The Coordinator-General

Great Keppel Island Resort project

Terms of reference for the environmental impact statement

June 2011

Contents

Synopsis

The proponent, GKI Resort Pty Ltd (GKIR), proposes to construct a $592.5 million tourism development on Great Keppel Island, which is located 12 kilometres east of Yeppoon on the central Queensland coast. The island is within the Rockhampton Regional Council area and the Great Barrier Reef Marine Park.

The key components of the proposed development include: a 250-room hotel, 750 eco-tourism villas, 300 eco-tourism apartments, 250-berth marina, ferry terminal, yacht club, retail village, upgrade works to the existing airstrip, 18-hole championship golf course, sporting oval, and creation of a series of managed environmental parks covering approximately 545 hectares.

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

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

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

The EIS process is being coordinated by the Department of Employment, Economic Development and Innovation (DEEDI) on behalf of the Coordinator-General.

Terms of reference (TOR) set out the requirements, both general and specific, that the proponent should address in preparing the EIS. These TOR have been prepared having regard to comments and submission received on the draft TOR released for public comment over the period of 4 October 2010 to 29 November 2010.

The TOR is divided into two parts:

- Part A—General information and administrative procedures
- Part B—Contents of the EIS

Part A. General information and administrative procedures

1 Project summary

GKI Resort Pty Ltd (GKIR) is proposing to expand the former resort facilities located on Great Keppel Island, approximately 12 kilometres off the coast of Yeppoon on the central Queensland coast. The island is within the Rockhampton Regional Council area and the Great Barrier Reef Marine Park.

The proposed $592.5 million tourism development includes:

- 250-room hotel and day spa
- 750 eco-tourism villas
- 300 eco-tourism apartments
- 250-berth marina
- retail village (with a mix of cafes, restaurants and clothing shops)
- upgrade works to the existing airstrip
- 18-hole championship golf course
- sporting oval
- preservation of the original Leeke's Homestead
- preservation of Indigenous sites of significance
- creation of a series of managed environmental parks covering approximately 545 hectares
- implementation of a vegetation management plan to restore the vegetation disturbance on the island.

The initial advice statement for the Great Keppel Island Resort project forecasts the following key economic benefits:

- approximately 1055 full-time, part-time and casual jobs generated in the Capricorn Region, once Great Keppel Island Resort is fully operational
- creation of an average of 350 construction-related jobs each year during the 15-year construction period, with total jobs generated representing approximately 5400 person years of direct employment
- once fully operational, an estimated 685 full-time equivalent jobs on the island, plus additional workforce in high periods of demand
- through flow-on or multiplier effects, the creation of almost 400 additional, full-time equivalent construction and operational jobs on the mainland, predominantly at Rockhampton and Yeppoon

- tourist and residential expenditure contributing over $82 million per annum to the local economy.

A significant component (villas and golf course) of the project is located in Lot 21, which GKIR presently leases for recreational purposes. Lot 21 was recently the subject of a State Government section 16 *Land Act 1994* 'most appropriate use' evaluation. This evaluation concluded that conservation was the most appropriate use for Lot 21.

The proposal represents a further scaled-down version of the project originally submitted for significant project declaration in June 2008.

GKIR has requested and been granted approval for an annual extension of the lease for Lot 21 to enable an EIS for the project to be undertaken until completion. The outcome of the proposed EIS will ultimately inform the Department of Environment and Resource Management (DERM) in relation to the proponent's application to renew the lease and a decision in relation to tenure or tenures for Lot 21 can then be made.

2 Project proponent

The project proponent of the Great Keppel Island Resort project is GKI Resort Pty Ltd (GKIR). GKIR is wholly owned by Mr Terrence Agnew. The development process will be managed by Mr Agnew's wholly owned principal trading company, Tower Holdings Pty Ltd.

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100 Miller Street
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3 Legislative framework

On 28 August 2009, the Coordinator-General declared the Great Keppel Island Resort project to be a 'significant project' under section 26(1)(a) of the SDPWO Act. This declaration initiates the statutory environmental impact assessment procedure of Part 4 of the SDPWO Act, which requires the proponent to prepare an environmental impact statement (EIS) for the project.

DEEDI is managing the EIS process on behalf of the Coordinator-General. DEEDI has invited relevant Australian, state and local government representatives and other relevant authorities, to participate in the process as advisory agencies.

The first step in the impact assessment process is the development of TOR for an EIS for the project. The process involves the formulation of draft TOR that are made available for public and advisory agency comment. The Coordinator-General will have regard to all properly made submissions received on the draft TOR in finalising the TOR which will be presented to the proponent.

The proponent will prepare an EIS to address the TOR. Once the EIS has been prepared to the satisfaction of the Coordinator-General, a public notice will be advertised in relevant newspapers circulating in the region and nationally. The notice will state where copies of the EIS can be viewed or purchased, the submission period, and where submissions should be sent. The proponent may also be required to prepare supplementary information to the EIS to address specific matters raised during the EIS submission period.

At the completion of the EIS phase, the Coordinator-General will prepare a report (Coordinator-General's report) evaluating the EIS and other relevant material, pursuant to section 35 of the SDPWO Act. The Coordinator-General's report will include an assessment and conclusion about the environmental impacts of the project and any associated mitigation measures. Material that will be assessed includes: the EIS; properly made submissions and other submissions accepted by the Coordinator-General; and any other material the Coordinator-General considers relevant to the project such as supplementary information to the EIS, comments and advice from advisory agencies and other entities, technical reports and legal advice.

The Coordinator-General's report will be publicly notified by placing it on the website at www.deedi.qld.gov.au The Coordinator-General's report will also be presented to the proponent, the assessment manager under the *Sustainable Planning Act 2009* (Qld) (SPA) and the Australian Government Minister for Sustainability, Environment, Water, Population and Communities, if relevant.

If the project involves development requiring an application for a development approval under SPA, the Coordinator-General's report may, under section 39 of the 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 Coordinator-General's 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.

On 4 July 2010, the former Australian Government Minister for the Environment, Heritage and the Arts determined that the project is a 'controlled action' under the EPBC Act (reference no EPBC 2010/5521) due to the likely potential impacts on

matters of national environmental significance. The controlling provisions under the EPBC Act are:

- sections 12 and 15A (World Heritage properties)
- sections 15B and 15C (National Heritage places)
- sections 18 and 18A (listed threatened species and communities)
- sections 20 and 20A (listed migratory species)
- sections 23 and 24A (Commonwealth marine areas)
- sections 24B and 24C (Great Barrier Reef Marine Park).

As a consequence, the project requires assessment and approval under the EPBC Act.

The project will therefore require approval from both the State and Australian governments before it can proceed. The EIS process will be administered in **parallel** by DEEDI for the Coordinator-General on behalf of the Queensland Government, and by the Department of Sustainability, Environment, Water, Population and Communities, on behalf of the Australian Government.

4 EIS objectives

The objective of the EIS is to ensure that all potential environmental, social and economic impacts of the project are identified and assessed and that adverse impacts are avoided or mitigated. Direct, indirect and cumulative impacts must be fully examined and addressed. The project should be based on sound environmental protection and management criteria.

The EIS document should provide information for the following persons and groups, as the project stakeholders:

- for interested bodies and persons—a basis for understanding the project, prudent and feasible alternatives, affected environmental values, impacts that may occur and the measures to be taken to mitigate all adverse impacts
- for affected persons—that is, groups or persons with rights or interests in land, as defined under section 38 of the *Environmental Protection Act 1999* (Qld) or water as defined under the *Water Act 2000*—an outline of the effects of the proposed project
- for government agencies and referral bodies—a framework for decision-makers to assess the environmental aspects of the proposed project with respect to legislative and policy provisions, and based on that information, to make an informed decision on whether the project should proceed or not, and if so, subject to what conditions, if any

- for the proponent—a mechanism by which the potential environmental impacts of the project are identified and understood, including information to support the development of management measures, such as an environmental management plan, to mitigate the effects of adverse environmental impacts of the development.

The proponent is required to address the TOR to the satisfaction of the Coordinator-General before the EIS is made publicly available as per Section 32 of the SDPWO Act.

5 EIS guidelines

The EIS should be a self-contained and comprehensive document that provides sufficient information for an informed decision on the potential impacts of the project and the management measures employed to mitigate adverse impacts. The main EIS report needs to be supported by appendixes containing relevant data, technical reports and other sources of the EIS analysis. In preparing the EIS, the approach to be adopted requires that:

- scientific studies are used to predict potential impacts and details of their methodology, reliability, and any relevant assumptions or scientific judgements are indicated
- the EIS is to present all technical data, sources or authority and other information used to assess impacts
- proposed measures to mitigate and manage identified issues are described and evaluated
- residual impacts that are not quantifiable are described qualitatively, in as much detail as reasonably practicable
- a discussion of the significance criteria adopted in assessing the proposed project and its impacts, for instance: compliance with relevant legislation, policies, standards, guidelines, community acceptance is included
- the level of investigation of potential/uncertain impacts on the environment is proportionate to both the severity and the likelihood of those events occurring
- issues that may emerge during the investigations and preparation of the EIS are adequately addressed and the necessary studies are undertaken and reported
- all relevant matters concerning environmental values, impacts and proposed mitigation measures are addressed for the first time in the main text of the EIS and not in an appendix or the draft environmental management plan
- adverse and beneficial impacts should be presented in quantitative and/or qualitative terms as appropriate.

Where possible, information provided in the EIS should be clear, logical, objective and concise, so that non-technical people may easily understand it. Where appropriate, text should be supported by maps and diagrams and factual information

in the document should be referenced. Where applicable, aerial photography and/or digital information (e.g. of project site etc.) should be presented.

The terms ‘describe,’ ‘detail’ and ‘discuss’ should be taken to include both quantitative and qualitative matters as practical and meaningful. Should the proponent require any information in the EIS to remain confidential, this should be clearly indicated, and separate information should be prepared on these matters.

6 Stakeholder consultation

The proponent should undertake a comprehensive and inclusive consultation plan with the stakeholders identified in Part A, Section 4. Consultation with advisory agencies should be the principal forum for identifying legislation, regulations, policies and guidelines relevant to the project and EIS process.

The public consultation plan should identify broad issues of concern to local and regional community and interest groups, and address issues from project planning through commencement, project operations and decommissioning. The consultation plan should identify:

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

7 EIS format and copy numbers

7.1 General requirements

The EIS should be written in a format matching the TOR or include guidelines (preferably as an appendix) describing how the EIS responds to the TOR. Where the project is made up of several components, the EIS should make it clear which project component is being discussed, to allow assessment agencies and other readers to differentiate between the components.

The EIS should contain (as part of the executive summary) a one-page table that explains where readers can find categories of information in the report. This should particularly cover subjects that are presented in multiple places in the EIS.

Include maps, diagrams and other illustrative material in the EIS to assist readers to interpret information.

7.2 Specific format and copy requirements

The proponent must publish the EIS as follows:

(a) On a website that is hosted at the proponent's own expense, in both HTML and PDF formats, as follows:

  (i) pages produced in HTML format must meet the W3C web content accessibility guidelines. All cross-references to sections elsewhere in the EIS must be hyperlinked; and all external web links must be hyperlinked.

  (ii) PDF files must meet the following requirements:

    (A) no larger than two megabytes in size (documents can be uploaded in sections to meet this requirement)

    (B) text size and graphics files included in the PDF documents should be of sufficient resolution to facilitate reading and enable legible printing

    (C) produced in accordance with Adobe's PDF accessibility best practice guides and meet the following minimum accessibility requirements:

      (1) document structure tags and proper read order

      (2) searchable text

      (3) alternative text descriptions

      (4) security that does not interfere with assistive technology.

(b) As a single PDF file on a CD-ROM, DVD or other electronic memory device. This PDF file, which will be read by staff from DEEDI and other assessment agencies, must include:

  (i) bookmarks (links) to all sections of the document (down to five heading levels); and the PDF file must be set to open with the bookmarks showing by default

  (ii) active (clickable) internal hyperlinks to any pages, sections or diagrams that have been cross-referenced within the EIS

  (iii) active (clickable) hyperlinks to any external websites/documents that have been included in the EIS.

(c) Provide a PDF version of the executive summary, no larger than two megabytes in size, on a CD-ROM or DVD. This file will be placed on the website; and the PDF file must meet the accessibility requirements listed under point (1)(b) above.

(d) Provide all maps/diagrams/figures in JPG format, on a separate CD-ROM, DVD or other electronic memory device. All JPG files should be a minimum of 300 dpi.

(e) Limited copies of the EIS should be produced on A4-size paper capable of being photocopied, with maps and diagrams of A4 or A3-size (discuss this requirement with DEEDI staff in the early stages of the EIS process).

8 Contact details

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

EIS project manager – Great Keppel Island Resort Project
Significant Projects Coordination
Department of Employment, Economic Development and Innovation
PO Box 15517 City East Qld 4002
tel + 61 7 3235 4620
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Part B. Contents of the EIS

The EIS should follow the format and content outlined in these TOR; however, changes to the structure can be discussed with the EIS project manager.

Executive summary

The function of the executive summary is to convey the most important aspects and options relating to the project to the reader in a concise and readable form. It should use plain English and avoid the use of jargon. The executive summary should be written as a stand-alone document and be structured to follow the EIS. It should be 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 should include:

- the title of the project
- name and contact details of the proponent and a discussion of previous projects undertaken by the proponent, if applicable, and their commitment to effective environmental management
- a concise statement of the aims and objectives of the project
- the legal framework, decision-making authorities and advisory agencies
- an outline of the background and need for the project, including the consequences of not proceeding with the project
- 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, operational activities and decommissioning) and the existing environment, utilising visual aids where appropriate
- an outline of the principal environmental impacts predicted and the proposed environmental management strategies and commitments to minimise the significance of these impacts
- a discussion of the cumulative impacts in relation to social, economic and environmental factors of associated infrastructure projects proposed within the region.

Detailed maps of the proposed project location and any other critical figures should also be included.

Glossary of terms

Provide a glossary of technical terms, acronyms, abbreviations and references.

1 Introduction

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

1.1 Project proponent

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

1.2 Project description

A brief description of the key elements of the project should be provided with illustrations or maps. Any major associated infrastructure requirements should also be summarised. Detailed descriptions of the project should follow in Section 2.

1.3 Project rationale

The specific objectives and justification for the project should be described including its strategic, economic, environmental and social implications, technical feasibility and commercial drivers. The status of the project should be discussed in a regional, state and national context. The project's compatibility with relevant policy, planning and regulatory frameworks should also be mentioned, including a description of the project's lease arrangements and conditions and the compatibility of the proposed project actions/activities with the lease arrangements.

1.4 Relationship to other projects

This section should also describe how the project relates to any other infrastructure projects of which the proponent should reasonably be aware, that have been or are being taken or that have been approved in the area affected by the project.

As a result of this assessment, opportunities may exist for co-location of existing or proposed infrastructure enabling efficiency gains and the mitigation of environmental and property impacts. Where co-location may be likely, the EIS should outline opportunities to coordinate or enhance impact mitigation strategies. Opportunities should be discussed in sufficient detail to enable an understanding of the reasons for preferring certain options or courses of action and rejecting others.

1.5 Alternatives to the project

This section should describe feasible alternatives including conceptual, technological and locality alternatives to the proposed project, as well as discussion of the consequences of not proceeding with the project. Alternatives should be discussed in sufficient detail to enable an understanding of the reasons for preferring certain

options or courses of action and rejecting others. This should include a discussion of the 'no action' option. A discussion of the methodology adopted to discern between the feasible options should be included.

The interdependencies of the project components should be explained, particularly in regard to how each of any infrastructure requirements relate to the viability of the project. The EIS should demonstrate:

- the need for a marina
- investigate other sites on the island suitable for a marina
- alternative methods to access the island
- the need for an airstrip and investigate other sites suitable for an airstrip.

This information is required to assess why the scope of the project is as it is, and to ensure that the environmentally sustainable design principles and sustainable development aspects have been considered and incorporated during the scoping of the project.

1.6 The environmental impact assessment process

1.6.1 Methodology of the EIS

This section should provide an outline of the environmental impact assessment process including the role of the EIS in the Coordinator-General's decision making process. It should include information on relevant stages of the EIS development, statutory and public consultation requirements and any interdependencies that exist between approvals sought. The information in this section is required to ensure:

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

1.6.2 Objectives of the EIS

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

- provide public information on the need for the project, alternatives to it and options for its implementation
- present the likely effects of the project on the natural, social and economic environment
- demonstrate how environmental impacts can be avoided managed or mitigated, and offsets for any residual impacts.

Also, the role of the EIS in providing information for the formulation of the environmental management plan (EMP) for the project should be discussed.

1.6.3 Submissions

The EIS should inform the reader how to properly make submissions and what form the submissions should take. The reader should be informed as to how and when properly made public submissions on the EIS will be addressed and taken into account in the decision-making process. The EIS should also indicate any implications for submissions in the event of any appeal processes.

1.7 Public consultation process

The public consultation process 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 (i.e. newsletters), and other consultation mechanisms to encourage and facilitate active public consultation. Public consultation processes (community engagement) for all parts of the EIS should be integrated.

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

- identify the stakeholders and how their involvement was facilitated
- identify the processes conducted to date and the future consultation strategies and programs including those during the operational phase of the project
- indicate how consultation involvement and outcomes were integrated into the EIS process and future site activities including opportunities for engagement and provision for feedback and action if necessary
- 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
- information about the consultation process that has taken place and the results should be provided.

1.8 Project approvals

1.8.1 Relevant legislation and approvals

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

Relevant Australian Government legislation may include, but is not limited to:

- *Environment Protection and Biodiversity Conservation Act 1999*

- *Native Title Act 1993*
- *Aboriginal and Torres Strait Islander Heritage Protection Act 1994*
- *Great Barrier Reef Marine Park Act 1975.*

Relevant Commonwealth obligations such as protection of World Heritage values, migratory species (CAMBA, JAMBA, ROKAMBA, and Bonn Convention), biodiversity, climate and wetlands of international importance (Ramsar) should also be outlined and identified.

Reference must also be made, where relevant, to applicable Queensland legislation but not limited to:

- *Environmental Protection Act 1994* (EP Act)
- *Sustainable Planning Act 2009 (*and relevant state planning instruments)
- *Iconic Queensland Places Act 2008*
- *Land Act 1994*
- *Coastal Protection and Management Act 1995*
- *Marine Parks Act 2004*
- *Fisheries Act 1994*
- *Aboriginal Cultural Heritage Act 2003*
- *Torres Strait Islander Cultural Heritage Act 2003*
- *Nature Conservation Act 1992*
- *Queensland Heritage Act 1992*
- *Transport Infrastructure Act 1994*
- *Vegetation Management Act 1999*
- *Water Act 2000*
- Transport Infrastructure (Public Marine Facilities) Regulation 2000*.*

1.8.2 Relevant plans

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

1.8.3 Parallel process for controlled actions under Commonwealth legislation (Part 2)

As discussed in Part A of this report, on 4 July 2010, the former Australian Government Minister for the Environment, Heritage and the Arts determined that the project is a ‘controlled action’ under the EPBC Act. Refer to Part A, Section 3 (legislative framework) for the Australian Government’s EIS requirements.

2 Description of the project

The objective of this section is to describe the project through its lifetime of construction and operation. The project description also allows further assessment of which approvals may be required and how they may be managed through the life of the project.

2.1 Location

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

- the location and boundaries of current or proposed land tenures, that the project area is or will be subject to
- the area and size (in hectares) of the project area
- the location and boundaries of the project footprint, including easement widths and access requirements, and inter-tidal, offshore and mainland areas
- the location of any proposed buffers surrounding the project's working areas (for construction and operation)
- the location of infrastructure such as roads, waterways, shorelines (Highest Astronomical Tide, Mean High Water Springs and Mean Low Water Springs) and marine infrastructure as relevant
- the location of any proposed site offices and accommodation sites
- the location of the coastal management district and the erosion prone area
- the Great Keppel Island Revitalisation Plan 2010 should clearly identify the location of the environmental parks
- provision of appropriate maps identifying the indicative construction and operational sites, including roadways, site offices and accommodation sites.

2.2 Overview of the project

The EIS should provide an overview of the project to put it into context. This section should include:

- a rationale explaining the selection of the preferred operating scenario, including details such as cost, environmental impacts and the operational efficiencies of each option
- a description of the key components of the project including the use of text and design plans where applicable
- the expected cost, timing and overall duration of the project

- a summary of any environmental design features of the project should be presented, including ecologically sustainable development principles (e.g. water saving devices, height and design features) for each component of the proposed project
- a description of the planned administration facilities and provisions for emergency services (Queensland Police) to undertake core policing activities.

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

- the overall concept plan
- the proposed master plan layout described in words and plans (including elevations) and illustrating all the components
- include the area in hectares for each component of the proposed development
- construction and staging schedule
- expected visitor population including day visitors and overnight stays
- estimates of operations staff (permanent, temporary and dependants), contractors, movements, travel arrangements, composition, expected sources and local availability of employees.
- accessibility and transportation systems and networks, including roads, footpaths, cycle paths, buggy paths and public walking tracks
- provisions for visually and mobility impaired people
- landscaping and reinstatement of disturbed areas.

2.2.1 Marina and ferry terminal

A description of the concept and development plans for the proposed marina and ferry terminal must be provided including details on the following matters, with appropriate illustrations:

- details of the associated facilities, such as shops, restaurants, cafes (gross floor area, elevations, architectural drawings)
- staging plan
- reclamation and dredging requirements (capital and maintenance)
- dredging spoil disposal requirements in terms of processes and site storage/dumping of spoil
- land tenure (including details of ownership proposals for the ferry terminal)
- wastes disposal
- fuel storage and handling
- consideration of the proposed location of the marina entrance facing south-east given impact from possible adverse weather conditions

- the particular requirements of any of the associated structures that necessitate then to be constructed on or over tidal land
- facilities that will be required in order for emergency services to conduct effective service delivery.

If the proposed marina development is to include a sewage pump-out facility for boats berthing in the marina, then the EIS should include descriptions of the design and operation of appropriate ship-sourced waste reception facilities including sewage pump out and treatment, as well as other facilities for the reception of garbage, recyclable materials, quarantine waste and oily water as generated by vessels using the marina. The preferred format for the presentation of this information is through the development of a management plan for ship-sourced pollution.

2.2.2 Tourism apartments/villas

A description of the concept and development plans for the proposed tourism apartments and villas component must be provided including details on the following matters, with appropriate elevations:

- staging plan
- proposed number of villas and apartments (including gross floor area)
- proposed facilities, buildings and other constructed features, including identification of those available for public access
- building parameters and restrictions, such as height, architectural and urban design features, natural hazard design parameters
- access and parking
- crime prevention through urban design measures
- proposed land tenure, including purpose, management arrangements and responsibilities.

2.2.3 Hotel

A description of the concept and development plans for the proposed hotel must be provided including details on the following matters, with appropriate elevations:

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

2.2.4 Golf course

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

- construction and ongoing maintenance requirements
- architectural, building and urban design principles and natural hazard design principles
- location of fairways in relation to natural water bodies, creeks, streams or drainage paths, including underground acquifers and water table
- provide drainage plan and description of anticipated annual chemical and fertilizer application
- details and location of natural buffers to manage the impacts of golf course operation on ground and surface water quality (including options proposed for treatment to remove contaminants (including but not limited to nitrogen and phosphorous)).

2.2.5 Conservation area

Provide a description of the concept characteristics and attributes of the proposed series of environmental parks, including:

- rehabilitation plan
- access arrangements
- ongoing maintenance plan.

2.2.6 Upgraded airstrip

Provide a description of the key components proposed as part of upgrading the existing airport and associated infrastructure, including:

- changes to flight frequency on the runway, including expected number and percentage of aircraft movements by type
- additional infrastructure and ground activities associated with the upgraded runway operations
- any impacts on anchorages around Great Keppel Island.

2.3 Construction

The following information should be provided on the pre-construction, construction and commissioning of the project including detailed plans where appropriate.

2.3.1 Pre-construction activities

This section should set out a description of all the pre-construction activities, including:

- any land acquisitions required, be it in full or as easements, leases etc.
- types of construction equipment expected to be used, method of transport and numbers of plant to be transported onto the construction site
- nature, scale and timings for vegetation clearing
- site access
- nature, scale and timings for earthworks, including any borrow pit or quarry requirements, soil stockpiles and the potential to disturb acid sulphate soils
- interference with watercourses
- the nature, scale and timing of any near shore operations, including need for dredging, and construction of any marine support facilities
- site establishment requirements for construction facilities, including access restriction measures, expected size, source and control of the construction workforce accommodation, services (water, sewage, communication, power, recreation) and safety requirements
- areas of no access to be demarcated to prevent accidental clearing
- temporary works
- upgrade, relocation, realignment or deviation of roads and other infrastructure, including construction of new roads
- nature, scale and timing of interference with watercourses and floodplain areas, including wetlands
- a road use management plan
- all demolition, estimates of quantities and types of materials, types of equipment to be used, location of storage and methods of processing, transport of waste materials, and any associated infrastructure
- workforce numbers expected for the project from commencement through to project completion.

2.3.2 Construction

This section should set out a description of all the construction elements of the project, including:

- an indicative construction timetable, including expected commissioning and start-up dates and hours of operation
- description of major work programs for the construction phase, including an outline of construction methodologies
- capacity to construct accommodation for workforce required on Great Keppel Island

- provide a separate description of the proposed construction methods for structures within tidal waters (details should include equipment to be used, proposed staging etc.)
- provide a detailed discussion of alternative construction methodologies, justified in terms of minimising adverse impacts on water quality, marine and terrestrial biodiversity and the community
- construction inputs, transport, handling and storage including an outline of potential locations for source of construction materials
- estimates of the quantity of freshwater required for construction purposes and the sources from which this water will be obtained
- details of any proposed blasting
- major hazardous materials to be transported, stored and/or used on-site, including environmental toxicity data and biodegradability
- the clean up and restoration of areas used during construction, including camp site(s) and storage areas
- a road use management plan
- reference to the transport management plan in Section 3.10.5 (Transport impact management strategies), and in particular reference to section 475A of the *Transport Infrastructure Act 1995* (Waterway Transport Management Plan).

2.3.3 Commissioning

A description of the commissioning process including the associated environmental impacts should be provided.

2.3.4 Dredging

Description of capital dredging including:

- footprint size for capital dredging
- estimated volumes of dredge material to be removed
- estimated length of time for capital dredging to be undertaken
- description of sampling and analysis of dredge material to be undertaken
- estimate of maintenance dredging footprint and length of time undertaken
- estimated values
- methods, equipment
- disposal of dredge material and alternatives
- estimate of maintenance dredging requirements including volumes, frequency, methodology and contingency for extreme events

- arrangements for long-term disposal of dredge material and condition assessment of spoil ground prior to dredging and dumping of soil
- alternatives considered and discussion of options that minimise the need for dredging
- description of dredge material in terms of grain size characterisation and quality.

2.4 Operation

This section should provide full details of the operation for all elements of the project, including:

- a description of the project site, including concept and layout plans of buildings, structures, plant and equipment to be employed
- nature and description of all key operational activities
- the capacity of the project equipment and operations
- estimated numbers and roles of persons to be employed during the operational phase of the project
- schedules, timing, methods, and materials for ongoing maintenance requirements.

2.5 Associated infrastructure

This section should detail, with concept and layout plans, requirements for new infrastructure or the upgrading/relocating of existing infrastructure to service the project. Matters to be considered include such infrastructure as transportation (marine and terrestrial), water supply, energy supply, telecommunications, stormwater, waste disposal and sewerage. Provision of the scheduled times for any shipping/waterborne transportation for when movements may occur, should be provided.

A discussion of infrastructure alternatives, justified in terms of ecological sustainable development, should be provided. Energy and water conservation and the reduction, reuse, recycling and recovery of waste must be briefly described in the context of relevant Commonwealth, state and local government policies.

Potential impacts of the required infrastructure should be addressed within the relevant technical chapter identified under Part B, Section 3 of this TOR (environmental values and management of impacts).

2.5.1 Shipping/waterborne transport

Provide details of the infrastructure requirements for the transport of fill or other materials to the site by coastal barge and details of any marine transport infrastructure, whether temporary or permanent, that is required for construction and

ongoing use of the development, or likely to be demanded as a result of the development. Details should include:

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

2.5.2 Road transport

Provide information on road transportation requirements on public roads (both state and local) for both construction and operations phases, including:

- any proposed new roads or proposed upgrades to roads on Great Keppel Island
- construction traffic on Great Keppel Island and the mainland
- method of movement (including vehicle types and number of vehicles likely to be used)
- anticipated times at which movements may occur
- the proposed transport routes (including waterway crossings)
- need for increased road (and waterway crossing) maintenance and upgrading
- need for increased road maintenance
- communication of these issues to the public
- description of methodology for capture of oils and fuel spills on island roads in order to prevent transport into aquatic and marine environments
- description of methodologies to be employed to prevent/minimise introduction and/or spread of weeds on construction vehicles.

2.5.3 Energy

Describe all energy requirements, including electricity, natural gas, and/or solid and liquid fuel requirements for the construction and operation of the project. The location, design and capacity of power generation and transmission infrastructure for construction and ongoing use should be detailed. Consideration and design arguments for alternative energies as a source should be detailed. The locations of any easements must be shown on the infrastructure plan.

2.5.4 Water supply and storage

Provide information on the proposed water usage by the project, including details on:

- water supply design
- the ultimate supply required by full occupancy of the development

- the quality and quantity of all water supplied to the site during the construction and operational phases
- estimated water requirements and supply options for operation and maintenance of the golf course
- fire fighting flows required
- a site plan outlining actions to be taken in the event of failure of the main water supply
- potential for recycling of treated waste water
- if applicable, describe the methods to be employed to prevent/control cyanobacterial growth in open water storages.

Describe proposed sources of water supply given the implication of any approvals required under the *Water Act 2000*. Emphasis must be placed on demand and supply variability to demonstrate self-sufficiency of the project (e.g. during all stages of development and ongoing use, including reasonable predicted low rainfall).

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

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

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

2.5.5 Stormwater drainage

Describe the proposed stormwater drainage system, and the proposed disposal arrangements, including any off site services.

The EIS must detail the sources of stormwater and the quantity, quality and location of discharge to watercourses including the Great Barrier Reef Marine Park. Provide details on the standard of proposed stormwater treatment systems, including examples of quality improvement devices (sediment removal, gross pollutant traps), the schedule and timing of stormwater release from potential discharge points (spread of flow and scour protection), and the maintenance regime for the stormwater treatment systems.

2.5.6 Waste

The proposed management of solid and liquid wastes must be detailed with consideration given to the suitability of available waste disposal options. Particular

attention must be given to the capacity of wastes to generate acidic, saline or sodic conditions.

Liquid waste

Describe the sewerage infrastructure required by the project, including:

- options proposed for wastewater treatment and the proposed system for odour control
- peak design capacity evaluation of the wastewater treatment system and associated infrastructure using equivalent persons
- determination of the potential emergency effluent storage that would be required in an extended rain event (50 and 100-year wet weather storage ARIs accounting for climate change)
- the proposed disposal and/or reuse of the treated effluent and the management of such use. An irrigation plan should be provided detailing where the use of treated effluent is likely. Details of the likely impacts of treated effluent on surface water and groundwater quality should also be provided
- the siting and maintenance regime for the system
- all waste streams including demolition and construction wastes.

2.5.7 Other infrastructure

All other infrastructure required to be constructed, upgraded, relocated or decommissioned for the construction and/or operation of the project should be described including the design and construction standards to be met (e.g. waterway crossings should be designed to meet the requirements of the *Fisheries Act 1994* and in consultation with DEEDI).

Alternative approaches or the opportunity of obtaining materials from alternative sources should be discussed.

Any requirements for fuel storage, chemical storage, or workshops should be detailed, including information on locations, storage quantities and storage management.

3 Environmental values and management of impacts

The objectives of subsequent sections are to:

- describe the existing environmental values of the area that may be affected by the project, using background information and/or new studies to support. This shall include reference to all definitions of environmental values set out in relevant legislation, policies and plans

- describe the potential adverse and beneficial impacts of the project on the identified environmental values
- the measures to avoid, minimise and/or mitigate impacts
- describe any cumulative impacts on environmental values caused by the project, either in isolation or by combination with other known existing or planned projects
- present environmental protection objectives, standards and measurable indicators to be achieved
- examine viable alternative mitigation strategies for managing impacts. These alternatives should be presented and compared in view of the stated objectives and standards to be achieved
- discuss the available techniques to control and manage impacts in relation to the nominated objectives.

This section should detail the environmental protection and mitigation measures incorporated in the planning, construction, rehabilitation, commissioning, operations and decommissioning of all facets of the project. Measures should prevent, or where prevention is not possible, minimise environmental harm and maximise environmental benefits of the project. Preferred measures should be identified and described in more detail than other alternatives. In accordance with the *Queensland Government Environmental Offset Policy* (2008), proposals to offset impacts should be presented.

The EIS should follow the format and content outlined in these TOR however changes to the structure can be discussed with the EIS project manager. The mitigation measures, monitoring programs etc., identified in this section of the EIS should be used to develop the EMP for the project (see Part B, Section 8, environmental management plan).

3.1 Climate, natural hazards and climate change

3.1.1 Natural hazards and climate change adaptation

Description of environmental situation

This section should describe the current and future climatic conditions that may affect construction and operation of the project. This includes a description of the vulnerability of the project area to:

- seasonal conditions
- extremes of climate (e.g. cyclonic damage or possible tsunami events)
- natural or induced hazards (including but not limited to bushfire, storm surge and sea-rise level).

Potential impacts and mitigation measures

A risk assessment and management plan should be provided detailing these potential threats to the construction, and operation of the project.

The most recent information on potential impacts of climatic factors should be addressed in the appropriate sections of the EIS. An assessment of climate change risks and possible adaptation strategies should included, as well as the following:

- a risk assessment of changing climate patterns that may affect the viability and environmental management of the project
- the preferred and alternative adaptation strategies to be implemented
- commitments to undertaking, where practicable, a cooperative approach with government, other industry and other sectors to address adaptation to climate change.

3.2 Land

3.2.1 Land use and tenure

Description of environmental situation

The EIS should identify, with the aid of maps:

- land tenure both existing and proposed, including reserves, tenure of special interest such as protected areas and forest reserves, identification of existing and proposed gas, water pipelines, power lines and transport corridors, including local roads, state-controlled roads and rail corridors
- existing land uses and facilities surrounding the project
- the quantitative area (in hectares) for each land tenure, existing and proposed infrastructure and actions
- areas covered by applications for native title claims or native title determinations, providing boundary descriptions of native title representative body/ies. The proponent should also identify in the EIS whether there are any necessary notifications required to the representative body/ies or evidence that native title does not exist
- distance of the project from residential and recreational areas
- declared water storage catchments and aquifers
- location of the project in relation to environmentally and culturally sensitive areas.

Potential impacts and mitigation measures

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

A description of the following should be included:

- impacts on surrounding land uses and human activities and strategies for minimisation, including accommodation, recreational, marina and conservation uses
- potential impacts from the proposed dispersed land use pattern and the possibility for future development on adjoining lands including the development assessment and approval process
- a development land use pattern promoting a very high level of sustainability (investigation of alternative land use patterns)
- possible effect on town planning objectives and controls, including local government zoning and strategic plans
- constraints to potential developments and possibilities of rezoning adjacent to the development area, including options for a legally-binding framework for on-going protection of environmental values of the island that would not be directly affected by the development
- management of the immediate environs of the project including construction buffer zones
- the identification of the potential native title rights and interests likely to be impacted upon by the project and the potential for management of those impacts by an Indigenous Land Use Agreement or other native title compliance outcomes
- proposed land use changes in any areas of high conservation value and information on how easement widths and vegetation clearance in sensitive environmental areas will be minimised
- potential issues involved in proximity and/or co-location of other current or proposed infrastructure services
- potential impacts on future road upgrades
- identification of any land units requiring specific management measures.

3.2.2 Scenic amenity

Description of environmental values

The EIS should detail the scenic and landscape values of the project site and surrounding area, focusing on the visual absorption capacity of the site and including the relevant world heritage values. This section should describe the existing landscape features, panoramas and views that have, or could be expected to have, value to the community. Information in the form of maps and photographs should be used, particularly where addressing the following issues:

- major views, view sheds, outlooks, and features contributing to the amenity of the area, including assessment from private residences
- focal points, landmarks, waterways and other features contributing to the visual quality of the area and the project site/s

- character of the local and surrounding areas including vegetation and land use
- the outlook from sea and nearby national parks back towards Great Keppel Island.

At a level of detail appropriate to the scale of the project, provide a description of the relevant geomorphology, supported by illustrative mapping highlighting any significant features and associated environmental values.

Potential impacts and mitigation measures

Describe the potential beneficial and adverse impacts of the project on landscape character and visual qualities of the site and the surrounding area. The assessment should address the local and broader visual impacts of the project buildings, other structures and breakwater, including height of infrastructure above tree-line, effect of facilities on current tree-line along hills and ranges viewed from the mainland. This should include views from places of residence, work, and recreation, from road, cycle and walkways, including the adjacent mainland, from the air and other known vantage points day (including views from the water) and night, during all stages of the project as it relates to the surrounding landscape.

Sketches, diagrams, computer imaging/simulation and photos are to be utilised where possible to portray the near views and far views of the completed structures and their surroundings from visually sensitive locations, which include the adjacent mainland.

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

3.2.3 Iconic values

Description of relevant iconic values and protected planning provisions

This section of the EIS should identify and describe those iconic values and protected planning provisions of the Livingstone iconic place (declared under the *Iconic Queensland Places Act 2008*) of relevance to the project site and surroundings. This should include, but not be limited to:

- the five iconic values for the Livingstone iconic place
- 'The Keppels (Z42)' Livingstone Planning Scheme 2005 Zoning Map
- the Comprehensive Development Zone (Great Keppel Island – GKI) Code
- the Great Keppel Island Structure Map 'PSM 5'
- relevant Special Management Area Codes
  - Natural Features Code
- relevant Overlay Maps
  - Protected Area Overlay Map 01

- Steep land, Drainage Problem overlay Map 02A
- Wetlands Overlay Map 03A/1
- Storm Tide/Bushfire Hazard Overlay Map 05A/1

Potential impacts and mitigation measures

Assess and describe the potential impacts of the project on the relevant iconic values of the Livingstone iconic place, having regard to the relevant protected planning provisions. This should include, but not be limited to:

- a detailed planning assessment against the declared iconic values for the Livingstone iconic place and the protected planning provisions
- the range of uses envisaged assessed against those nominated in the zone code for Comprehensive Development Zone—Great Keppel Island
- overall outcomes of the Great Keppel Island Code in particular:
  - visual quality impacts in relation to the protection of dominant landscape features
  - proposed subdivision
  - density
  - scale, building height and slope including bushfire analysis
  - the western aquifer in terms of surface and groundwater hydrology (both upstream and downstream), water quality; or quantity and availability of raw water
  - the operation of the existing airstrip at Fisherman's Beach
  - erosion prone areas which contains most of the low lying land shown on overlay map 02A as referred to in the Natural Features Code
- level of compliance with the precincts illustrated on the PSM 5 – Great Keppel Island Structure Map
- future visitor's enjoyment of the Island's nature character
- the capacity of existing physical infrastructure.

Measures and strategies to mitigate potential impacts should be identified.

3.2.4 Lighting

An assessment of all potential impacts of lighting of the project, during all stages, is to be provided, with particular reference to objectives to be achieved and management methods to be implemented to mitigate or avoid:

- the visual impact at night
- night operations/maintenance and effects of lighting on fauna (including marine fauna)

- night operations/maintenance and effects of lighting on visitors and residents
- the potential impact of increased vehicular traffic
- changed habitat conditions for nocturnal fauna and associated impacts
- potential impacts on amenity not only for island residents but for those on the mainland with views of Great Keppel Island
- impacts on nesting turtles
- impacts on flying insect populations.

3.2.5 Topography, geology and soils

Description of environmental values

Maps should be provided locating the project in state, regional and local contexts. The topography should be detailed with contours at suitable increments, shown with respect to Australian Height Datum (AHD). Significant features of the landscape and topography should be included and commented on the maps.

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

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

As required by State Planning Policy 2/02: Planning and Managing Development Involving Acid Sulfate Soils, for proposed disturbances undertake an onshore and offshore investigation of acid sulfate soils according to the *Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils (ASS) in Queensland 1998*.

Potential impacts and mitigation measures

This section should provide details of any potential impacts to the topography or geomorphology associated with the project and proposed mitigation measures, including:

- a discussion of the project in the context of major topographic features and any measures taken to avoid or minimise impact to such, if required
- the objectives to be used for the project in any re-contouring or consolidation, rehabilitation, landscaping, and fencing.

Identify for all permanent and temporary landforms the possible soil erosion rate and provide a description of the techniques used to manage the impact. Identify all soil types and outline the erosion potential (both wind and water) and erosion management techniques to be used. Detail the maintenance of environmental flows with respect to surface flows. An erosion-monitoring program, including rehabilitation measures for erosion problems identified during construction, must also be outlined and acceptable mitigation strategies provided.

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

Summarise methods proposed to prevent or control erosion with regard to:

(a) *the Soil Erosion and Sediment Control – Engineering Guidelines for Queensland Construction Sites* (Institute of Engineers Australia (Qld Division) 1996)

(b) the EPA Guideline *EPA Best Practice Urban Stormwater Management: Erosion and Sediment Control*

(c) preventing soil loss in order to maintain land capability/suitability

(d) preventing degradation of local waterways.

The potential for acid generation by disturbance of acid sulfate soils during earthworks and construction should be discussed and measures for management of soils and mitigation of impacts should be proposed for all site earthworks and construction activities. Should action criteria be triggered by acid generation potential as a result of testing, provide a site-specific Acid Sulfate Soils Management Plan with management strategies according to the *Queensland Acid Sulfate Soil Technical Manual, Soil Management Guidelines 2002*.

3.2.6 Land contamination

Description of environmental values

The following information needs to be presented in the EIS:

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

Potential impacts and mitigation measures

The EIS should discuss the management of any contaminated land and potential for contamination from construction, commissioning and operation, in accordance with DERM (formerly EPA) *Draft Guidelines for the Assessment and Management of*

Contaminated Land in Queensland (1998) and the *National Environment Protection (Assessment of Site Contamination) Measure* (1999).

This section should describe strategies and methods to be used to prevent and manage any land contamination resulting from the project, including the management of dredged material, any acid generation or management of chemicals and fuels to prevent spills or leaks.

Intentions should be stated concerning the classification of land contamination after project completion.

3.3 Nature conservation

This section should detail the existing nature conservation values that may be affected by the proposal. The environmental values should be described in terms of:

- integrity of ecological processes, including habitats of rare and threatened species
- conservation of resources
- biological diversity, including habitats of rare and threatened species
- integrity of landscapes and places including wilderness and similar natural places
- aquatic, marine, and terrestrial ecosystems.

Survey effort should be sufficient to identify, or adequately extrapolate, the floral and faunal values over the range of seasons, particularly during and following a wet season. The survey should account for the ephemeral nature of watercourses traversing the proposal area and seasonal variation in fauna populations.

Wherever possible, seek the involvement of the local Indigenous community in the conduct of field observations and survey activities to identify the traditional and contemporary Indigenous uses of species.

The section should also outline the proposed strategies to avoid, or minimise and mitigate impacts on the identified natural values within the project's footprint and any impacts outside the footprint caused or expected to be caused by the development.

Key flora and fauna indicators should be identified for future ongoing monitoring.

3.3.1 Sensitive environmental areas

Description of environmental values

The EIS should identify areas that are environmentally sensitive in proximity to the project on a map of suitable scale. This should include areas classified as having national, state, regional or local biodiversity significance, or flagged as important for their integrated biodiversity values. Reference should be made to both Queensland and Australian Government legislation and policies on threatened species and ecological communities.

Areas regarded as sensitive with respect to flora and fauna have one or more of the following features and should be identified and mapped:

- important habitats of species listed under the *Nature Conservation Act 1992* and/or Commonwealth EPBC Act as presumed extinct, endangered, vulnerable or rare
- regional ecosystems listed as 'endangered' or 'of concern' under State legislation, and/or ecosystems listed as presumed extinct, endangered or vulnerable under the Commonwealth EPBC Act
- good representative examples of remnant regional ecosystems or regional ecosystems which are described as having ‘medium’ or ‘low’ representation in the protected area estate as defined in the Regional Ecosystem Description Database (REDD) available at the DERM website
- sites listed under international treaties such as Ramsar wetlands and World Heritage areas
- sites containing near threatened or bio-regionally significant species or essential, viable habitat for near threatened or bio-regionally significant species
- sites in, or adjacent to, areas containing important resting, feeding or breeding sites for migratory species of conservation concern listed under the Convention of Migratory Species of Wild Animals, and/or bilateral agreements between Australia and Japan (JAMBA), between Australia and China (CAMBA), and between Australia and the Republic of Korea (ROKAMBA)
- sites adjacent to nesting beaches, feeding, resting or calving areas of species of special interest, for example, marine turtles, dugong and cetaceans
- sites containing common species which represent a distributional limit and are of scientific value or which contains feeding, breeding, resting areas for populations of echidna, koala, platypus and other species of special cultural significance
- sites containing high biodiversity that are of a suitable size or with connectivity to corridors/protected areas to ensure survival in the longer term. Such land may contain:
  - natural vegetation in good condition or other habitat in good condition (e.g. wetlands)
  - degraded vegetation or other habitats that still supports high levels of biodiversity or acts as an important corridor for maintaining high levels of biodiversity in the area
- a site containing other special ecological values, for example, high habitat diversity and areas of high endemism
- ecosystems which provide important ecological functions such as: wetlands of national, state and regional significance; coral reefs; riparian vegetation; important buffer to a protected area or important habitat corridor between areas

- sites of palaeontologic significance such as fossil sites
- sites of geomorphological significance, such as lava tubes or karst
- protected areas which have been proclaimed under the *Nature Conservation Act 1992* and *Marine Parks Act 1982* or are under consideration for proclamation
- areas of major interest, or critical habitat declared under the *Nature Conservation Act 1992* or high nature conservation value areas or areas vulnerable to land degradation under the *Vegetation Management Act 1999*
- significant coastal dunes and significant coastal wetlands as defined by (draft) Queensland Coastal Plan
- any high-value regrowth, as described by DERM, should be identified and mapped.

Areas of special sensitivity include the freshwater and marine environment and wetlands, wildlife breeding or roosting areas, wildlife feeding areas and significant wildlife habitat and pathways any significant habitat or relevant bird flight paths for migratory species, bat roosting and breeding caves including existing structures such as adits and shafts, and habitat of threatened plants, animals and communities.

Potential impacts and mitigation measures

This section should discuss the impact of the project on species, communities and habitats of local, regional or national significance in sensitive environmental areas as identified above. Also it should include human impacts and the control of any domestic animals introduced to the area.

The EIS should demonstrate how the project would comply with the following hierarchy:

- avoiding impact on areas of remnant vegetation and other areas of conservation value
- mitigation of impacts through rehabilitation and restoration including, where relevant, a discussion of any relevant previous experience or trials of the proposed rehabilitation
- 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.

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

The EIS should address any actions of the project or likely impacts that require an authority under the *Nature Conservation Act 1992*, and/or would be assessable development for the purposes of the *Vegetation Management Act 1999*.

Outline how these measures will be implemented in the overall EMP for the project.

Where relevant, this section should discuss environmental offset requirements in accordance with the *Queensland Government Environmental Offsets Policy* and taking into account the applicable specific-issue offset policies, as follows:

- *Policy for Vegetation Management Offsets* (NRW, 2007)
- *Mitigation and Compensation for Works or Activities Causing Marine Fish Habitat Loss* (DPI&F, 2002)
- draft *Policy for Biodiversity Offsets* (consultation draft, EPA, 2008).

Any departure from no net loss of ecological values should be described.

3.3.2 Terrestrial flora

Description of environmental values

Provide vegetation mapping for all relevant project sites. Adjacent areas should also be mapped to illustrate interconnectivity. Mapping should also illustrate any larger scale interconnections between areas of remnant or regrowth vegetation where the project site includes a corridor connecting those other areas. Information should include a comparison of site mapping, with mapping produced by Queensland Herbarium, with discussion of any differences.

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

- location and extent of vegetation types using the regional ecosystem type descriptions in accordance with the Regional Ecosystem Description Database (REDD)
- location of vegetation types of conservation significance based on regional ecosystem types and occurrence of species listed as protected plants under the Nature Conservation (Wildlife) Regulation 1994 and subsequent amendments, as well as areas subject to the *Vegetation Management Act 1999*
- the current extent (bioregional and catchment) of protected vegetation types of conservation significance within the protected area estate (national parks, conservation parks, resource reserves, nature refuges and conservation reserves under the *Land Act 1991*)
- any plant communities of cultural, commercial or recreational significance should be identified
- the location of any horticultural crops in the vicinity of the project area

- location and abundance of any exotic or weed species.

Sensitive or important vegetation types should be highlighted, including any marine littoral and subtidal zone and riparian vegetation, and their value as habitat for fauna and conservation of specific rare floral and faunal assemblages or community types. The description should contain a review of published information regarding the assessment of the significance of the vegetation to conservation, recreation, scientific, educational and historical interests.

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

- the relevant Regional Vegetation Management Codes
- site data should be recorded in a form compatible with the Queensland Herbarium CORVEG database
- the minimum site size should be 10 by 50 metres
- a complete list of species present at each site should be recorded
- the surveys should include species structure, assemblage, diversity and abundance
- the relative abundance of plant species present should be recorded
- any plant species of conservation, cultural, commercial or recreational significance should be identified
- specimens of species listed as protected plants under the Nature Conservation (Wildlife) Regulation 1994, other than common species, are to be submitted to the Queensland Herbarium for identification.

Existing information on plant species may be used instead of new survey work provided that the data is derived from previous surveys at the site consistent with the above methodology. Methodology used for flora surveys including site maps (at appropriate scales) and GPS points should be specified in the appendices to the report.

Potential impacts and mitigation measures

The potential environmental harm to the ecological values of the area arising from the construction, operation and decommissioning of the project including clearing, salvaging or removal of vegetation should be described, and the indirect effects on remaining vegetation should be discussed. Short-term and long-term effects should be considered with comment on whether the impacts are reversible or irreversible.

With regard to all components of the project, this section should include:

- any management actions to minimise vegetation disturbance and clearance

- a discussion of the ability of identified vegetation to withstand any increased pressure resulting from the project and any measures proposed to mitigate potential impacts
- a description of the methods to ensure rapid rehabilitation of disturbed areas following construction, including the species chosen for revegetation which should be consistent with the surrounding associations
- details of any post construction monitoring programs
- a discussion of the potential environmental harm on flora due to any alterations to the local surface and ground water environment with specific reference to impacts on riparian vegetation or other sensitive vegetation communities
- a description of any foreseen impacts which increase the susceptibility of ecological communities and species to the impacts of climate change (e.g. frequency of bushfires, decreased habitat range etc).

Outline how these measures will be implemented in the overall EMP for the project. Weed management strategies are required for containing existing weed species (e.g. parthenium and other declared plants) and ensuring no new declared plants are introduced to the area. Reference should be made to the local government authority's pest management plan and any strategies and plans recommended for the project area by Biosecurity Queensland. The strategies should be discussed in accordance with provisions of the *Land Protection (Pest and Stock Route Management) Act 2002* in the main body of the EIS and in the pest management plan within the EMP for the project.

If vegetation is to be removed, details of an achievable offset is to be presented and provided to the Coordinator General prior to finalising the EIS.

3.3.3 Terrestrial fauna

Description of environmental values

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

- the description of the fauna present or likely to be present in the area should include species diversity (i.e. a species list) and abundance of animals of recognised significance
- any species that are poorly known but suspected of being rare or threatened
- habitat requirements and sensitivity to changes, including movement corridors and barriers to movement
- the existence of feral or introduced animals including those of economic or conservation significance

- existence (actual or likely) of any species/communities of conservation significance in the study area, including discussion of range, habitat, breeding, recruitment feeding and movement requirements and current level of protection (e.g. any requirements of protected area management plans or threatened species recovery plans)
- an estimate of commonness or rarity for the listed or otherwise significant species
- the use of the area by migratory fauna.

The EIS should indicate how well any affected communities are represented and protected elsewhere in the bio-region where the project occurs. The methodology used for fauna surveys should be specified. Relevant site data should be provided to the DERM in a format compatible with the Wildlife Online database[1] for listed threatened species. The occurrence of feral species in the project area should be described.

Potential impacts and mitigation measures

The assessment of potential impact should consider impacts the project may have on terrestrial fauna, relevant wildlife habitat and other fauna conservation values, including:

- impacts due to loss of range/habitat, food supply, nest sites, breeding/recruiting potential or movement corridors or as a result of hydrological change
- impacts on species of conservation significance
- cumulative effects of direct and indirect impacts
- threatening processes leading to progressive loss
- potential to change the fauna composition with the introduction of the more adaptable species (e.g. crows, magpies)
- a description of any foreseen impacts which increase the susceptibility of ecological communities and species to the impacts of climate change (e.g. frequency of bushfires, decreased habitat range etc).

The EIS should address any actions of the project or likely impacts that require an authority under the *Nature Conservation Act 1992*. With respect to mitigation strategies the following should be provided:

- measures to avoid and mitigate the identified impacts. Any provision for buffer zones and movement corridors, nature reserves or special provisions for migratory animals should be discussed and coordinated with the outputs of the flora assessment
- details of the methodologies that would be used to avoid injuries to livestock and native fauna as a result of the project's construction and operational works, and if accidental injuries should occur the methodologies to assess and handle injuries

[1] Formerly the *Wildnet* database.

- strategies for complying with the objectives and management practices of relevant recovery plans.

Outline how these measures will be implemented in the overall EMP for the project. Rehabilitation of disturbed areas should incorporate, where appropriate, provision of nest hollows and ground litter.

Feral animal management strategies and practices should be addressed. The study should develop strategies to ensure that the project does not contribute to increased encroachment of a feral animal species. Reference should be made to the local government authority's pest management plan and any strategies and plans recommended for the project area by Biosecurity Queensland. The strategies should be discussed in accordance with provisions of the *Land Protection (Pest and Stock Route Management) Act 2002* in the main body of the EIS and in the pest management plan within the EMP for the project.

3.3.4 Aquatic ecology

Description of environmental values

General

The aquatic (and marine) flora and fauna occurring in the areas affected by the proposal should be described, noting the patterns and distribution in the waterways and any associated wetlands. The description of the fauna and flora present or likely to be present in the area should include:

- fish species, mammals, reptiles, amphibians, crustaceans, corals and aquatic invertebrates occurring in the waterways within the affected area and any associated wetlands and coastal waters (as defined under section 5 of the *Fisheries Act 1994*)
- any rare or threatened marine species
- habitat requirements and the sensitivity of aquatic species to changes in flow regime, water levels and water quality in the project areas
- aquatic plants including native and exotic/weed species, including algae and seagrasses
- aquatic and benthic substrate
- habitat downstream of the project or potentially impacted due to currents in associated lacustrine and marine environments
- aquatic substrate and stream type, including extent of tidal influence and common levels such as Highest Astronomical Tide and Mean High Water Springs
- reef habitat and coral species impacted by the proposed development.

Wetlands listed by DERM as areas of national, state or regional significance should be described and their values and importance for aquatic flora and fauna species.

Flora

Define the nature and extent of existing marine features such as littoral and sub-littoral lands, waterways, affected tidal and sub-tidal lands, corals and marine vegetation (e.g. salt couch, seagrass and mangroves) within the proposed area of development and in the areas adjacent to the project.

Field assessments should be conducted for plant species, preferably in both pre- and post-wet season conditions, as follows:

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

Fauna—turtles

The turtle species which may be utilising beaches in proximity to the proposed development area should be described. Monitoring of turtle nesting along beaches proximate to the proposed project area should be undertaken for the duration of the turtle nesting seasons for turtle species occurring in the area.

A desktop review of information on the turtle communities of the study area, should be undertaken with specific attention paid to any anecdotal or recorded information on turtle populations frequenting the port area and any known nesting sites.

Reference should be made to studies of the turtle populations and DERM should be consulted on historical data for the area, in particular in relation to previously conducted nesting surveys.

This information shall be used to establish the basis for recommendations in relation to the most appropriate management measures to be adopted in order to minimise the risk of turtle injury or death. Particular reference should be given to the protection of turtles from boat strike given the potential increase in boat traffic closer to feeding grounds than the existing port channel.

Fauna—dugongs

A desktop review of information on the dugong communities of the study area, should be undertaken with specific attention paid to any anecdotal or recorded information on dugong populations frequenting the port area.

Reference should be made to studies of the dugong populations and DERM should be consulted on historical data for the area.

This information shall be used to establish the basis for recommendations in relation to the most appropriate management measures to be adopted in order to minimise the risk of dugong injury or death. Particular reference should be given to the protection of dugongs from boat strike given the potential increase in boat traffic closer to feeding grounds than the existing port channel.

Fauna—cetaceans

A desktop review of information on the cetacean communities of the study area, should be undertaken with specific attention paid to any anecdotal or recorded information on cetacean populations frequenting the port area.

Reference should be made to studies of the cetacean populations and DERM should be consulted on historical data for the area.

This information shall be used to establish the basis for recommendations in relation to the most appropriate management measures to be adopted in order to minimise the risk of cetacean injury or death. Particular reference should be given to the protection of cetaceans from boat strike given the potential increase in boat traffic closer to feeding grounds than the existing port channel.

Benthic macroinvertebrates

Benthic macroinvertebrate communities likely to be directly or indirectly impacted by the project should be characterised for the assessment of the potential impacts of proposed capital works. The effect of ongoing maintenance activities including dredging on benthic fauna should also be considered.

Fish habitat

Describe the nature and extent of fish habitats that have the potential to be impacted including seagrass (permanent and ephemeral), macro-algae, mangrove, coral reefs and saltcouch communities and sand bars/mudflats, mapped relative to existing features for reference.

Surveys for seagrass and algae should reflect the seasonal variation in occurrence and density of these communities. The location and density of marine plants should be mapped at an appropriate scale, including a series showing inter-year change.

Show the location of any declared or proposed Fish Habitat Areas proximal to the proposed development site.

Potential impacts

This section should provide a discussion of the potential impacts of the project including:

- potential short-term and long-term impacts to flora and fauna communities from any dredging works. This should include modelling of the potential impacts of the dredge plume (e.g. increased turbidity) on seagrass, corals and other aquatic species within and adjacent to the proposed marina area
- potential impacts due to any alterations to the long term hydrodynamic processes of the coastal environments should be discussed, with specific reference to impacts on sand bars/spits, riparian vegetation and other sensitive vegetation communities, including mangrove stands and seagrass meadows
- details of proposed stream diversions, causeway construction and crossing facilities, stockpiled material and other impediments that would restrict free movement of aquatic fauna
- potential impact of the creation of permanent deep water within the proposed marina and the likely colonisation of the marina and marine structures with marine biota, including invasive species
- potential impacts on marine park values through increase marine traffic visitation, with specific consideration of boat strike frequency for turtles, dugongs, dolphins and whales. The potential demand for high speed ferry connection to the mainland should also be discussed in relation to impacts on marine park values
- potential impacts resulting from recreational use of the island, including altered lighting and noise environments, and use of recreational crafts such as jet skis
- potential impacts from climate change and the projects potential to increase the susceptibility of aquatic (including marine) ecological communities and species to such impacts (e.g. coral bleaching (water quality), decreased habitat range (fragmentation) etc)
- potential short-term and long-term impacts of the proposed development on coral species and reef habitat
- potential short-term and long-term impacts of the proposed golf course construction and maintenance requirements, including the addition of fertiliser and other chemicals
- potential impact (direct, indirect and cumulative) to marine and terrestrial fauna as a result of alterations to long term hydrodynamic processes of coastal environments
- potential negative impacts that would increase biodiversity (at least in the short-term) such as increased representation of algal, cyanobacterial, and other pests species or indicators of degrading/changing habitats
- potential impacts of increased visitor numbers and resultant increased fishing pressures on fish abundance and diversity.

Mitigation measures

This section should provide a description of proposed mitigation measures and/or offsets to address potential aquatic biology impacts, including:

- measures to avoid fish spawning periods, such as seasonal construction of waterway crossings and measures to facilitate fish movements through water crossings
- details of alternatives to waterway crossings where possible
- measures to prevent direct impacts on marine fauna by any dredging works including spoil disposal; these include:
  - dredge head design to physically exclude and deter marine fauna
  - operational constraints and monitoring systems to minimise risks to turtles, dugongs, dolphins and whales
  - spoil disposal methods to avoid potential impacts
  - monitoring and reporting of harm and subsequent review of operations
- offsets proposed for unavoidable, permanent loss of fisheries habitat including vegetated and unvegetated habitats
- a description of methods to minimise the potential for the introduction and/or spread of weed species or plant disease
- monitoring of aquatic biology health, productivity and biodiversity in areas subject to direct discharge
- measures to mitigate any potential impact to marine flora, estuarine flora and coastal flora
- measures to mitigate any potential impact from the proposed development on coral species and reef habitat
- measures to mitigate any potential impacts from the proposed golf course construction and maintenance requirements, including the addition of fertiliser and other chemicals
- proposed buffer between any development and aquatic ecosystems.

The EIS should address any actions of the project or likely impacts that require an authority under the relevant legislation including the *Nature Conservation Act 1992* and/or the *Fisheries Act 1994.* Outline how these measures will be implemented in the overall EMP for the project.

3.4 Water resources

3.4.1 Description of environmental values

This section of the EIS should provide a description of the existing water resources that may be affected by the project in the context of environmental values as defined in such documents as the EP Act, Environmental Protection (Water) Policy 2009 [EPP (Water)], *Australia and New Zealand Guidelines for Fresh and Marine Water Quality 2000,* the *EPA Queensland Water Quality Guidelines 2009*, and any relevant local and regional guidelines.

An indication of the quality and quantity of water resources in the vicinity of the project area should be given. This section should describe:

- existing surface and groundwater in terms of physical, chemical and biological characteristics, and the interaction between surface and groundwater
- the recharge and discharge areas for groundwater on and around the island
- existing surface drainage patterns, flows, history of flooding including extent, levels and frequency and present water uses.

The environmental values of the surface waterways and ground water of the affected area should be described in terms of:

- values identified in the EPP (Water)
- physical integrity, fluvial processes and morphology, including riparian zone vegetation and form, if relevant
- any impoundments (e.g. dams, levees, weirs etc.)
- hydrology of waterways and groundwater
- sustainability, including both quality and quantity
- dependent ecosystems
- existing and other potential surface and groundwater users
- any Water Resource Plans relevant to the affected catchments
- possible discharge areas—where the groundwater seeps into coastal waters.

If the project is likely to use or affect local sources of groundwater, this section should provide a description of groundwater resources in the area in terms of:

- geology/stratigraphy
- aquifer type—such as confined, unconfined
- depth to and thickness of the aquifers
- depth to water level and seasonal changes in levels
- groundwater flow directions (defined from water level contours)
- interaction with surface water
- possible sources of recharge
- potential exposure to pollution
- current access to groundwater resources in the form of bores, springs, ponds, including quantitative yield of water and locations of access
- water quality, especially salinity and nitrates.

The groundwater assessment should also be consistent with relevant guidelines for the assessment of acid sulphate soils including spatial and temporal monitoring to

accurately characterise baseline groundwater characteristics. Specific reference should be made to relevant legislation or water resource plans for the region. The review should also provide an assessment of the potential take of water from the aquifer and how current users and the aquifer itself and any connected aquifers will be affected by the take of water.

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

- location
- pumping parameters
- draw down and recharge at normal pumping rates
- seasonal variations (if records exist) of groundwater levels
- historical environmental health data on groundwater held by the Rockhampton Regional Council.

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

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

If in the event of the need for a desalination plant this would require detailed hydrodynamic modelling of the brine plume and its affect on the natural environment.

3.4.2 Potential impacts and mitigation measures

This section should assess potential impacts of the project on water resource environmental values identified in the previous section. It should also define and describe the objectives and practical measures for protecting or enhancing water resource environmental values, to describe how nominated quantitative standards and indicators may be achieved, and how the achievement of the objectives will be monitored, audited and managed. Discuss potential impacts from sewage treatment plant overflows and pump station overflows. Matters to be addressed should include:

- potential impacts on the flow and the quality of surface and ground waters from all phases of the project, with reference to their suitability for the current and potential downstream uses, including aquatic ecosystem protection and discharge licences
- implications of irrigation and maintenance of the golf course with fertilizers and pesticides, especially on groundwater quality and ultimate effects on surrounding coastal waters and sediments
- an assessment of all likely impacts on groundwater depletion or recharge regimes

- potential impacts of surface water flow on existing infrastructure, with reference to the *EPP (Water)* and the *Water Act 2000*
- chemical and physical properties of any waste water including stormwater at the point of discharge into natural surface waters, including the toxicity of effluent to flora and fauna. Having regard to the requirements of the Environmental Protection (Water) Policy, the EIS must present the methods to avoid stormwater contamination and the means of containing, recycling, reusing, treating and disposing of stormwater
- potential impacts on other downstream receiving environments, if it is proposed to discharge water to a riverine system
- the results of a risk assessment for uncontrolled releases to water due to system or catastrophic failure, implications of such emissions for human health and natural ecosystems, and list strategies to prevent, minimise and contain impacts
- an assessment of the environmental and health impact of the discharges and the potential for any chemicals or toxins to bio-accumulate in the aquatic environment (both flora and fauna).

Management strategies should be adequately detailed to demonstrate best practice management and that environmental values of receiving waters will be maintained to nominated water quality objectives. Monitoring programs, which will assess the effectiveness of management strategies for protecting water resources during the construction, operation and decommissioning of the project, should be described. Outline how these strategies are incorporated into appropriate sections of the EMP.

Surface water and water courses

The hydrological impacts of the proposal on surface water and water courses should be assessed, particularly with regard to stream diversions, scouring and erosion and changes to flooding levels and frequencies both upstream and downstream of the project. When flooding levels will be affected, modelling of afflux should be provided and illustrated with maps.

The need or otherwise for licensing of any diversions, water impoundments, placement of fill or destruction of native vegetation within any water course, lake or spring under the *Water Act 2000* and the *Fisheries Act 1994* should be discussed. Water allocation and water sources, including impacts on existing water entitlements, including water harvesting, should be established in consultation with DERM.

Wastewater treatment

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

In relation to water supply and usage, and wastewater disposal, the EIS should discuss anticipated flows of water to and from the proposal area. Where dams, weirs

or ponds are proposed, the EIS should investigate the effects of predictable climatic extremes (storm events, floods and droughts allowing for climate change) on: the capacity of the water storages (dams, weirs, ponds), the ability of these storages to retain contaminants; the structural integrity of the containing walls; relevant operating regime and the quality of water contained, and flows and quality of water discharged. The design of all water storage facilities should follow the technical guidelines on site water management.

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

Groundwater

The EIS should include an assessment of the potential environmental impact caused by the project (and its associated project components) to local groundwater resources, including the potential for groundwater induced salinity and contamination from use of pesticides and fertilisers on the golf course and other areas of the resort.

The response of the groundwater resource to the progression and final cessation of the proposal should be described.

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

Any potential for the project to impact on groundwater dependent vegetation and stygofauna should be assessed and described. Avoidance and mitigation measures should be described.

3.5 Coastal environment

The function of this section is to describe the existing coastal environment, which may be affected by the project in the context of coastal values identified in the *Queensland State of the Environment Reports* and environmental values as defined by the EP Act and Environmental Protection Policies.

This section should also identify actions associated with the project that are assessable development within the coastal zone and will require assessment under the provisions of the *Coastal Protection and Management Act 1995*.

The EIS should assess the project's consistency with the relevant policies of the draft *Queensland Coastal Plan*, including the draft *State Planning Policy Coastal Protection* and the draft *State Policy Coastal Management*.

3.5.1 Hydrodynamics and sedimentation

Description of environmental values

The physical processes of the coastal environment related to the project should be described, including waves, currents, tides, storm surges, freshwater flows and the key influencing factors of cyclones and other severe weather events and their interaction in relation to the assimilation and transport of pollutants entering marine waters from, or adjacent to, the project area. This should include the following:

- the environmental values of the coastal resources of the affected area in terms of the physical integrity and morphology of landforms created or modified by coastal processes
- describe the environmental values of the coastal resources of the affected area in terms of the physical integrity and morphology of landforms created or modified by coastal processes
- describe the tidal hydrodynamics of the project area and the adjoining tidal waterways in terms of water levels and current velocities and directions at different tidal states. Two and/or three-dimensional modelling should be undertaken
- provide details of water levels and flows associated with historical and predicted storm surges
- the wave climate in the vicinity of the project area and the adjacent beaches including a description of inter-annual variability and details of historical and predicted extreme wave conditions generated by tropical cyclones or other severe storm events
- predict the likely changes to hydrodynamics (including water levels, currents, wave conditions and freshwater flows) and sedimentation in the project area due to climate change
- provide a detailed assessment of the morphology and variability of Putney Beach and Fishermans Beach including predicted impacts of climate change and sea level rise
- describe the hydrology of the area and the adjacent catchments of the rivers and the associated freshwater flows within the study area and the adjoining tidal waterways in terms of water levels and discharges. The interaction of freshwater flows with different tidal states, including storm tides, should also be provided.

Potential impacts and mitigation measures

This section should describe the potential changes to the hydrodynamic processes and local sedimentation resulting from the construction and operation of the project. This should include:

- impacts on tidal flows and water levels

- changes to sediment transport patterns including the potential of the proposal to affect the adjacent beaches particularly Putney Beach and Fishermans Beach
- assess the environmental impact to Passage Rocks reefs of continual sediment accumulation and settlement, turbidity, and pollution from vessels.

This assessment should also provide a discussion of the potential impacts associated with extreme events such as storm tide flooding, taking into account the predicted impacts of climate change. 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.

Discuss the analysis of feasible alternatives to the proposal that would avoid or minimise any impacts on coastal processes in the area. Where unavoidable impacts are predicated, describe proposed mitigation measures.

3.5.2 Sediment quality and dredging

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, TBT, PAH's, % organic carbon, sediment grain size and pesticides), the presence of fines and/or indurated layers and acid sulphate potential, should be provided. This information should be presented as a map of sediment types based on their physical and chemical properties and include depth profiles.

Assessment of marine sediments should be undertaken in accordance with the *National Assessment Guidelines for Dredging 2009* (Department of the Environment, Water, Heritage and the Arts, 2009).

It should also include the following:

- detail on specific measures to maintain sediment quality to nominated quantitative standards within the project and surrounding areas, particularly where future maintenance dredging may be required
- provide comment on the choice of the disposal site in relation to coastal management outcomes, having regard to the nature of the spoil, cost of alternatives and potential impacts on coastal resources and their values
- describe provisions for dredge material disposal and associated impacts on sediment quality
- discuss disposal options for contaminated material, if required. This must include a description of the arrangements to be put in place for long term (20 years) dredge material disposal including details of proposed material placement areas
- a prediction of time for spoil to be colonised (if dumped in the marine environment), and the measures proposed to expedite this.

3.5.3 Water quality

Description of environmental values

Provide baseline information on water quality of coastal waters with surveys done pre and post wet season. This information should include (but not necessarily be limited to) general physical chemical water quality parameters such as dissolved oxygen, pH, heavy metals, nutrients, temperature, salinity, polycyclic aromatic hydrocarbons (PAHs) and tributyltin (TBT), pesticides, oil in water and turbidity. For coastal areas potentially affected by sediment run-off or dredging, suspended solids concentration and Secchi depth should also be included. Discuss the interaction of freshwater flows with coastal waters and the significance of this in relation to marine flora and fauna adjacent to the project area.

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

- variability associated with the local wind climate, seasonal factors, freshwater flows and extreme events, including prolonged droughts and cyclones
- values identified in the *Environmental Protection (Water) Policy*.

Potential impacts and mitigation measures

The water quality objectives and practical measures for protecting, mitigating or enhancing coastal environmental values are to be defined and described, including how nominated quantitative standards and indicators may be achieved, and how the achievement of the water quality objectives will be monitored, audited and managed. The potential environmental harm caused by the project on coastal resources and processes shall be described in the context of controlling such effects. State Planning Policy 2/02: *Planning and Managing Development Involving Acid Sulfate Soils* should be addressed as should the *State Coastal Management Plan* and the Department of Primary Industries and Fisheries *Guidelines for Marine Areas*.

Specific issues to be addressed include:

- describing the water quality objectives used (including how they were developed), and how predicted activities will meet these objectives (refer to the DERM *Queensland Water Quality Guidelines* and the ANZECC *Guidelines for Fresh and Marine Water Quality*, 2000)
- potential threats to the water quality and sediment quality of the coastal environment within and outside of the project footprint, specifically associated with the construction and operation of the facilities.

This assessment shall consider, at minimum:

- dredging and dredge material disposal, including disturbance of fine grained sediments and contaminated material
- potential accidental discharges of contaminants during construction and operation of the marina

- release of contaminants from marine structures and vessels, including potential for the introduction of marine pests
- stormwater runoff from the marine precinct facilities and associated infrastructure
- flooding of relevant river systems and other extreme events
- analysis and assessment of any potential impact on water quality as a result of the construction and operation of the golf course
- contaminant runoff from the golf course.

Strategies for protecting Ramsar wetlands should be described, and any obligations imposed by state or Australian legislation or policy or international treaty obligations (i.e. JAMBA, CAMBA, and ROKAMBA) should be discussed.

3.6 Air quality

3.6.1 Description of environmental values

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 EP Act and *Environmental Protection (Air) Policy 2008*.

A discussion of the existing air shed environment both local and regional should be provided, including:

- background levels and sources of particulates, gaseous and odorous compounds and any major constituent
- pollutants, including greenhouse gases which may be affected by the project
- baseline monitoring results including sensitive receptors
- data on local meteorology and ambient levels of pollutants to provide a baseline for later studies or for the modelling of air quality environmental harms.

Parameters should include air temperature, wind speed and direction, atmospheric stability, mixing depth and other parameters necessary for input to the models.

3.6.2 Potential impacts and mitigation measures

The following air quality issues and their mitigation should be considered:

- an inventory of air emissions from the project expected during construction and operational activities
- identify ‘worst case’ emissions that may occur during operation. If these emissions are significantly higher than those for normal operations, it will be necessary to evaluate the worst-case impact as a separate exercise to determine whether the planned buffer distance between the facility and neighbouring sensitive receptors will be adequate

- ground level predictions should be made at any residential, industrial and agricultural developments believed to be sensitive to the effects of predicted emissions
- dust generation from construction activities especially in areas where construction activities are adjacent existing road networks or are in close proximity to sensitive receivers
- climatic patterns that could affect dust generation and movement
- vehicle emissions and dust generation along major haulage routes both internal and external to the project site
- human health risk associated with emissions from the facility of all hazardous or toxic pollutants should be assessed
- impacts on terrestrial flora and fauna
- odours from the sewage treatment plant and pump stations, potential odour from effluent reuse and odour risk from golf course water hazards.

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

3.7 Greenhouse gas emissions

3.7.1 Description of environmental situation

This section of the EIS should provide an inventory of projected annual emissions for each relevant greenhouse gas, with total emissions expressed in 'CO_2 equivalent' terms for the following categories:

- Scope 1 emissions, where 'Scope 1 emissions' means direct emissions of greenhouse gases from sources within the boundary of the facility and as a result of the facility's activities
- Scope 2 emissions, where 'Scope 2 emissions' means emissions of greenhouse gases from the production of electricity, heat or steam that the facility will consume, but that are physically produced by another facility
- briefly describe method(s) by which estimates were made.

The Department of Climate Change's National Greenhouse Accounts (NGA) Factors can be used as a reference source for emission estimates and supplemented by other sources where practicable and appropriate. As a requirement of the NGA Factors, estimates should include the loss of carbon sink capacity of vegetation due to clearing and impoundment.

3.7.2 Potential impacts and mitigation measures

This section of the EIS should discuss the potential for greenhouse gas abatement measures. This may include:

- a description of the proposed measures (alternatives and preferred) to avoid and/or minimise direct greenhouse gas emissions
- an assessment of how the preferred measures minimise emissions and achieve energy efficiency
- a description of any opportunities for further offsetting greenhouse gas emissions through indirect means including sequestration and carbon trading.

3.8 Noise and vibration

3.8.1 Description of 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 (Noise) Policy 2008.* The DERM's Noise Measurement Manual should be considered and references should be made to the *EPA Guideline Noise and Vibration from Blasting*.

Sensitive noise receptors adjacent to all project components should be identified and typical background noise and vibration levels estimated based on surveys at representative sites. The potential sensitivity of such receptors should be discussed and performance indicators and standards nominated.

3.8.2 Potential impacts and mitigation measures

The EIS should describe the impacts of noise and vibration generated during the construction and operational phases of the project. An analysis of noise and vibration impacts should include:

- the levels of noise and vibration generated, including noise contours, assessed against current typical background levels, using modelling where appropriate, at the identified sensitive receptors
- impact of noise, including low frequency noise (noise with components below 200Hz) and vibration at all potentially sensitive receivers compared with the performance indicators and standards nominated above
- impact on terrestrial and aquatic fauna
- proposals to minimise or eliminate these effects, including details of any screening, lining, enclosing or bunding of facilities, or timing schedules for construction and operations that would minimise environmental harm and environmental nuisance from noise and vibration.
- options for sensitive receivers that are otherwise unable to achieve a satisfactory internal noise level for the preservation of health and well-being identified within the *Environmental Protection (Noise) Policy 2008*.

3.8.3 Aircraft noise

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

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

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

The assessment of potential impacts from aircraft noise should be discussed in the context of Australian Standard 2021: *Acoustics – Aircraft Noise Intrusion and Building Siting and Construction (2000)*.

3.9 Waste

3.9.1 Existing waste generation and management

This section should estimate existing waste generation and describe the current waste management practices on Great Keppel Island, including solid, liquid and hazardous waste streams.

3.9.2 Potential impacts and mitigation measures

Waste generation

The EIS should identify and describe all sources, likely volumes and quality (where applicable) of waste associated with construction, operation and decommissioning of all aspects of the project. This section should describe:

- waste generated by delivery of material to site(s)
- all chemical and mechanical processes conducted on the construction sites that produce waste

- the amount and characteristics of solid and liquid waste produced on-site by the project, including the percentage of waste that would be suitable for reuse, recycling or recovery
- hazardous materials to be stored and/or used on-site, including environmental toxicity data and biodegradability.

Waste management

Having regard for best practice waste management strategies and the *Environmental Protection (Waste) Policy 2000* and *the Environmental Protection (Waste) Regulation 2000*, this section should assess the potential impact of all wastes generated during construction and operation and provide details of each waste in terms of:

- reducing waste generation and optimising resource recovery
- the options available (both on and off-site) for avoidance/minimisation, recycling, reuse and recovery (including any potential 'waste to energy' opportunities). Details on natural resource use efficiency (e.g. energy and water), co-generation of power and by-product reuse (as shown in a material/energy flow analysis) are required.
- market demand for recyclable waste (where appropriate)
- operational handling and fate of all wastes including storage. The percentage of total waste that will be diverted from landfill for reuse, recycling or recovery should be specified
- 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
- measures to minimize attraction of vermin, insects and pests
- the decommissioning of the construction site.

3.10 Transport

3.10.1 Existing infrastructure

The transport assessment is to be presented in separate reports for each project-affected mode (road, rail, air and sea) as appropriate. These assessment reports should provide sufficient information to allow an independent assessment of how existing transport infrastructure will be affected by project transport at the local and regional level during both construction and operation of the project. They should also include all base data assumptions, including current condition of the affected network

and its performance. Broadly describe the potentially affected road network, including the State-controlled road (SCR) network. Provide a summary of the current pavement (width, condition, and age), levels of service, speed environments, road safety profile, locations of existing services and utilities in the road reserves and locations and standards of existing access points. This section should differentiate between the SCR network and the local council roads.

3.10.2 Transport tasks and routes

The Road Impact Assessment should be undertaken in accordance with the Department of Transport and Main Roads *Guidelines for Assessment of Road Impacts of Development 2006*.

This section should describe:

- expected volumes of project inputs and outputs of transported raw materials, wastes, hazardous goods, finished products 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 construction and operation workforce personnel including visitors (volume, composition, timing and routes)
- likely heavy and oversize/indivisible loads (volume, composition, timing and routes) highlighting any vulnerable bridges and structures along proposed routes.

3.10.3 Potential impacts and mitigation measures

Impact assessment reports should include:

- details of the adopted assessment methodology (for impacts on roads: *The Road Impact Assessment Report (RIA*) in general accordance with Department of Transport and Main Roads *Guidelines for Assessment of Road Impacts of Development 2006*
- description of input data and assumptions, and justification of assumptions made
- a summary of consultation undertaken with transport authorities regarding scope of impact assessment and methodology.

The EIS should assess project impacts on:

- capacity, safety, efficiency and condition of transport operations, services and assets (from either transport or project operations)
- marine usage and infrastructure, including jetties, wharves, marinas, docks, navigational aids, recreational and commercial boating
- possible interruptions to transport operations
- the natural environment within the jurisdiction of an affected transport authority (for example road and rail corridors)

- the nature and likelihood of product-spill during transport if relevant.

3.10.4 Infrastructure alterations

The EIS should detail:

- any proposed alterations or new transport-related infrastructure and services required by the project (as distinct from impact mitigation works)
- construction of any project-related plant and utilities, within or impacting on the jurisdiction of any transport authority.

3.10.5 Transport impact management strategies

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 include consideration of that authority's works program and forward planning.

Findings of studies and transport infrastructure impact assessments should be an input into preparing a transport management plan.

Road management planning

This section should outline:

- procedures for assessing and agreeing on the scope of required mitigation works with road corridor managers (e.g. maintenance or upgrading), including any associated works, such as sourcing water and gravel
- strategies to minimise the effects of project transport on existing and future public road corridors
- steps to be taken to prevent access from public roads to the project sites
- strategies to maintain safe access to public road reserves to allow road/pipeline maintenance activities
- process for decommissioning of any temporary access to road reserves, e.g., stockpile sites.

Findings of studies and transport infrastructure impact assessments should be an input into preparing a draft road-use management plan. Conditions of approval for transport management impacts should also be detailed in the EMP.

Shipping management planning

To assist identification of maritime related impacts and to define mitigation strategies, Maritime Safety Queensland has developed guidelines for major development proposals. The guidelines specify the minimum information required by Maritime Safety Queensland to evaluate significant development proposals. The preferred

format for presentation of this information is through the development of management plans for:

- vessel traffic management
- aids to navigation
- ship-sourced pollution prevention.

The guideline is available at www.msq.qld.gov.au/Waterways/Major-development-proposals.aspx

The EIS should develop a Boat Harbour Management Plan describing the impacts and mitigation strategies associated with the development on the Rosslyn Bay State Boat Harbour.

The Regional Harbour Master should be consulted regarding maritime issues relating to the movement and loading of tankers and any barge operations. The EIS should discuss the results of the consultation.

Describe current vessels utilising the port and in the Commonwealth Marine Area, their size, shipping movements, anchorages, access to/from the port and navigational arrangements.

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

- potential for introduction of exotic organisms from increased shipping rates
- ballast water management arrangements—including Australian Quarantine and Inspection Service (AQIS) mandatory arrangements and agency contingency planning
- management of ship waste, in particular quarantine waste, domestic garbage, oil and sewage
- potential risk of spills and their management
- potential foreshore damage caused by tanker and tug activities
- potential for increased vessel strike to marine species
- potential impacts on existing shipping activity
- routes of ships in transit through port waters and the aligned infrastructure such as navigational aids.

Additional marine transport issues that should be considered include:

- the potential of the project to impact on water and land based recreational and commercial activities within the project site and surroundings

- proposals for the coordination of vessel navigation within and external to the proposed marina (i.e. including access channels) during both construction and operational phases of the project
- detailed information on the additional pressure that will be placed on existing passenger transport infrastructure, particularly if the proposal is predicated on achieving increased visitation to the region
- the impact of increased recreational and commercial boat traffic within the region as a result of the project
- any potential for interchanging between transport modes (e.g. private car, coaches, charter boats, air).

A vessel traffic management plan should be prepared that addresses:

- the cumulative impacts and mitigation strategies associated with the construction and operation of submarine pipelines installed as part of the development
- the impacts and mitigation strategies associated with the design, construction, and operation of the proposed Great Keppel Island marina and ferry terminal
- the demand for temporary and permanent mooring and anchorages in the vicinity of the resort
- the potential for greater volumes of recreational and commercial vessel traffic, including high speed craft and personal watercraft and the impacts and mitigation strategies to manage the interaction of craft in the vicinity of the resort should be identified. Further information describing supporting maritime infrastructure should be provided through an aids to navigation management plan.

A boat harbour management plan should be prepared that addresses:

- a description of the operations of the Roslyn Bay State Boat Harbour as the staging ground for the transport of materials to and from the island during the construction phase, including consideration of the impacts and mitigation strategies on the users and lease holders of the boat harbour
- a description of the impacts and mitigation strategies on Rosslyn Bay State Boat Harbour users and lease holders resulting from the transport of supplies and passengers to the Great Keppel Island resort from Rosslyn Bay State Boat Harbour during the operations of the resort.

Air service management planning

The air services and their current capacity serving the region should be described. Projections should be made of the requirements of the project for air transport to and from these regions, and the services required to supply these projections. An assessment is required of the infrastructure needed to support the projected level of air services. An assessment of proximity to existing and known future flight paths and likely expected air traffic movements, and impact on air safety is also required.

3.11 Indigenous cultural heritage

3.11.1 Description of existing Indigenous cultural heritage values

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

The section should also describe how in conjunction with the appropriate Aboriginal people, the cultural heritage values were ascertained including for example, the results of any Aboriginal cultural heritage survey undertaken; the DERM Aboriginal Cultural Heritage Register and database and any existing literature relating to Aboriginal cultural heritage in the project area.

3.11.2 Potential impacts and mitigation measures

This section should define and describe the objectives and practical measures for protecting or enhancing Aboriginal cultural heritage environmental values, describe how nominated quantitative standards and indicators may be achieved for cultural heritage management, and describe how the achievement of the objectives will be monitored, assessed and managed.

To the greatest extent practicable, significant cultural heritage areas should be avoided by the project. The EIS should provide an assessment of likely effects on sites of Aboriginal cultural heritage values, including but not limited to the following:

- description of the significance of artefacts, items or places of conservation or cultural heritage values likely to be affected by the project and their values at a local, regional and national level
- recommended means of mitigating any negative impact on cultural heritage values and enhancing any positive impacts.

As a minimum, impact assessment, management and protection strategies should satisfy statutory responsibilities and duties of care.

A native title agreement (NT agreement) as that term is defined under the *Aboriginal Cultural Heritage Act 2003* (ACH Act) that includes management and protection strategies for Aboriginal cultural heritage (NT agreement) or a Cultural Heritage Management Plan under the ACH Act (CHMP) should be initiated during the EIS process. An NT agreement or an approved CHMP in a form which complies with Part 7 of the ACH Act will ensure that the project meets the Aboriginal cultural heritage duty of care imposed by the ACH Act.

If an NT agreement is not finalised or, a CHMP has not been approved, by the time of submission of the EIS to the Coordinator-General then the following should be provided:

- an outline of the draft CHMP or draft plan within the NT agreement which addresses management and protection strategies for cultural heritage, subject to any confidentiality provisions, outlining the position of the relevant parties
- details of the proposed steps and timeframes for finalising the CHMP or NT agreement.

An NT agreement or CHMP should be negotiated between the proponent and the appropriate native title/Aboriginal parties and should address and include the following:

- a process for including Aboriginal people associated with the development areas in protection and management of Aboriginal cultural heritage
- processes for mitigation, management and protection of identified cultural heritage sites and objects in the project areas, including associated infrastructure developments, during both the construction and operational phases of the project
- provisions for the management of the accidental discovery of cultural material, including burials
- a clear recording process to be developed to assist initial management and recording of accidental discoveries
- a cultural heritage induction for project staff
- the development of a cultural heritage awareness program to be incorporated into the contractor/employee manual as well as induction manual. This is to be in the form of a plain language, short document which is easy for contractors and staff 'on the ground' to understand
- a conflict resolution process.

3.12 Non-Indigenous cultural heritage

3.12.1 Description of existing non-Indigenous cultural heritage values

The EIS should include a cultural heritage study that describes non-Indigenous cultural heritage sites and places, and their values. Any such study should be conducted by an appropriately qualified cultural heritage practitioner and should include the following:

- consultation with:
  - the Australian Heritage Places Inventory
  - the Queensland Heritage Register and other state information sources regarding places of potential non-Indigenous cultural heritage significance
  - any local government heritage register
  - any existing literature relating to the heritage of the affected areas

- liaison with relevant community groups/organisations (e.g. local historical societies) concerning:
  - places of non-Indigenous cultural heritage significance
  - opinion regarding significance of any cultural heritage places located or identified
- locations of culturally and historically significant sites, shown on maps, that are likely to be impacted by the project
- a constraints' analysis of the proposed development area to identify and record non-Indigenous cultural heritage places. If it is determined that a field survey of the footprint of the study is required, this should be undertaken by a qualified heritage professional
- identify if there are any artefacts or places related to the State Heritage Place 'Leeke's Homestead' that occur outside the Heritage Register Boundary. The potential should be examined and any such features should be described, identified, recorded and impact mitigation strategies devised.

3.12.2 Potential impacts 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 artefacts, items or places of conservation or non-Indigenous cultural heritage value likely to be affected by the project and their values at a local, regional, state and national level
- recommended means of mitigating any negative impacts on non-Indigenous cultural heritage values and enhancing any positive impacts
- strategies to manage places of historic heritage significance, taking account also of community interests and concerns
- the nature and extent of proposed restoration work to the State Heritage Place 'Leeke's Homestead' should be described and what impact these works would have on the heritage significance of the place.

As a minimum, investigation, consultation, 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 Social values and management of impacts

4.1 Description of existing social values

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

4.1.1 Social and cultural area

The SIA should define the project's social and cultural area of influence, including the local, district, regional and state level as relevant, taking into account:

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

4.1.2 Community engagement

Consistent with national and international good practice the proponent should engage at the earliest practical stage with likely affected parties to discuss and explain the project, and to identify and respond to issues and concerns regarding social impacts.

This section of the SIA should detail the community engagement processes used to conduct open and transparent dialogue with stakeholders. This dialogue should include the project's planning and design stages and future operations including affected local and state authorities. Engagement processes will involve consideration of social and cultural factors, customs and values, and relevant consideration of linkages between environmental, economic, and social impact issues.

4.1.3 Social baseline study

A targeted baseline study of the people residing in the project's social and cultural area is required to identify the project's critical social issues, potential adverse and positive social impacts, and strategies and measures developed to address the impacts. The social baseline study should be based on qualitative, quantitative, and participatory methods. It should be supplemented by community engagement processes, and reference relevant data contained in local and state government publications, reports, plans, guidelines and documentation, including regional plans and, where available, community plans.

The social baseline study should describe and analyse a range of demographic and social statistics determined relevant to the project's social and cultural area including:

- major population trends/changes that may be occurring irrespective of the project
- total population (the total enumerated population for the social and cultural area and the full time equivalent (FTE) transient population), 18 years and older

- estimates of population growth and population forecasts resulting from the proposal
- family structures
- age and gender distributions
- education, including schooling levels
- health and wellbeing measures
- cultural and ethnic characteristics
- the Indigenous population including age and gender
- income including personal and household
- labour force by occupation and industry
- housing costs (monthly housing repayments—per cent of dwellings in each category), and weekly rent (per cent dwellings in each category), housing tenure type and landlord type, household and family type
- housing availability and affordability: the rental market (size, vacancy rate, seasonal variations, weekly rent by percentage dwellings in each category); the availability and typical costs of housing for purchase; monthly housing repayments by percentage dwellings in each category and the availability of social housing
- disability prevalence
- the social and economic index for areas, index of disadvantage—score and relative ranking
- crime, including domestic violence
- any other indicators determined through the community engagement process as relevant.

The social baseline study should take account of current social issues such as:

- the social infrastructure including community and civic facilities, services and networks (for definition see South East Queensland Plan 2005-2026 Implementation Guidelines No. 5: www.dip.qld.gov.au/resources/guideline/Implementationguideline5.pdf)
- settlement patterns including the names, locations, size, history and cultural aspects of settlement in the social and cultural area
- the identity, values, lifestyles, vitality, characteristics and aspirations of communities in the social and cultural area, including Indigenous communities
- land use and land ownership patterns including:
  - rural properties, farms, croplands and grazing areas including on-farm activities near the proposed activities

- the number of properties directly affected by the project
- the number of families directly and indirectly affected by the project including Indigenous traditional owners and their families, property owners, and families of workers either living on the property or workers where the property is their primary employment

- use of the social and cultural area for forestry, fishing, recreation, business and industry, tourism, aquaculture, and Indigenous cultural use of flora and fauna.

4.1.4 Workforce profile

The SIA should include a profile of the workforce which describes:

- the number of personnel to be employed, the skills base of the required workforce and the likely sources (i.e. local, regional or overseas) for the workforce during the construction and operational phases for each component of the project
- the estimated number of people to be employed during construction and operation, and arrangements for their transport to and from the project areas, including proposed use of regional or charter air services
- estimates according to occupational groupings and variations in the workforce numbers for the duration of the project and anticipated peaks in worker numbers during the construction period.

The SIA should provide an outline of recruitment schedules and policies for recruitment of workers, addressing recruitment of local and non-local workers including Indigenous workers and people with a disability.

If re-locatable camp sites are to be used to accommodate the workforce, details on the number, size, location (shown on a map), management, proximity to the construction site, and typical facilities for these sites should be provided. Information should outline any local government or other regulatory approvals required for establishment and operation of such camps, including building, health and safety and waste disposal purposes.

The section should provide information in relation to the location of other major projects or proposals under study within the social and cultural area, together with workforce numbers.

4.2 Potential impacts

This section of the SIA should assess and describe the type, level and significance of the project's social impacts (both beneficial and adverse) on the local and cultural area, based on outcomes of community engagement processes and the social baseline study. Further it should:

- describe and summarise outcomes of community engagement processes including the likely response of the affected communities, including Indigenous people

- include sufficient data to enable affected local and state authorities to make informed decisions about the project's effect on their business and plan for the provision of social infrastructure in the project's social and cultural area. If the project is likely to result in a significant increase in the population of the area, then the proponent should consult the relevant management units of the state authorities and summarise the results of the consultations
- address direct, indirect and secondary impacts from any existing projects and the proposed project including an assessment of the size, significance, and likelihood of these impacts at the local and regional level by considering the following:
  - key population/demographic shifts; disruptions to existing lifestyles including the health and social wellbeing of families and communities; social dysfunction including alcohol and drugs, crime, violence, and social or cultural disruption due to population influx
  - the needs of vulnerable groups including women, children and young people, the aged and people with a disability
  - Indigenous peoples including cultural property issues
  - local, regional and state labour markets, with regard to the source of the workforce. This information is to be presented according to occupational groupings of the workforce. In relation to the source of the workforce, information is required as to whether the proponent, and/or contractors, is likely to employ locally or through other means and whether there are initiatives for local employment business opportunities
  - proposed new skills and training related to the project including the occupational skill groups required and potential skill shortages anticipated
  - comment on how much service revenue and work from the project would be likely to flow to the project's social and cultural area
  - impacts of construction and operational workforces, their families, and associated contractors on housing and accommodation availability and affordability, land use and land availability. The capability of the existing housing and rental accommodation, to meet any additional demands created by the project is to be discussed including direct impacts on Indigenous people.
- discuss the social impacts resulting from the potential for a large visitor population to establish on Great Keppel Island and the mitigation measures and management strategies to deal with these issues. If restrictions are proposed on this expansion on the island, then those measures that will be put in place to prevent this occurring should be detailed.

The SIA will include an evaluation of the potential cumulative social impacts resulting from the project including an estimation of the overall size, significance and likelihood of those impacts. Cumulative impacts in this context is defined as the additional impacts on population, workforce, accommodation, housing, and use of community infrastructure and services, from the project, and other proposals for

resource development projects in the area which are publicly known or communicated by DEEDI, if they overlap the proposed project in the same time frame as its construction period.

4.2.1 Mitigation measures and management strategies

For identified social impacts, social impact mitigation strategies and measures should be presented to address:

- the recruitment and training of the construction and operational workforces and the social and cultural implications this may have for the host community, including if any part of the workforce is sourced from outside the social and cultural area
- housing and accommodation issues, in consultation with relevant local authorities and state government agencies, with proposals for accommodating the project workforce and their families that avoid, mitigate or offset any short and medium term adverse effects on housing affordability and availability, including the rental market, in the social and cultural area
- the demographic changes in the profile of the region and the associated sufficiency of current social infrastructure, particularly health and welfare, education, policing and emergency services
- the adequate provision of education, training and employment for women, people with a disability, and Indigenous peoples
- potential issues regarding access to State Government services during and following construction
- plans to manage the risks from natural hazards, including more intense cyclones.

The proponent should describe any consultation about acceptance of proposed mitigation strategies and how practical management and monitoring regimes are proposed to be implemented.

5 Economies and management of impacts

5.1 Economy

5.1.1 Description of affected local and regional economies

This section should provide the baseline economic description and data for the key elements (economic stakeholders and local communities) of the local and regional economy. The description should include:

- Gross Regional Product or other appropriate measure of annual economic production
- population
- labour force statistics

- economic indicators
- the regional economy's key industries and their contribution to regional economic income
- the key regional markets relevant to the project:
- labour market
- housing and land markets
- construction services and building inputs market
- regional competitive advantage and expected future growth
- sufficient baseline economic data to underpin a comprehensive assessment (in Section 5.1.2) of the direct, indirect, cumulative, costs and impacts of the project.

With regard to the region's key industries and factor prices:

- provide information on current input costs (wage rates, building costs, housing rent etc)
- provide information on land values in the region by type of use.

5.1.2 Potential impacts and mitigation measures

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

The analysis should describe both the potential and direct economic impacts including estimated costs, if material, on industry and the community, assessing the following:

- property values
- industry output
- employment
- the indirect impacts likely to flow to other industries and economies from the development of the project. This should also consider the implications of the project for future development
- the distributional effects of the proposal including proposals to mitigate any negative impact on disadvantaged groups.

Strategies for local participation

The assessment of economic impacts should outline strategies for local participation, including:

- strategies for assessing the cost effectiveness of sourcing local inputs from the regional economy during the construction, operation and rehabilitation of the project

- employment strategies for local residents including members of Indigenous communities and people with a disability, including a skills assessment and recruitment and training programs to be offered
- strategies responding to relevant government policy, relating to:
  - the level of training provided for construction contracts on Queensland Government building and construction contracts, with regard to the *Queensland Government Building and Construction Contracts Structured Training Policy* (the 10 per cent policy)
  - Indigenous employment opportunities, with regard to the Indigenous Employment Policy for Queensland Government Building and Civil Construction Projects (the 20 per cent policy)
  - a commitment to develop a Local Industry Participation Plan under the Local Industry policy (Department of Employment, Economic Development and Innovation, 2008) in conjunction with the DEEDI Office of Advanced manufacturing.

Impact upon property management

This section should also address the current and future management processes for adjacent properties which are likely to be impacted by the project during construction and/or operation. Mention should be made of:

- the impact of the project on existing agricultural land uses and management practices e.g. disruption to stockyards, fences, water points, sowing or harvesting of crops, movement of livestock, agricultural machinery and any loss of agricultural land
- the range of measures required to mitigate real and potential disruptions to rural practices and management of properties
- the impact of the project on existing residential land uses e.g. dwellings available for holiday rental.

5.2 Sustainable development

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

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

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

6 Hazard and risk

6.1 Hazard and risk assessment

This section of the EIS should describe the potential hazards and risks to people and property that may be associated with the project, which may include but are not restricted to:

- identification of potential hazards, accidents, spillages and abnormal events (including marine collisions and bushfires) which may occur during all stages of the project, including possible frequency of occurrence
- security issues (during construction and once operational)
- identification of all hazardous substances to be used, stored, processed or produced and the rate of usage
- potential wildlife hazards, natural events and implications related to climate change.

A preliminary risk assessment for all components of the project shall be undertaken as part of the EIS process in accordance with *Australia/New Zealand AS/NZS 4360:2004 Risk Management.* With respect to risk assessment:

- the EIS should deal comprehensively with external and on-site risks including transport risks
- the study should assess risks during the construction, operational and decommissioning phases of the project
- analysis of the consequences of each hazard on safety in the project area should be conducted, examining the likelihood of both individual and collective consequences, involving injuries and fatalities to workers and to the public
- quantitative levels of risks should be presented from the above analysis.

Details should be provided on the safeguards that would reduce the likelihood and severity of hazards, consequences and risks to persons, within and adjacent to the project area(s).

A comparison of assessed and mitigated risks with acceptable risk criteria for land uses in and adjacent to the project area(s) should be presented.

A risk management plan should be presented.

6.1.1 Airstrip hazards and risk

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

- probability analysis of aircraft accidents with reference to aircraft incidents within Australia

- the impact of flight paths and frequency of aircraft movements on the risk of accidents involving residential and industrial areas
- identification of sites on or near the upgraded airstrip that attract birds or bats and the typical routes used by birds and bats taking into account seasonal variation
- the relative risk of bird strike, including quantitative and qualitative discussion of:
  - how the risk of bird strike is to be managed
  - how successful planned measures are likely to be
  - what the consequences of that level of risk are expected to be.

6.2 Health and safety

6.2.1 Description of public health and safety community values

This section should describe the existing health and safety values of the community, workforce, suppliers and other stakeholders in terms of the environmental factors that can affect human health, public safety and quality of life, such as air pollutants, odour, lighting and amenity, dust, noise and water.

If construction camps are identified, then they are considered sensitive receptors/receivers within the EIS.

The proponent should identify how potable water will be supplied, treated, protected and monitored at the construction camps, ensuring compliance with the *Australian Drinking Water Guideline 2004.*

6.2.2 Potential impacts and mitigation measures

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

The EIS must address the project's potential for providing disease vector and potential wildlife hazards such as snakes. Measures to control mosquito and biting midge breeding must be described (including the potential impacts to the receiving environment). Any use of recycled water must be assessed for its potential to cause infection by the transmission of bacteria and/or viruses by contact, dispersion of aerosols, and ingestion. Similarly, the use of recycled water must be addressed for its potential to cause harm to health via the food chain due to contaminants such as heavy metals and persistent organic chemicals.

The EIS should assess the cumulative effects on public health values as well as occupational health and safety impacts on the community and workforce from project operations and emissions. Practical monitoring regimes should be recommended in this section.

The EIS should assess the impact the project will have on regional health services and describe any necessary management strategies, including consultation with the appropriate regional health service district.

6.3 Evacuation and emergency management plan

The development of emergency planning and response procedures is to be determined in consultation with state and regional emergency service providers.

An outline of the proposed integrated Evacuation and Emergency Management Planning procedures is to be provided for the range of situations identified in the risk assessment developed in this section, including:

- details of any accommodation villages or other residential development, and provide a copy of the evacuation and access map of these facilities
- identify emergency access routes and meeting points to work sites, and any procedures to be followed for an incident occurring on site
- strategies to deal with natural disasters during operation and construction, and identify details of the key stakeholders.

In regard to fires, the EIS should outline strategies to manage the provision of:

- fire management systems to ensure the retention on-site of fire water or other fire suppressants used to combat emergency incidents
- building fire safety measures for any construction or permanent accommodation
- details of any emergency response plans and bushfire mitigation plans under the SPP 1/03
- on-site fire fighting equipment provided and the level of training of staff who will be tasked with emergency management activities
- detailed maps showing the plant outline, potential hazardous material stores, incident control points, fire fighting equipment, etc
- of any dangerous goods stores associated with operations, including fuel storage and emergency response plans.

7 Cumulative impacts

The purpose of this section is to provide a summary of the cumulative impacts from the project and to provide a description of these cumulative impacts both in isolation and in combination with those of existing or proposed project(s) publicly known or advised by DEEDI to be in the region, to the greatest extent practicable. Cumulative impacts should be assessed with respect to both geographic location and environmental values. The methodology used to determine the cumulative impacts of the project should be presented, detailing the range of variables considered,

including where applicable, relevant baseline or other criteria upon which the incremental aspects of the project have been assessed.

8 Environmental management plan

This section should detail the environmental management plans (EMP) for both the construction and operation phases of the project. The EMP should be developed from, and be consistent with, the information in the EIS. The sections of the EMP must address discrete project elements and must provide life-of-proposal control strategies. The EMP must be capable of being read as a stand-alone document without reference to other parts of the EIS.

The EMP must comprise the following components for performance criteria and implementation strategies:

- the proponent's commitments to acceptable levels of environmental performance, including environmental objectives, performance standards and associated measurable indicators, performance monitoring and reporting
- impact prevention or mitigation actions to implement the commitments
- corrective actions to rectify any deviation from performance standards
- an action program to ensure the environmental protection commitments are achieved and implemented. This will include strategies in relation to:
  - continuous improvement
  - environmental auditing
  - monitoring
  - reporting
  - staff training
  - a rehabilitation program for land proposed to be disturbed under each relevant aspect of the proposal.

The recommended structure of each element of the EMP is:

Element/issue:	aspect of construction or operation to be managed (as it affects environmental values)
Operational policy:	the operational policy or management objective that applies to the element
Performance criteria:	measurable performance criteria (outcomes) for each element of the operation

Implementation strategy:	the strategies, tasks or action program (to nominated operational design standards) that would be implemented to achieve the performance criteria and also include the implementation agency for each element of the EMP
Monitoring:	the monitoring requirements to measure actual performance (i.e. specified limits to pre-selected indicators of change)
Auditing:	the auditing requirements to demonstrate implementation of agreed construction and operation environmental management strategies and compliance with agreed performance criteria
Reporting:	format, timing and responsibility for reporting and auditing of monitoring results
Corrective action:	the action (options) to be implemented in case a performance requirement is not reached and the person(s) responsible for action (including staff authority and responsibility management structure).

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

9 Conclusions and recommendations

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

10 References

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

11 Appendices

11.1 Final TOR for this EIS

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

11.2 TOR cross-reference table

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

11.3 Project approvals

A list of the project approvals required by the project should be presented.

11.4 Consultation report

The report should include the methodology used in the public consultation plan including criteria for identifying stakeholders and the communication methods used (the consultation plan). A list of stakeholders identified, including the Australian, Queensland and local government agencies, and/or the affected parties (as defined by the EP Act) should be provided. A summary of the issues raised by stakeholders and the means by which the issues have been addressed, should be provided. Plans for ongoing consultation should be outlined and included in the EMP.

11.5 Study team

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

11.6 Glossary of terms

A glossary of technical terms and should be provided.

11.7 Specialist studies

All reports generated on specialist studies undertaken as part of the EIS are to be included as appendices. These may include, but are not limited to:

- air pollution, noise and vibration
- groundwater and surface water hydrology
- geology and geomorphology
- economic studies and/or cost-benefit analyses
- cultural heritage
- hazard and risk studies
- land use and land capability studies.

11.8 Corporate environmental policy

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

11.9 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.

Abbreviations

The following abbreviations have been used in this document:

ACH Act	*Aboriginal Cultural Heritage Act 2003*
AHD	Australian Height Datum
CAMBA	China–Australia Migratory Bird Agreement
CHMP	cultural heritage management plan
CLR	Contaminated Land Register
CPM Act	*Coastal Protection and Management Act 1995* (Qld)
DEEDI	Department of Employment, Economic Development and Innovation
DERM	Department of Environment and Resource Management, Queensland
EIS	environmental impact statement
EMP	environmental management plan
EP Act	*Environmental Protection Act 1994* (Qld)
EPA	Former Environmental Protection Agency, Queensland (now DERM)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)
EPP	Environmental Protection Policy (water, air, waste, noise)
JAMBA	Japan–Australia Migratory Bird Agreement
MNES	matters of national environmental significance (under the EPBC Act)
NGA	National Greenhouse Accounts
NT agreement	native title agreement
QASSMAC	Queensland Acid Sulfate Soils Management Advisory Committee
QASSIT	Queensland Acid Sulfate Soils Investigation Team
REDD	Regional Ecosystem Description Database

RIA	road impact assessment (report)
ROKAMBA	Republic of Korea-Australia Migratory Bird Agreement
SDPWO Act	*State Development and Public Works Organisation Act 1971* (Qld)
SIA	social impact assessment
SPA	*Sustainable Planning Act 2009* (Qld)
The proponent	GKI Resort Pty Ltd
TOR	terms of reference
WRP	water resource plan

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