, economic, ecological and technical criteria for selection of the preferred project option
- provide sufficient detail to enable understanding of the reasons for selection of the preferred option and for rejection of alternatives.

The EIS should describe any prudent and feasible alternatives to the project or specific elements of the project. These alternatives should be discussed in sufficient detail to make clear the reasons for preferring certain options and rejecting others. The reasons for choice of the preferred option should be explained, with reference to the adverse and beneficial effects used as the basis for selection as well as compliance with government policy and with the principles and objectives of ecologically sustainable development.

# 3 Project description

The objective of this section is to describe all components of the total project in detail from construction activities to long term operations. The project description allows further assessment of approvals which may be required and how they may be managed through the life of the project.

## 3.1 Ecologically sustainable development

A brief summary of the proposal's compatibility with the concepts of ecologically sustainable development and other relevant policy instruments such as the standard criteria defined in the *Environmental Protection Act 1994* and the *Fisheries Guidelines for Fish-Friendly Structures* (Department of Primary Industries and Fisheries Policy FHG006) should be presented. Consideration should focus on *The National Strategy for Ecologically Sustainable Development*, published by the Commonwealth Government in December 1992 (available from the Australian Government Publishing Service). A life-of-project perspective should be shown.

### Design principles

The design principles adopted for the marine precinct should be considered in the context of both the *Australian Building Greenhouse Rating* and the Green Building Council's *Green Star Environmental Rating System for Buildings* in the design, construction and operation of the proposed development. The Gold Coast City Council Planning Scheme Policy 5 - *Energy Conservation [Design for Climate]* should be considered. Design principles could include:

- water sensitive use and design such as rainwater tanks and/or re-use of water opportunities, where appropriate
- public spaces designed to promote social interaction and to be safe and accessible for users of all ability levels (as per the *Disability Discrimination Act 1992* and the *Queensland Anti-discrimination Act 1991*)
- subtropical design principles to minimise energy demand associated with heating and cooling as well as enhanced amenity
- best practice environmental management
- waste management and minimisation strategies
- industry best practice standards for the design of marinas
- innovative construction methods and materials.

Design principles should also incorporate the *Principles of Crime Prevention through Environmental Design.* The principles are outlined in the draft *Crime Prevention through Environmental Design Guidelines for Queensland*, which includes information on appropriate responses to design, ownership, management, access control, individuality and natural surveillance.

## 3.2 Project overview

The various elements of the project should be described and illustrated with maps and diagrams (at a suitable scale) as required. Details should be provided of the project's components, including:

- the indicative location and layout of the industrial, retail and commercial facilities, including any environmental buffer zones and open space and landscaping
- training facilities such as the proposed TAFE and Centre of Excellence including consideration of student transport and accommodation for international students
- layout of marina berths

- dredged areas and dredge disposal ponds
- waterways and overland drainage pathways
- vehicular access, car parking and traffic flows
- proposed construction sequencing and methodology.

## 3.3 Location

This section should describe the regional and local context of the project and associated infrastructure, illustrated on maps at suitable scales. Real property descriptions of the project site should be provided. Maps should show the precise location of the project area, and in particular:

- the location and boundaries of land tenures, in place or proposed, to which the project area is or will be subject
- the location and boundaries of the project footprint, including easement widths and access requirements
- the location of the project in relation to any sensitive receptors including residences, remnant vegetation, vegetation that is on state land, on waterways, fish habitat areas, marine plants and marine parks
- the location of any proposed buffers to sensitive receptors
- the location of any proposed buffers surrounding the working areas (for construction).

## 3.4 Construction

### Pre-construction activities

This section should briefly describe pre-construction activities, including:

- any land acquisitions required, be it in full or as easements, leases, etc
- the land acquisition process
- site establishment requirements for construction facilities.

### Construction

The extent and nature of the project's construction phase should be described, including any staging of the proposal, with illustrations showing site boundaries, development sequencing and timeframes. The general description should include:

- the layout, development, sequencing and timeframes for construction of the various precincts within the project site including the marina, marine industry and public open space areas
- the design, construction standards, construction methods and site management associated with the project
- works needed off-site (e.g. erosion protection)
- the number and type of vehicles, machinery and equipment used for construction activities
- general construction requirements including types, sources, quantity and method of transport of construction material, including the nature, extent and scheduling of proposed earthworks including requirements for import of fill
- layout, staging and construction methodology of all infrastructure necessary for development and operation of the project, including any roads, pipelines, power, telecommunications and any other services

- details of the construction of the marina are to be provided including:
  - sequencing of activities undertaken to construct the marina basin and external marina
  - how the excavation of the marina basin will be undertaken, in particular the measures that would be used to avoid or minimise impacts to adjacent waterways
  - the proposed use or disposal of excavated material including treatment and handling of acid sulfate soils
  - layout, staging and construction methodology of proposed structures including revetments, piling, pontoons and hardstand areas.
- estimated numbers and roles of persons to be employed
- a description of any chemicals and hazardous goods to be utilized (if any) during construction
- allowance for provision of power back-up in emergency and potential impact on local supplies in the area
- site security, including public safety and emergency aid/medical facilities to be provided on site.

### Construction dredging

A description of the proposed dredging in the Coomera River and on-site is to be provided, including:

- the location area and volumes of dredging required (including cross sectional drawings)
- details of the dredging methodology including a dredging program and details of typical dredging plant
- details of the characteristics of dredged materials including potential contaminants
- a description of the locations and dimensions of dredge spoil disposal areas on land or in water, including information on alternative methods of dredge spoil disposal and any beneficial use of dredged materials.

The historical dredging requirements within the Coomera River should be described with particular emphasis on dredging intervals and depth, including any changes that capital dredging may have on future maintenance dredging requirements in the Coomera River.

## 3.5 Operations

### Site operations

This section should describe the proposed operation of the project. A detailed description is required of all operations that would be environmentally relevant activities as prescribed in the *Environmental Protection Act 1994*. Operational issues to be addressed include (but are not limited to):

- a description of the buildings, structures, plant and equipment to be employed during site operations
- a brief description of ongoing programs to monitor impacts of the project and maintenance dredging on the receiving waters and marine and estuarine environment. EMPs required to be implemented should be described.
- the location and nature of shipyard operations including any abrasive blasting and painting
- the nature, sources, location and approximate quantities of all chemicals to be handled on site

- the use of bunds, dry-break couplings and containment for fuels, oils, gases and other environmentally hazardous substances during transfer, use and storage should be identified together with the development of appropriate contingency plans for containing and cleaning up spills
- water use and the approximate amount and characteristics of solid and liquid wastes produced and method of disposal
- water use and equipment required for fire fighting and emergency situations
- details of sewage disposal for vessels utilising the marina
- details of predicted vessel movements in the Coomera River as a consequence of the project, including the maximum displacement and draft of vessels intended to be catered for by the proposed marina
- maintenance provisions for all structures within the marina precinct, including responsibility for maintenance works and monitoring requirements.

### Maintenance dredging

Details of the potential maintenance dredging of the artificial water (internal marina) and the navigation channels are to be provided including:

- the expected amount, frequency and cost of maintenance dredging required to maintain the marina and associated waterways
- details of the dredging methods to be employed including a description of the typical dredging plant, timing of maintenance dredging and dredge material disposal
- measures for minimizing turbidity plumes and release of contaminants including water quality objectives to be maintained during dredging and details of the proposed water quality monitoring program
- a description of the locations and dimensions of dredge spoil disposal areas on land or in water, including information on alternative methods of dredge spoil disposal and any beneficial use of dredged materials.

### Workforce and accommodation

This section should provide details on the employment requirements and skills base of the required workforce for both the construction and operational phases of the project, including:

- size and source of construction and operational workforce
- information regarding the occupational groupings required for the workforce
- new skills and training required in relation to the project.

## 3.6 Infrastructure requirements

This section should provide a description of the requirements for constructing, upgrading or relocating any infrastructure in the vicinity of the project. This section should include layout plans showing the location of any infrastructure elements in relation to the project site.

### Traffic and transport

The assessment of traffic and transport impacts should be presented in a separate report for each project affected mode (e.g. road, rail, air and sea). These assessment reports must provide sufficient information to allow an independent assessment to be made of how existing transport infrastructure will be affected by project transport at the local and regional level.

Proposed new or alterations to transport related infrastructure required by the project should be described. This includes modification to roads for access works and realignments, and rail lines, including level crossings and services, air and sea port facilities, if relevant. The EIS

must also include details on the construction of any project related plant and utilities, within or impacting on the jurisdiction of any transport authority.

This section should also include:

- expected volumes of project inputs and outputs of transported raw materials, wastes, hazardous goods, finished products and so on for all phases of the project
- how identified project inputs and outputs will be moved through the transport network (volume, composition, trip timing and routes)
- traffic generated by workforce personnel including visitors (volume composition, timing and routes)
- likely heavy and oversize loads (volume, composition, timing and routes) highlighting any vulnerable bridges and structures along proposed routes.

The EIS should also consider requirements for public transport, pedestrian and cycling networks and should outline proposed linkages to the project site.

### Energy and telecommunications

The energy and telecommunications requirements of the project should be identified and described. A description of electricity, natural gas and other solid and liquid fuel requirements for the construction and operation of the project should be provided.

Existing electrical networks, proposed upgrades and the locations of any easements should be shown on appropriately scaled maps.

The capacity of existing energy and telecommunications networks to service the project must be determined in consultation with service providers.

Any energy efficiency measures proposed should be briefly described in the context of any Commonwealth, state and local government policies.

### Water supply

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

Appropriate water conservation and management measures should be outlined and any opportunities for recycled water use should be detailed.

Determination of potable water demand should be made for the project, including the temporary demands during the construction period, demand from visiting marine vessel and ongoing demand from commercial and industrial activities within the marine precinct. Details should be provided of any existing town water supply to meet such requirements. If water storage and treatment is proposed on site, for use by the site workforce, then this should be described.

### Stormwater drainage

This section should provide a description and concept plan for the proposed stormwater drainage system and the proposed treatment and disposal arrangements including proposed discharge points. A stormwater management plan should be prepared for the site that addresses stormwater quantity and quality and incorporates the principles of water sensitive urban design.

Water quality objectives for discharge of stormwater should be specified and stormwater quality improvement devices should be proposed to achieve the stated objectives.

If storm water drainage systems are proposed to discharge to tidal waters, details of any development permit required to undertake operational work within the coastal management district and/or tidal work and marine plant disturbance should be provided. If a development

permit is required, information will need to be provided in accordance with the Environmental Protection Agency (EPA) *Guidelines for Operational Work on State Coastal Land and/or Constructing Tidal Works.*

### Sewerage

This section of the EIS should describe the sewerage infrastructure required to service the project including the location and capacity of sewage reception and handling facilities associated with the marine vessels. An assessment should be undertaken of potential impacts on existing and planned sewerage infrastructure to determine the requirement for infrastructure upgrades as a result of the project, including estimated costs of required upgrades.

## 3.7 Rehabilitation

This section should present general strategies and methods for decommissioning and rehabilitation of the project should it ever be required.

# 4 Environmental values and management of impacts

This section should address all elements of the environment, such as land, water, 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.

The functions of this section 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
- describe measures taken to avoid, or where avoidance is not possible, measures to minimise and mitigate impacts on environmental values
- describe any cumulative impacts on environmental values caused by the project, either in isolation or by combination with other known existing or planned developments
- present environmental protection objectives and the standards and measurable indicators to be achieved by the project
- 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 should be discussed. The Queensland Government Environmental Offsets Policy should be considered for remaining impacts after all viable mitigation measures.

The EIS should assess the impacts of pre-construction, construction and operation of the project. The EIS should consider project specific impacts, such as any proposed increase in size and number of vessels accessing the Coomera River as a result of the development and subsequent environmental impacts. The impacts associated with potential ongoing maintenance, access and servicing resulting from the development and any other facilities required for the project should also be assessed.

The EIS should detail the environmental protection measures incorporated in the planning, construction, commissioning, operations, decommissioning, rehabilitation and associated works for the project. Preferred measures should be identified and described in more detail than other alternatives.

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

## 4.1 Climate and natural disasters

This section should describe the local and regional meteorological environment and climate, including seasonal and diurnal variations. Ambient conditions should be described in sufficient detail to allow identification of elements that may influence the project. Climatic factors should include rainfall patterns (including magnitude and seasonal variability of rainfall), air temperatures, humidity, wind (direction and speed) and any other special factors (e.g. temperature inversions) that may affect management of the project.

Historic weather patterns in the project area and seasonal conditions (e.g. cyclones, thunderstorms, floods and storms) that may influence timing and/or construction methods should be discussed, including how this would be managed. Extremes of climate (e.g. droughts, floods, etc.) should be discussed with particular reference to water management at the project site.

The vulnerability of the area to natural or induced hazards, such as flood, cyclone and bushfire should be addressed, including increased risk of extreme events due to climate change. The relative frequency and magnitude of these events should be considered together with the risk they pose to the construction and operation of the project.

### Flood plain management

A comprehensive flood study for a range of flood events up to ARI 100 years should be included in the EIS, and which considers:

- quantification of flood impacts on surrounding properties and external to the project site from redirection or concentration of flows
- identification of likely increased flood levels, increased flow velocities or increased time of flood inundation as a result of the development
- any potential for loss of flood plain storage, including detailed calculations and triangulated surface meshes produced in computer terrain modelling software.

The comprehensive flood study will assume that existence of the proposed future intra-regional transport corridor taking into consideration its stormwater drainage and landfill requirements.

The flood report should address the Gold Coast City Council's *Planning Scheme Constraint Code for Flood Affected Areas*. The Gold Coast City Council's two-dimensional hydraulic model should be utilised for flood impact studies.

Reference must be made to any relevant studies undertaken by the Gold Coast City Council in relation to flooding and storm vulnerability. Hazard and risk assessment and management should be addressed in Section 4.13.

### Climate change adaptation

Climate change, through alterations to weather patterns and rising sea levels, has the potential to significantly impact on coastal developments. Therefore, it is important that the EIS specifies how the project design is adaptive to climate change. Consequently, the EIS should provide an assessment of the project's vulnerability to climate change and describe possible adaptation strategies.

## 4.2 Land

This section should detail the existing environment for all land areas associated with the project. This section should also describe the potential for the construction and operation of the project to change existing and potential land uses of the project sites and adjacent areas.

### Topography and land form

This EIS should provide a detailed description of the nature and characteristics of the terrain, within and adjacent to the project area, including soil types and major land units. Coastal and shoreline geomorphology should be characterised and supported by mapping including quantification of sediment movements for the current (base case) and the proposed development case.

Significant features of the landscape should be included on the maps. Commentary on the maps should be provided highlighting any significant topographical features.

Maps should show contours at suitable increments in relation to Australian Height Datum (AHD). The location of key tidal planes should be shown.

## Geology and soils

### Description of existing geology and soils

The EIS should provide a description, including maps, 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. Particular reference should be made to those properties of the soils that would influence erosion potential and stormwater run-off quality. Information should also be provided on soil stability and suitability for construction of all project facilities. Soils should be mapped at a suitable scale and described according to the *Australian Soil and Land Survey Field Handbook* (Gunn et al 1988 and McDonald et al, 1990) using the *Australian Soil Classification* (Isbell, 1996) and the relevant Gold Coast City development assessment guidelines and specifications.

### Potential impacts on geology and soils and mitigation measures

This section should provide details of any potential impacts and proposed mitigation measures to prevent or control soil erosion and sedimentation as a result of the construction and operation of the project. This may be addressed in accordance with measures detailed in *Soil Erosion and Sediment Control–Engineering Guidelines for Queensland Construction Sites, 1996*. The soils erosion and sediment control plan should be included in the EMP, which should address the management of nutrients of concern for coastal algal blooms (N, P, Fe, C) to prevent/minimise release of these nutrients into estuarine and marine waters.

Analysis of the proposed change in the river width, channel location, tidal flows and impact of this on the long-term geomorphology of the river outside of the project area, particularly any bank stability issues on the neighbouring properties, should be described. Quantification of the sediment movements for the current (base case) and the proposed development case should be provided.

The assessment of impacts and mitigation measures should conform to the Gold Coast City Council *Constraint Code for Sediment and Erosion Control* (Chapter 14) and should include a sediment and erosion control layout plan overlain on the proposed plan of development.

## Acid sulfate soils

### Description of potential acid sulfate soils

An assessment of acid sulphate soils in accordance with the *Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils (ASS) in Queensland 1998* (Revision 4.0 or any updates as they become available) should be carried out for all areas subject to excavation or filling below the level of five metres AHD (Australian height datum) and for wetland areas where the natural hydrology (surface or groundwater) may be affected by the proposal such that oxidation of potential ASS may occur. Additional technical information is available from:

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

### Potential impacts of acid sulfate soils and mitigation measures

The potential for acid generation by disturbance of acid sulfate soils during earthworks and construction should be discussed. Measures to avoid, or where avoidance is not possible, minimise and mitigate impacts should be proposed for all site earthworks and construction activities.

Where required, management measures should be outlined in an acid sulfate soils management plan prepared in accordance with the *Queensland Acid Sulfate Soils Investigation Team (QASSIT) Soil Management Guidelines* and the requirements of State Planning Policy 2/02 *Planning and Managing Development Involving Acid Sulfate Soils (Queensland Government, 2002*. The acid sulfate soils management plan should be prepared in consultation with the EPA and the Department of Natural Resources and Water (DNRW) and should consider management of trace metals (e.g. Fe, Al) in association with acid sulfate soils to avoid, and where avoidance is not possible, minimise discharge into waterways.

## Land use

### Description of existing land use

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

Maps at suitable scales showing existing land uses and tenures, and the project location, should be provided for the entire area and surrounding land that could be affected by the development including accesses. The maps should identify areas of conservation value and marine areas in any locality that may be impacted by the project.

### Potential impacts on land use 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. A description of the following should be included:

- impacts on existing terrestrial land uses should be discussed with regard to existing function and planning intent and strategies for addressing any individual properties affected, either during the construction or ongoing operation of the project, should be identified
- direct and indirect impacts on any areas of high conservation value, including national parks, Ramsar sites, or other areas designated to be of high conservation value (including impacts on accessibility)
- impacts on surrounding land uses and human activities and strategies for minimisation, including:
  - good quality agricultural land
  - key resource areas (refer to State Planning Policy 2/07 *Protection of Extractive Resources and Guideline*)
  - recreational uses
  - residential and industrial uses.
- possible effect on town planning objectives and controls, including local government zoning, the Coomera Local Area Plan, and other strategic plans
- constraints to potential future developments and possibilities of rezoning adjacent to the development area
- potential impacts on state controlled roads
- 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.

### Contaminated land

#### Description of existing contaminated land

A review of the project site, to determine if all or part of the site is on the *Environmental Management Register* or *Contaminated Land Register* is to be undertaken. Maps of any areas listed on the *Environmental Management Register* or *Contaminated Land Register* should be provided and a schedule of further investigations and remediation activities recommended for those land parcels where soil contamination may have an impact on construction activities.

A preliminary site investigation in accordance with the EPA *Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland, 1998* and *The National Environmental Protection (Assessment of Site Contamination) Measures, 1999* should be prepared where evidence of existing or past contamination is encountered and where it may be impacted by the project.

If construction proceeds, the results of site investigations, remediation and validation will need to be certified by a third party reviewer before being submitted to the EPA.

#### Potential impacts of contaminated land and mitigation measures

This section should provide details of any potential impacts from land contamination and proposed mitigation measures in accordance with all relevant guidelines, including:

- a description of the nature and extent of existing or potential contamination at each site and remediation and validation sampling
- the means of preventing land contamination, site management measures to ensure that land contamination does not cause human health impacts or environmental harm.

The means of preventing land contamination (within the meaning of the *Environmental Protection Act 1994*) should be addressed. Methods proposed for preventing, recording, containing and remediation of any contaminated land should be outlined.

## 4.3 Nature conservation

This section of the EIS should provide a comprehensive description of the environmental values of the affected area. Any areas impacted by the project within or adjacent to a sensitive ecological community, including impact footprint, should be discussed. Where the project would impact upon a threatened species or community, the discussion should include reasons why an alternative site layout cannot be adopted and the viability of alternatives considered. The EIS should demonstrate how the project (including all associated infrastructure requirements such as navigation channels) 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, this section should discuss environmental offset requirements in accordance with the *Queensland Government Environmental Offsets Policy (QGEOP)* and taking into account the applicable specific-issue offset policies, as follows:

- *Policy for Vegetation Management Offsets (DNRW September 2007)*

- *Mitigation and Compensation for Works or Activities Causing Marine Fish Habitat Loss (Department of Primary Industries and Fisheries 2002)*
- *Offsets for Net Benefit to Koalas and Koala Habitat (EPA 2006)*
- *Policy for Biodiversity Offsets (consultation draft, EPA 2008)*.

### Sensitive environmental areas

The EIS should identify all areas that are environmentally sensitive in proximity to the project. Particular consideration should be given to koala habitat, saltmarsh wetlands, critical habitat listed under the *Vegetation Management Act 1999*, nature refuges, national parks, conservation parks, declared fish habitat areas, wilderness areas, aquatic reserves, heritage/historic areas or items, national estates, world heritage listings and sites covered by international treaties or agreements (e.g. Ramsar), areas of cultural significance and scientific reserves.

The proximity of the project to environmentally sensitive areas should be shown on a map of suitable scale.

Action plans for protecting rare or threatened species and vegetation types, where identified, should be described, and any obligations imposed by Queensland or Australian Government biodiversity protection legislation or policy should be discussed.

### Terrestrial and aquatic ecology

### Description of existing ecological values

An ecological assessment of the area affected by the project should be undertaken. The level of assessment should be consistent with contemporary best practice standards for ecological assessment (e.g. the Gold Coast City Council Planning Scheme Policy 8 – *Guidelines for Ecological Assessments,* the EPA's *Biodiversity Planning Assessment Version 3.5*), including consideration of seasonality, potential for occurrence of significant species, rarity of species and the sensitivity of the species to disturbance.

Vegetation communities within the affected area should be described at an appropriate scale with mapping produced from aerial photographs and ground-truthing. A discussion of the significance of any native vegetation (including re-growth and restored areas in addition to remnant vegetation and vegetation that is on State Land) from a local, regional, state and national perspective should be included. Special landscape values of natural vegetation communities should be described.

Existing information on plant species may be used instead of new survey work provided that the data are derived from surveys consistent with the above methodology and describe existing conditions.

The occurrence of pest plants (weeds), particularly significant populations of declared plants under the *Land Protection (Pest and Stock Route Management) Act 2002* should be shown on a map at an appropriate scale. A weed management strategy will be required where pest plants are present.

The survey of terrestrial fauna occurring in areas affected by the project should describe broad distribution patterns in relation to vegetation, topography and substrate. Wildlife corridors and refugia on or adjacent to the project site should be identified and mapped. The existence of feral or exotic animals should be discussed.

A description of habitat requirements and the sensitivity of aquatic flora and fauna species to changes in flow regime, water levels and water quality in areas affected by the project should be described. This should include detailed mapping of the occurrence, health and density of aquatic flora and fauna within and adjacent to, the project site.

Where marine plants are proposed to be disturbed, a development approval under the *Integrated Planning Act 1997* will be required. Marine plants in the vicinity of the project should be shown on a map of a suitable scale and the nature of the impacts should be

discussed in detail. Description of marine plants should be undertaken in accordance with the relevant Department of Primary Industries and Fisheries operational policies.

Methodology used for flora and fauna surveys should be specified in the appendices to the report. Any existing information should be revised and comments provided on whether vegetation areas are degraded, cleared or affected in ways that would affect their environmental value. The EIS should indicate how well any affected communities are represented and protected elsewhere in the sub-region where the project occurs.

### Potential impacts on ecological values and mitigation measures

The EIS should address any actions of the project or likely impacts that require an authority under the *Fisheries Act 1994*, *Marine Parks Act 1994*, *Nature Conservation Act 1992* and/or would be assessable development for the purposes of the *Vegetation Management Act 1999*. The description should include all direct and indirect impacts on terrestrial and aquatic communities affected by the project. Objective and practical methods to minimise impacts on ecological communities should be identified. In particular, the EIS should describe:

- direct and indirect impact on regional vegetation ecosystems at the project site, including an evaluation of type and amount of vegetation clearing required for the project
- consideration for protecting vegetation communities on-site
- impacts the project may have on terrestrial fauna, wildlife habitat and other fauna conservation values, including direct and indirect impacts due to loss of habitat, food supply, nest sites, breeding/recruiting potential or movement corridors
- details of the proposed methodologies to be used to avoid capture or injury to native fauna as a result of the project's construction and operational works, and if accidental capture or injury should occur the procedures to assess and handle injuries
- consideration of impacts from increased sediment deposition resulting from construction activities and potential impacts on marine biodiversity or ecological processes
- disturbance of marine flora and fauna associated with increased marine vessel traffic and/or changes in water quality or hydrology
- an assessment of the likely effects of the project on the integrity and functioning of adjacent aquatic environments, including wetlands within and adjacent to the site.

The EIS should include a discussion of the significance of identified impacts on ecological communities at a local, catchment, bioregional, state or national level. Any strategies to mitigate identified adverse impacts from the project on flora and fauna, for incorporation into an EMP, should be identified and discussed.

The EMP should include a weed management plan, where required, and control measures to prevent increases in local populations and spread of biting insect species of pest and health significance. These sections of the EMP should be prepared in consultation with local government environmental officers.

The existence of rare or threatened species and communities should be specifically addressed under the EIS section dealing with sensitive environmental areas.

## 4.4 Water resources

This section should describe the existing environment for water resources, including surface and groundwater resources, that may be affected by the project. All environmental values, as defined under the *Environmental Protection (Water) Policy 1997* and the *National Water Quality Management Strategy (Australian and New Zealand Environment and Conservation Council) 2000* should be described.

## Watercourses and drainage

### Description of the existing watercourses and drainage

A detailed description of regional catchments, sub-catchments and overland flow paths and watercourses within the project site should be provided. Run-off characteristics including water quantity and quality should be described.

A detailed description of the receiving environment should be provided including description of existing sources of contamination, water quality, environmental values and water quality objectives. The description of the receiving environment should consider water quality characteristics in both a seasonal and episodic (e.g. flooding) context. Water quality description should include:

- physical, chemical and biological characteristics (e.g. pH, dissolved oxygen, suspended solids, turbidity, total nitrogen, total phosphorous, total and dissolved aluminium, total and dissolved iron, faecal coliforms and chlorophyll (a)
- current sources and nature of any pollutants
- physical processes that may influence water quality including currents, tides, storm surge, freshwater flows and their interactions in relation to pollutant transport.

Existing water quality data (if available) should be supplemented by water quality monitoring to establish baseline water quality in the area against which potential impacts of the project can be considered.

This section should define and describe the water quality objectives (WQO) required to protect the environmental values identified, including discussion of why they are suitable indicators for the environmental values. Impacts on water quality as a result of climate change should be considered. The description of surface water run-off characteristics and the receiving environment should be undertaken in accordance with relevant state and local government requirements, including the *Environmental Protection (Water) Policy 1997* and the relevant Gold Coast City development assessment guidelines and specifications. The stormwater quality objectives should consider the targets of relevant action plans within the *South East Queensland Healthy Waterways strategy 2007-2012*.

### Potential impacts on watercourses and drainage and mitigation measures

A detailed assessment of the potential direct and indirect impacts of the project on run-off quantity and quality and the water quality of the receiving environment should be undertaken. The assessment should consider both construction and operation stages.

Potential impacts of changes in run-off quantity should be identified including environmental flows, erosion and scour and any potential impacts on physical integrity, fluvial processes and morphology of water courses, including riparian zone vegetation and form.

The assessment of water quality should consider as a minimum:

- dredging and dredge material disposal with particular attention to visual amenity (foaming), suspended solids, pH, dissolved oxygen, organic carbon, phosphorus and nitrogen
- potential accidental discharge of contaminants during construction and operation of the project
- release of contaminants from marine structures and vessels, including antifouling coatings
- stormwater run-off from developed areas.

The assessment of potential water quality impacts should include an analysis based on both historical climatic regimes and predicted climatic regimes (changes to the frequency and intensity of rainfall, and extreme events such as flood, storm surge).

The assessment should propose measures to mitigate, manage and monitor any impacts including the preparation of a stormwater management plan in accordance with relevant state and local government requirements, including the *Environmental Protection (Water) Policy 1997* and the relevant Gold Coast City development assessment guidelines and specifications.

### Groundwater

### Description of the existing groundwater environment

A groundwater survey should be undertaken to review the quality and quantity of groundwater in the project area, including groundwater use in neighbouring areas. This section should identify groundwater characteristics, recharge sources, direction of flow and existing levels across the project area.

Data obtained from the groundwater survey should be sufficient to enable specification of the major ionic species present in the groundwater, pH, electrical conductivity and total dissolved solids. The groundwater assessment should also be consistent with relevant guidelines for the assessment of acid sulfate soils, including sufficient spatial and temporal monitoring to accurately characterise baseline groundwater characteristics.

### Potential impacts on groundwater and mitigation measures

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

Matters to be addressed should include clear descriptions of the following.

- assessment of the impact of the project on the local groundwater regime caused by altered porosity and permeability from land disturbance
- an assessment of the potential to contaminate groundwater resources and measures to avoid, or where avoidance is not possible, mitigate and remediate any potential contamination should be identified
- the extent of the area within which groundwater resources are likely to be affected by the construction and operation of the project including potential impacts from the disturbance of acid sulfate soils
- an assessment of the likely impact on groundwater depletion or recharge regimes.

A groundwater monitoring program should be developed for monitoring of groundwater quality both prior to commencement of construction and during operation of the project.

## 4.5 Coastal environment

This section should describe the existing coastal environment, which may be affected by the project in the context of coastal values identified in the *State Coastal Plan* (Queensland's Coastal Policy) and environmental values as defined by the *Environmental Protection Act 1994* and relevant Environmental protection policies. The *Environmental Protection (Water) Policy 1997* has defined environmental values for waterways that include aquatic ecosystem protection.

This section should demonstrate compliance with relevant policies of any state coastal management plan/s in effect, including where relevant, the necessary analysis to demonstrate a net benefit for the state and 'net gain of coastal resources and values' if required under the plan.

## Coastal processes

### Description of existing coastal processes

Describe the environmental values of the coastal processes of the affected area in terms of the physical integrity and morphology of landforms created or modified by coastal processes, including sediment transport processes and tidal hydraulics, and the dependence of estuarine and marine ecosystems on the existing physical environment.

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

### Potential impacts on coastal processes and mitigation measures

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

- impacts on tidal flows and water levels. The assessment should consider the effects of the proposed marina basin and external marina, and the proposed channel dredging both separately and in combination
- the potential of the proposed works to impact on bank erosion within the Coomera River and adjacent waterways
- impacts of the proposed works on the fluvial geomorphic processes, including the potential for increased sediment and nutrient export
- an assessment of the erosive effects of vessel wash associated with boat traffic generated by the proposed marina. This would be supported by a vessel traffic impact assessment to determine the increase of vessels (size and number) that can be expected as a result of the project relative to the existing situation considering the Coomera Marine Precinct and development further upstream
- a survey of the existing condition of the potentially affected banks in the Coomera River and identification of the erosion potential of those banks and likely need for bank protection works, and who is responsible for identified bank protection works.

This assessment should also provide a discussion of the potential impacts associated with extreme events such as storm tide flooding. This must include an assessment of the vulnerability of the project to storm tide flooding and the potential of the project to affect vulnerability to storm tide flooding on adjacent properties.

The following studies (available from Gold Coast City Council) are relevant for these assessments:

- Environmental Inventory for the Coomera River and its Tributaries 2005
- Oakey Creek Catchment, Stormwater Drainage Management Plan 2004
- Saltwater Creek Foreshore Master Plan 2008
- Saltwater Creek Environmental Inventory 2006

### Capital and maintenance dredging

The assessment of impacts on coastal processes should specifically consider capital and maintenance dredging requirements of the project. Information should be provided on the predicted impacts on tidal flows and water levels, siltation that may affect marine flora and fauna and /or biological processes. An assessment of the nature and extent of turbidity plumes from dredging should be undertaken. The assessment of dredging should be consistent with contemporary best practice standards (e.g Australian and New Zealand Environment and Conservation Council *National Ocean Disposal Guidelines for Dredged Material*, Queensland EPA *Guidelines for Dredge Management Plans*).

Measures for minimizing turbidity plumes and release of contaminants should be identified which include water quality objectives to be maintained during dredging activities. The potential rate of sedimentation within adjacent navigation channels as a consequence of the proposed dredging should be discussed.

A strategy for dealing with capital and maintenance dredge spoil should be developed in the context of local and regional dredging requirements, particularly any maintenance dredging requirements of navigation channels necessary to facilitate vessel access to the project.

When considering a strategy for capital and maintenance dredge spoil management due regard should be given to social, environmental and economic issues as part of a net benefit assessment. A net present value assessment of options should also be provided which highlights the expected operational and capital cost of alternatives with all assumptions clearly referenced.

## 4.6 Waste

This section should provide comprehensive description of the waste generated by the project and the strategies to be employed to avoid, or where avoidance is not possible, minimise and manage waste in accordance with best practice waste management and the requirements of the *Environmental Protection (Waste Management) Policy 2000*.

### Waste generation

The EIS should identify and describe all sources of waste associated with construction and operation of all aspects of the project, using schematic diagrams and flowcharts as required for each distinct phase. This section should describe all activities including:

- chemical and mechanical processes conducted on the construction sites (e.g. chemical storage, sewage treatment, power generation, fuel burning, mechanical workshop, fuel storage)
- the amount and characteristics of solid and liquid waste (including run-off from roads, plant areas, chemical storage areas and workshops) produced on-site by the project
- any waste treatment process
- hazardous materials to be stored and/or used on-site, including environmental toxicity data and biodegradability.

Descriptions should also include (using maps and plans as appropriate) showing:

- waste generation points
- storage methods and facilities
- quantities
- disposal arrangements
- recycling/reuse arrangements.

### Waste management

Having regard for best practice waste management strategies, the *Environmental Protection (Waste Management) Policy 2000* and the *Environmental Protection (Waste Management) Regulation 2000*, the proposals for waste avoidance, reuse, recycling, treatment and disposal should be described.

This section should discuss waste management strategies, including reduction, reuse, recycling, storage, transport and disposal of waste, and measures to minimize attraction of vermin, insects and pests. Market demand for recycled waste should be quantified. The potential impact of all wastes to be generated during construction and operation should be considered.

Details should be provided of each waste in terms of:

- operational handling and fate of all wastes including storage
- on-site treatment methods proposed for any wastes
- methods of disposal (including the need to transport wastes off-site for disposal) proposed to be used for any trade wastes, liquid wastes and solid wastes
- the potential level of impact on environmental values
- measures to ensure stability of the waste storage areas and impoundments
- methods to prevent, seepage and contamination of groundwater from stockpiles and/or storage areas and impoundments
- market demand for recyclable waste (where appropriate)
- decommissioning of the construction site.

## 4.7 Air quality

### Description of existing air quality

This section of the EIS should describe the existing air quality that may be affected by the project in the context of environmental values as defined by the *Environmental Protection Act 1994* and *Environmental Protection (Air) Policy 2008*. These descriptions should include any baseline monitoring results. Emissions sources (quantity and characteristics) in the vicinity of the project site and nearby sensitive receptors should be identified and presented with the aid of maps at a suitable scale.

### Potential impacts on air quality and mitigation measures

This section of the EIS should describe in detail the expected quantity and quality of all air emissions (including particulates, gaseous, and odorous compounds) from the project during construction and operation. The proposed level of emissions of dust, fumes and odours should include emissions during both typical and worse case conditions. The assessment of air emissions should consider at least the following matters:

- construction activities likely to cause air emissions including excavation and filling, site compounds and stockpiles
- a review of operational impacts associated with increased road and river traffic emissions and air quality issues associated with servicing the project
- the human health risk associated with emissions from all hazardous or toxic pollutants
- the potential for nuisance and amenity impacts associated with the project.

The emissions from the project should be modelled using a recognized atmospheric dispersion model to identify changes in existing conditions. A comparison with air quality goals contained in the *National Environmental Protection Measures for ambient air quality (1998)*, the *National Health and Medical Research Council national guidelines for control of emissions from stationary sources (1985)* and the *Environmental Protection (Air) Policy 2008* should be included in the discussion.

Features of the project designed to suppress or minimize emissions including dusts and odours, should be detailed in this section. Objectives for protecting and or enhancing environmental values for air quality should be identified, including a discussion on how nominated quantitative standards and indicators may be achieved.

### Greenhouse gas emissions

The EIS should provide an inventory of projected annual greenhouse gas emissions from construction equipment and plant, with total emissions expressed in '$CO_2$ equivalent' terms.

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

A description of the proposed measures (alternatives and preferred) to implement energy efficiency measures should be described. This section should consider actions to achieve energy efficiency measures either through design principles or technology and how these measures compare with current national best practice standards.

The EMP in the EIS should include a specific module to address energy efficiency.

## 4.8 Noise and vibration

### Description of acoustic environmental values

This section should describe the existing noise and vibration environment that may be affected by the project in the context of environmental values as defined by the *Environmental Protection Act 1994* and the *Environmental Protection (Noise) Policy 2008*.

All existing and future sensitive receptors as defined by the *Environmental Protection (Noise) Policy 2008* should be identified within the vicinity of the project and located on a map at a suitable scale. Background noise levels, including daytime and night time measurements, should be monitored at sensitive receptors likely to be impacted by the project.

### Potential impacts on acoustic environmental values and mitigation measures

The EIS should describe the modelled impacts of noise and vibration generated during the construction and operational phases of the project. In particular any places of work, residence, recreation, education or worship should be considered. Potential noise contours should be prepared and mapped using a suitable acoustic model based on the proposed generation of noise associated with the operation of the project.

An analysis of noise and vibration impacts should include:

- the levels of noise and vibration generated during construction of the project and ancillary activities (e.g. access roads) and operations, assessed against current typical background levels
- potential emission of low-frequency noise (noise with components below 200Hz) where it may impact sensitive receivers, should be described
- information on the magnitude, duration and frequency of any vibration from construction and operation of the project should be provided, including schedules
- information should be supplied on blasting which might cause ground vibration or fly rock on or adjacent to the site
- a comparison with objectives, standards to be achieved and measurable indicators, including environmental impact on terrestrial and aquatic animals and avifauna should be provided.

Proposals to minimise or eliminate these effects from noise or vibration on sensitive receptors should be detailed.

## 4.9 Visual amenity and landscape character

### Description of the existing visual amenity and landscape

This section should describe in general terms the existing landscape character and visual amenity of the project site and surrounding areas. Information in the form of maps, sections, elevations and photographs is to be provided in this section. The discussion should include:

- a description of the character of the built environment in terms of scale, form, materials and colours
- a description of existing landscape features, panoramas and views that have, or could be expected to have, value to the community whether of local, regional, state or national significance
- identification of elements within the project and surrounding area that contribute to their image of the town/city as discussed in the local government planning scheme
- a review of existing short and long distance views of the project area and visibility of the project from existing view sheds, including assessment from private residences in the affected area
- significant visual landmarks within the locality including natural features, ridgelines and water views to determine existing visual amenity of the area
- a description of the general impression of the landscape that would be obtained while travelling through and around the project site
- comment on any changes that have already been made to the natural landscape since European settlement.

### Potential impacts on visual amenity and landscape and mitigation measures

This section should describe the potential impacts of the landscape character of the site and the surrounding area. Particular mention should be made of any changes to the broad-scale topography and vegetation character of the area, such as broad-scale clearing. Details should be provided of measures to be undertaken to mitigate or avoid the identified impacts including impacts on existing land uses that contribute to the character of the local area. An assessment should be made of the impacts of the project on the existing visual quality of the site and the surrounding area. This assessment should describe:

- impacts on existing short and long distance views of the project area
- changes in the visibility of the project from existing view sheds
- impacts on significant visual landmarks within the locality, including natural features, ridgelines and water views
- changes in the character of the built environment in terms of scale, form, materials and colours.

The visual sensitivity or the capacity of the project area to absorb visual changes should be assessed to determine likely impacts on existing visual quality.

An assessment of the obtrusive effects of installation of project lighting should be undertaken. This assessment should:

- provide details on the level and types of lighting required for safety and security requirements
- identify potential impacts of lighting of the project site including potential for light spill/intrusion, light glare on road users, changes to night viewing conditions due to sky glow, etc
- provide an assessment of the sensitivity of the receiving environment (e.g. fauna, residents, road users) to project lighting

- applicable limits or maximum lighting levels to control the obtrusive effects of lighting.

This section should propose options for avoidance, or where avoidance is not possible, mitigation of visual impacts and provide details of measures adopted in the design of the project including the use of colours and forms to ensure integration with existing environments and the use of landscaping vegetation as a visual screen.

## 4.10 Native title and Indigenous cultural heritage

### Description of native title and Indigenous cultural heritage

The EIS should provide a description of the location and owner/custodians of native title in the area and details of the status of any native title claims. The EIS should describe the Indigenous cultural heritage values that may be affected by the project. A systematic field survey of the site should be undertaken by a suitably qualified specialist to locate and record places and objects of cultural heritage significance. The Indigenous cultural heritage survey should refer to:

- the DNRW Indigenous site database; and
- any existing literature relating to the affected areas.

Refer to the consultation and negotiation with traditional owners and the outcomes about:

- significant Aboriginal objects and significant Aboriginal areas and their involvement in field surveys
- requirements relating to the selection of consultants and confidentiality of culturally sensitive information.

The EIS should:

- include locations of significant Aboriginal objects and significant Aboriginal areas likely to be impacted by the project
- provide a constraints analysis of the proposed development area to identify and record Indigenous cultural heritage places
- provide a report of work done which includes background research, relevant environmental data and methodology, as well as results of field surveys, significance assessment and conclusions and management recommendations (having due regard for any confidentiality requirements specified by community representatives).

### Potential impacts and mitigation measures

The Proponent should provide an assessment of any likely impacts on Native Title and effects on sites of Indigenous cultural heritage values, including but not limited to the following:

- a description of the significance of artefacts or places of 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 Indigenous cultural heritage values and enhancing any positive impacts.

The *Aboriginal Cultural Heritage Act 2003* requires (in most cases) the preparation of a Cultural Heritage Management Plan in conjunction with the EIS. A Cultural Heritage Management Plan should be prepared for the project site in a form that complies with the provisions of Part 7 of the *Aboriginal Cultural Heritage Act 2003*, thereby meeting the cultural heritage duty of care. The plan must provide a process for the conduct of comprehensive cultural heritage investigations and the identification and management of significant Aboriginal objects and significant Aboriginal areas in the proposed project area.

The agreement or plan should include the following:

- a process for including Aboriginal communities or Aboriginal parties in the identification, management and protection of Aboriginal cultural heritage in the project area
- a process for undertaking a comprehensive and systematic cultural heritage assessment
- processes for the mitigation, management and protection of identified cultural heritage objects and areas in the project area, and in any areas to be affected by development of any associated infrastructure, both during construction and operational phases of the project
- provision for the management of the accidental discovery of cultural material, including burials, in the project area
- processes for determining any requirements for monitoring of the project during construction, and measures by which any monitoring program is to be implemented
- Indigenous cultural heritage induction and awareness programs for project staff, subcontractors and staff, consultants and agents of the project
- a conflict resolution process.

The development of the agreement or plan should be negotiated with all relevant stakeholder representatives, subject to any confidentiality specified by the Aboriginal community, registered native title applicants, and/or Aboriginal parties as appropriate.

As a minimum, impact assessment, management and protection strategies should satisfy statutory responsibilities and duties of care under the *Aboriginal Cultural Heritage Act 2003* and the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cwlth).

## 4.11 Non-Indigenous cultural heritage

### Description of existing non-Indigenous cultural heritage

The EIS should describe the existing environmental values for non-Indigenous cultural heritage that may be affected by the project. Reference should be made to:

- the Australian Heritage Places Inventory
- the Queensland Heritage Register
- local government heritage register
- Gold Coast City Council
- any existing literature relating to the affected areas.

A survey report which includes background research, relevant data and methodology, as well as results of field surveys, significance assessment and conclusions and management recommendations (having due regard for any confidentiality requirements specified by community representatives) should be prepared.

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*.

### Potential impacts on non-Indigenous cultural heritage and mitigation measures

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 artifacts, 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
- negotiations with Queensland Heritage Council and the EPA regarding management of places of historic heritage significance, taking account also of community interests and concerns
- documented management strategies in accordance with the outcomes of negotiations with Queensland Heritage Commission, EPA and the community.

As a minimum, impact assessment, management and protection strategies should satisfy statutory responsibilities and duties of care, including those under the EPBC Act and *Queensland Heritage Act 1992*.

## 4.12 Infrastructure impacts

### Traffic and transport

Traffic and transport reports should include:

- details of assessment methodology adopted including a summary of consultation undertaken with transport authorities (for example, Department of Main Roads, local government and Queensland Transport) regarding the scope of the impact assessment and methodology to be used
- details of all base data assumptions, including an assessment of the current condition of the affected network and its performance
- details on possible interruptions to transport operations
- details of any impacts on the natural environment within the jurisdiction of an affected transport authority (e.g. road or rail corridors) including impacts concerning the amenity and health of adjacent land use and sensitive ecological areas as a result of dust noise and vibration or other environmental nuisances
- details on the nature and likelihood of product spill during transport (if relevant)
- any socio economic impact or contribution by the project at the local or regional level.

Road impact assessment report should be in general accordance with Department of Main Roads *Guidelines for Assessment of Road Impacts of Development* (2006 or as amended), available on the Department of Main Roads website.

The assessment must include:

- an assessment of project impacts (from either transport or project operations) on the safety efficiency and condition of road operations and assets
- an assessment of project impacts on overland water flows and their interaction with the current and future road network. The assessment will assume the presence of the proposed future intra-regional transport corridor
- an assessment of project impacts on any existing or proposed pedestrian cycle networks
- an assessment of project impacts on any existing public transport networks (assets and services).

Mitigation strategies to address project impacts should be included in the EIS for each project affected transport mode. The proponent is to discuss and recommend how identified impacts will be mitigated so as to maintain safety, efficiency, and condition of each mode. These mitigation strategies are to be prepared by the proponent in close consultation with relevant transport authorities and must include:

- consideration of any transport authorities works program and forward planning, in particular the proposed future intra-regional transport corridor

- proposed construction plans of all required transport infrastructure works in accordance with relevant and accepted authority standards and practices
- details on the timing of these works including the responsible parties for these works
- a summary of relevant approvals and legislative requirements needed to implement mitigation strategies and transport infrastructure works required by the project.

Potential impacts on the state controlled and local government road networks should be identified along with proposed corrective measures to address any adverse road impacts and the costs involved. This impact assessment should provide details of road transportation requirements on public roads for both construction and operational phases of the project, including a description of any need for increased road maintenance or upgrading.

### Power and telecommunications

Details should be provided of existing power and telecommunications services including locations, capacity and providers. This section should describe any impacts arising from the project on existing or planned power and telecommunications infrastructure (optical cables, microwave towers) and identify service upgrades required to support the project. Relevant service providers should be consulted to ensure that options identified to provide power and telecommunications services for the project are satisfactory.

### Water supply and sewerage

Details should be provided of existing water supply and sewerage services including locations, capacity and providers. A detailed assessment of any impact of the proposal on the water supply network shall be submitted including the availability of water in terms of pressure and flows (including fire flows) by carrying out comprehensive dynamic network analysis. Analysis should at least cover three consecutive maximum demand days.

Details should be provided of any existing or upgraded town water supply required to meet the potable water demand of the project. Proposed sources of alternative water supply should also be described where practicable (e.g. groundwater bores, surface storages) and any approvals required under the *Water Act 2000*. Estimated rates of supply from each source (average and maximum rates) should be provided. Appropriate water conservation and management measures should be outlined for inclusion in the operations EMP.

Sewerage as for water demand, capacity to meet demand should refer to the local authority planning scheme requirements.

## 4.13 Hazard and risk

### Health and safety

This EIS should describe any potential impacts on public health and safety arising from the project including air, noise and traffic environments. Nearby and other potentially affected populations should be identified and described, with particular attention to those sections of the population, such as children and the elderly that are especially sensitive to environmental health factors.

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

The EIS 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.

This section should define the objectives and practical measures for protecting or enhancing health and safety community values, including a description of 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.

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

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

### Hazard and risk assessment

This section of the EIS should describe the potential hazards and risks that may be associated with the project and should incorporate all known hazards, which may include:

- identification of potential hazards, accidents, spillages and abnormal events occurring during all stages of the project, including possible frequency of occurrence
- indication of cumulative risk levels to surrounding land uses
- identification of all hazardous substance to be used, stored, processed or produced and the rate of usage.

External risks to the project should also be considered. External risks from natural hazards could be determined on the basis of *Australia/New Zealand AS/NZS 4360:2004 Risk Management.* The study should assess risks during the construction, operational and decommissioning phases associated with the project. Possible hazards, accidents, and abnormal events that may arise for the project, both during construction and in operation should be described.

Analysis of the consequences of each of these events on safety and environmental damage in the project area should be conducted, including direct harm to the environment as a result of project hazards. The analysis should examine the likelihood of these consequences being experienced, both individually and collectively.

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.

### 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. 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 fires during the construction, operation and maintenance phases
- emergency planning and response procedures.

## 4.14 Cumulative impacts

The purpose of this section is to provide clear and concise information on the overall impacts of the project, and to discuss the interrelationship of these impacts. This is in addition to the discussion of cumulative impacts which feature in the relevant sections. The cumulative impacts as they relate to particular issues (e.g. foreshore habitats of the Coomera River, water management, cultural heritage, social etc.) may also be discussed in this section. These impacts should be considered over time or in combination with other impacts because of the scale, intensity, duration or frequency of the impacts.

Cumulative impacts should also take into consideration other infrastructure projects. The methodology to be used to determine the cumulative impacts of the project should be discussed. The methodology should detail the range of variables to be considered including, where applicable, relevant baseline or other criteria upon which the incremental aspects of the project should be assessed.

## 4.15 Environmental management plan

An outline of the EMPs for the construction and operational phases should be presented, setting out the framework for continuing management, mitigation and monitoring programs for the project's impacts, including any provision for independent environmental auditing.

The EMP should include a mechanism to receive complaints from the community and stakeholders and a process to ensure these complaints are appropriately investigated, any required mitigation measures implemented within a timely fashion, and that these actions have been communicated to the complainant.

# 5 Social values and management of impacts

## 5.1 Description of existing social values

This section should describe the existing social values that may be affected by the project. The social amenity and use of the project area and adjacent areas for forestry, mining, fishing, recreation, industrial, educational or residential purposes should be described. The social impact assessment of the project should consider the information gathered in the community consultation program, the analysis of the existing social and economic environment, existing policy including the Gold Coast City Council's Priority Infrastructure Plan and its Coomera River Recreation Masterplan, and describe the project's impact, both beneficial and adverse, on the local community. In the development of this community profile, consideration should be given to:

- the characteristics of the local community including demography, family structure and housing
- economic stability
- property values
- community infrastructure and services
- local community values, vitality and lifestyles
- recreational, cultural, leisure and sporting facilities and activities in relation to the affected area
- health and educational facilities
- local government and public facilities.

## 5.2 Profile of local business community

This section should provide a description of the key regional industries including: rural properties or farms, any crops, grazing or agricultural enterprises, small, medium and large businesses including retail and industrial. The potential benefits and impacts on the local business community as a result of the project should be described.

## 5.3 Potential impacts on social values and mitigation measures

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

The assessment of impacts should describe the likely response of affected communities and identify possible beneficial and adverse impacts (both immediate and cumulative). These impacts should be considered both at the regional and local level.

The evaluation of social impacts should consider as a minimum:

- an assessment of impacts on local, district and regional residents, current land uses and existing lifestyles and enterprises
- an assessment of impacts on local, regional and state labour markets, with particular regard to the source of the project workforce. This information is to be presented according to occupational groupings of the workforce and include information on whether the workforce will be employed locally

- implications (real and perceived) for public health, safety and amenity as a result of the development
- implications for property and retail values (probable and perceived), including a description of the effects of the development on property valuation and marketability during both construction and operational phases
- needs of special groups, taking into account heritage and cultural values and beliefs, and meeting legislative obligations in regards to mobility and access issues
- impact on community identity, including local community values, vitality and lifestyles
- impact on existing businesses and commercial activities both within the immediate study area and the wider community
- an assessment of the likely levels of employment and income (both direct and indirect) during construction and operation of the project.

The social impact assessment should provide a description of any proposed project modifications to improve social wellbeing and provide strategies for impact mitigation and community participation in the development. Sufficient information should be provided to allow both local and state authorities, such as Queensland Health and Education Queensland, to make informed decisions about how the project may affect their planning for provision of public services.

The level of assessment should be consistent with contemporary best practice standards for social assessment (e.g. the Gold Coast City Council's draft *Planning Scheme Policy–Social Impact Assessment*).

# 6 Economies and management of impacts

## 6.1 Description of existing economic values

This section should describe the existing economic environment that might be affected by the project. The EIS should describe the local economy, including;

- a thorough description of the local economy, including gross regional product and/or other appropriate measures of annual economic production, population, labour force statistics, infrastructure, competitive advantage and expected future growth
- the regional economy's key industries and their contribution to regional economic income
- descriptions key regional markets relevant to the project such as labour, housing and land markets, construction services and building inputs market
- economic contribution of existing enterprises (e.g. tourist activity, local business, etc) and future economic opportunities
- factor prices such as input costs
- information on land values in the region by type of use.

## 6.2 Potential impacts on economic values and mitigation measures

An economic analysis, including a cost benefit analysis, should be presented from national, state, regional and local perspectives as appropriate to the scale of the project. The general economic benefits from the project should be described, including estimated total economic costs for materials, labour and infrastructure for the construction and operational phases.

The analysis of general economic impacts of the project should include:

- discussion of the significance of the project in a local and regional economic context
- the long and short-term beneficial (e.g. job creation) and adverse (e.g. competition with local small businesses) impacts on communities

- the distributional effects of the project including proposals to mitigate any negative impact on disadvantaged groups
- potential for new or additional infrastructure provision
- potential economic impact of any major hazard as identified in Section 4.13
- the effects of the project on local residents, including property valuation and marketability, community services and recreational activities
- the implications of the project for future developments in the local area including constraints on surrounding land uses.

The effect on local labour markets should be discussed with regard to the number and source of the construction workforce, including sub-contractors. This information should be presented according to occupational groupings of the workforce and show anticipated peaks in numbers during the construction period. The operational workforce requirements should also be discussed. Identified impacts to economic values should be discussed and objectives and practical measures for protecting or enhancing economic values should be provided.

# 7 Recommendations

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

# 8 References

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

# 9 Appendices

## 9.1 TOR for this EIS

A copy of these TOR should be included in the EIS. A summary cross-referencing specific items of these TOR to the relevant section of the EIS should also be provided.

## 9.2 Development approvals

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

## 9.3 Consultation report

A list of advisory agencies should be provided in a summary consultation report, which should also list the Australian, Queensland and local government agencies consulted and the individuals and groups of stakeholders consulted. 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 EIS should summarise the results of the community consultation program, providing a summary of the groups and individuals consulted, the issues raised, and the means by which the issues were addressed. The discussion should include the methodology used in the community consultation program including criteria for identifying stakeholders and the communication methods used.

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.

## 9.4 Study team

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

## 9.5 Glossary of terms

A glossary of technical terms and acronyms should be provided.

## 9.6 Technical data and baseline studies

Relevant supporting data and information generated from specialist studies undertaken as part of the EIS are to be included as appendices. These may include:

- geotechnical surveys
- soil surveys
- flora and fauna studies
- waterway hydrology and groundwater
- flooding assessment
- coastal processes investigations
- air quality modelling
- noise and vibration modelling
- road impact assessment
- cultural heritage studies
- social impact assessment.

## 9.7 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.

## Appendix 1: Location plan