APPENDIX A9:A

Terms of Reference for an EIS for the Project

The **Coordinator-General**

Sunshine Coast Airport Expansion Project

Terms of reference for an environmental impact statement

May 2012

Queensland Government

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Contents

Introduction

The proponent, Sunshine Coast Regional Council (SCRC), proposes to construct and operate a new runway and associated infrastructure at the present Sunshine Coast Airport (SCA) site at Marcoola. The new east/west runway is expected to offer significant operational benefits over the existing runway.

These 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 by the Coordinator-General, in consultation with the Australian Government Department of Sustainability, Environment, Water, Population and Communities (SEWPaC), the Civil Aviation Safety Authority (CASA) and Airservices Australia, having regard to comments and submissions received on the draft TOR released for public comment over the period of 18 February 2012 to 2 April 2012.

The document is divided into three parts:

(a) About the project (page 3)

(b) Contents of the EIS for State matters (page 7)

(c) Contents of the EIS for Australian Government matters (page 58).

The TOR must be read in conjunction with *Preparing an environmental impact statement: Guideline for proponents*, which explains the following:

- the target audience for the EIS
- stakeholder consultation requirements
- document format
- copy requirements.

The guideline is available from the EIS project manager (refer to page 5 for contact details) or from the Office of Coordinator-General website: **www.projects.industry.qld.gov.au**

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Part A. About the project

1. Project summary

SCRC proposes to construct and operate a new runway (13/31[1]) and associated infrastructure at the present airport site at Marcoola on the Sunshine Coast. The new runway forms part of the SCA Master Plan, which was endorsed and formally adopted by SCRC in September 2007.

The new east/west runway is proposed to be 2430 metres in length and will offer significant operational benefits over the existing 1797-metre north/south runway. The project will also include:

- expansion of the existing regular public transport apron
- construction of a new terminal
- expansion of the aviation business precinct
- supply of fill for the new runway.

Approximately 2.7 million cubic metres (m^3) of fill and approximately 300 000 m^3 of pavement fill are required for the project. A combination of both terrestrial and marine fill sources may be required to meet the project's needs.

The initial advice statement (IAS) indicated that the project is expected to employ approximately 2357 people during construction with a peak workforce of 419 people around 2016. Once operational, the project is expected to employ 2690 people for the runway/regular public transport operations and within the airport and commercial precincts.

Further information on the project can be viewed at:
www.projects.industry.qld.gov.au

[1] This code refers to the direction of the runway ends, i.e. 130° / 310°

2. Project proponent

The SCA is a business unit of the SCRC, and the airport is owned, operated and managed by the SCRC. The contact details for the proponent are:

Mr Peter Pallot
Airport General Manager
Sunshine Coast Airport
Locked Bag 72
SCMC QLD 4560
tel +61 7 5453 1500
fax +61 7 5453 1511
email airport@sunshinecoast.qld.gov.au
web www.sunshinecoastairport.com.au

3. Legislative framework

On 24 October 2011, the Coordinator-General declared the 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* (Qld) (SDPWO Act). This declaration initiated the statutory environmental impact assessment process of Part 4 of the SDPWO Act, which requires the proponent to prepare an EIS for the project.

On 7 October 2011, the Australian Government determined that the project is a 'controlled action' under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act), due to the likely potential impacts on matters of national environmental significance (MNES) (EPBC reference number EPBC 2011/5823). The controlling provisions under the EPBC Act are:

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

As a consequence, the project requires assessment and approval under the EPBC Act. The Australian Government has determined that the EIS process is to be conducted under the bilateral agreement between the Australian and Queensland governments. This will enable the EIS conducted under Part 4 of the SDPWO Act to meet the impact assessment requirements under both Commonwealth and Queensland legislation. The project will require approval from the responsible Commonwealth Minister under Part 9 of the EPBC Act before it can proceed.

On 7 October 2011, the Australian Government also determined that the associated aviation airspace management referral (EPBC 2011/6104), made under section 160 of the EPBC Act by CASA and Airservices Australia, requires assessment under the EPBC Act.

Airspace impacts will be addressed in the EIS and the impacts relevant to section 160 of the EPBC Act will be assessed by the Australian Government by means of

coordinated assessment conducted in parallel with the process under Part 4 of the SDPWO Act.

3.1. Coordinator-General's report

At the conclusion of the EIS process, the Coordinator-General will prepare a report evaluating the EIS (Coordinator-General's report). If the report states conditions under the following Queensland Acts, the Coordinator-General is required to provide the responsible minister(s) with a copy of the report:

- *Mineral Resources Act 1989*
- *Environmental Protection Act 1994* (EP Act)
- *Petroleum and Gas (Production and Safety) Act 2004*
- *Greenhouse Gas Storage Act 2009*.

As the project is a 'controlled action' under the EPBC Act, the Coordinator-General will provide a copy of the report to the Commonwealth Environment Minister. Refer to Part C for information on Australian Government requirements.

The Coordinator-General's report will not specifically address aviation airspace management issues as these will be assessed directly by the Australian Government. The Australian Government's requirements are detailed in Part C, Section 3.

4. Contact information

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

EIS Project Manager—Sunshine Coast Airport Expansion project
Significant Projects Coordination
Office of the Coordinator-General
PO Box 15517
City East Qld 4002
tel + 61 7 3225 8892
fax+ 61 7 3225 8282
email SCA@coordinatorgeneral.qld.gov.au
web www.projects.industry.qld.gov.au

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Part B. Contents of the EIS for State matters

This part details the matters to be assessed by the Coordinator-General on behalf of the State of Queensland.

The EIS should follow the format and content outlined in this TOR. Discuss any proposed change to the overall structure of the EIS documents with the EIS project manager (refer to page 5 for contact details).

For details of the Australian Government matters to be assessed, refer to Part C of this document (page 58).

1. Executive summary

The executive summary should 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, avoid using jargon, be written as a stand-alone document and be structured to follow the EIS. It should be easy to reproduce and distribute on request to interested parties who may not wish to read or purchase the whole EIS.

The executive summary should include:

- project title
- proponent's name and contact details
- a discussion of any relevant previous projects undertaken by the proponent, and the commitment of the proponent to effective environmental management
- a concise statement of the aims and objectives of the project
- the legal framework for the project, 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 selecting the proposed development option
- a brief description of the project (pre-construction, construction, operational activities and decommissioning) and the existing environment, using 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.

2. Glossary of terms

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

3. Introduction

3.1. Project proponent

Describe the proponent's experience, including the nature and extent of business activities, experience and qualifications, and environmental record (including a list of any breach of relevant environmental laws during the previous ten years), including the proponent's environmental, health, safety and community policies.

3.2. Project description

Provide a brief description of the key elements of the project with illustrations or maps. Summarise any major associated infrastructure requirements. Provide detailed descriptions of the project in Part B, Section 4 (refer page 13).

3.3. Project rationale

Describe the specific objectives and justification for the project, including its strategic, economic, environmental and social implications, technical feasibility and commercial drivers. Discuss the status of the project in a regional, state and national context. Explain the project's compatibility with relevant policy, planning and regulatory frameworks.

Address the growth in demand for air services in the region, including forecasts of future passenger and aircraft movements and the basis for the projections having regard to different air service categories (e.g. domestic, international, commuter, charter services to resource communities and general aviation).

3.4. Relationship to other projects

Describe how the project relates to other major infrastructure projects (of which the proponent should reasonably be aware) that have been, are being undertaken or that have been proposed or approved in Sunshine Coast area, potentially affected by the project. This section should also consider other relevant airport-related interactions, such as Brisbane Airport. A list of projects is to developed and agreed with OCG for inclusion in the EIS.

As a result of this assessment, there may be opportunities to co-locate existing or proposed infrastructure, enabling efficiency gains and mitigating environmental and property impacts. Where co-location may be likely, outline opportunities to coordinate or enhance impact mitigation strategies. Discuss the opportunities in sufficient detail to enable the reader to understand the reasons for preferring certain options or courses of action and rejecting others.

3.5. Project alternatives

Describe feasible alternatives, including conceptual, technological and locality alternatives to the proposed project and the consequences of not proceeding with the project. Describe the criteria used to determine the alternatives and provide sufficient detail to enable the reader to understand why certain options or courses of action are preferred and why others are rejected (including the 'no action' option). Discuss the interdependencies of the project components, particularly in regard to how any infrastructure requirements (including those external to the airport site) relate to the viability of the project.

Include an analysis of any feasible alternative to the runway construction, source of fill material and transportation of fill to the airport site.

Describe any redesign options to address any significant environmental impacts.

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.

Refer to Part C for details of Australian Government requirements on project alternatives.

3.6. The environmental impact assessment process

3.6.1. Methodology of the EIS

Provide an outline of the environmental impact assessment process, including the role of the EIS in the Coordinator-General's decision making process. 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.

3.6.2. Objectives of the EIS

Provide a statement of the objectives of the environmental impact assessment process. The structure of the EIS can then be outlined and used to explain 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 the offsets for any residual impacts
- provide information for formulating the project's EMP.

3.6.3. Submissions

Inform the reader how to properly make submissions and what form the submissions should take. In consultation with staff of the Office of the Coordinator-General (OCG), inform the reader how and when properly made public submissions on the EIS will be addressed and taken into account in the decision-making process. Indicate points in subsequent approvals processes for the project (e.g. 'material change of use' (MCU) applications under SPA) where submitters may have appeal rights.

3.7. 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. The public consultation processes (community engagement) for all parts of the EIS should be integrated.

Outline the methodologies that were used 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.

List the stakeholders consulted during the program and provide details of any meetings held, presentations made and any other consultation undertaken for the EIS process. Provide information about the consultation process that has taken place and the results.

3.8. Project approvals

3.8.1. Relevant legislation and approvals

List and describe Commonwealth and state legislation and Commonwealth, state and local government policies relevant to the planning, approval, construction and operation of the project.

Commonwealth legislation

Relevant Commonwealth legislation (and regulations) may include, but is not limited to:

- *Aboriginal and Torres Strait Islander Heritage Protection Act 1994*
- *Air Navigation Act 1920*
- Air Navigation (Aircraft Engine Emissions) Regulations
- *Air Services Act 1995*
- Air Services Regulations 1995
- *Airspace Act 2007*

- *Aviation Transport Security Act 2004*
- Aviation Transport Security Regulations 2005
- *Civil Aviation Act 1988*
- Civil Aviation Regulations 1988
- Civil Aviation Safety Regulations 1998
- *Environment Protection and Biodiversity Conservation Act 1999*
- *Native Title Act 1993.*

Queensland legislation

Relevant Queensland legislation may include, but is not limited to:

- *Aboriginal Cultural Heritage Act 2003* (ACH Act)
- *Coastal Protection and Management Act 1995* (Coastal Act)
- *Environmental Protection Act 1994* (EP Act)
- *Fisheries Act 1994* (Fisheries Act)
- *Land Act 1994* (Land Act)
- *Land Protection (Pest and Stock Route Management) Act 2002*
- *Local Government Act 2009*
- *Marine Parks Act 2004*
- *Mineral Resources Act 1989*
- *Nature Conservation Act 1992* (NC Act)
- *Queensland Heritage Act 1992*
- *State Development and Public Works Organisation Act 1971* (SDPWO Act)
- *Strategic Cropping Land Act 2011*
- *Sustainable Planning Act 2009* (SPA)
- *Transport Infrastructure Act 1994* (TI Act)
- *Transport Security (Counter Terrorism) Act 2008*
- *Vegetation Management Act 1999* (VM Act)
- *Water Act 2000.*

Commonwealth approvals

Identify and outline Commonwealth approvals and advice required including, but not limited to:

- approval, under sections 131(1) and 133 of the EPBC Act, of the proposed action for each of the applicable controlling provisions
- advice under section 160 of the EPBC Act, for changes to airspace.

Also, identify and outline relevant Commonwealth obligations relating to the protection of World Heritage values, National Heritage values, declared Ramsar wetlands, listed threatened species and ecological communities, migratory animals (China–Australia Migratory Bird Agreement (CAMBA), Japan–Australia Migratory Bird Agreement (JAMBA), Republic of Korea–Australia Migratory Bird Agreement (ROKAMBA) and Bonn Convention) and biodiversity.

These matters are to be addressed in more detail in Part C.

Queensland approvals

Key Queensland approvals required, and to be considered in the EIS process, include:

Construction

- development permit for MCU of land identified as assessable by the Maroochy Plan 2000—SPA
- development permit for operational works for conducting, filling and excavation that is identified as assessable by the Maroochy Plan 2000—SPA
- MCU of a premises for an environmentally relevant activity (ERA)—EP Act:
  - ERA 6: Asphalt Manufacturing
  - ERA16: Extractive and Screening Activities
  - ERA 43: Concrete Batching
  - ERA 50: Bulk Material Handling
- approval to take native wildlife—NCA
- approval to take protected plants—NCA
- development permit for tidal works—Coastal Act
- development permit for operational work within a coastal management district, that is:
  - disposal of dredged spoil or other solid waste material in tidal water—Coastal Act
  - interfering with quarry material as defined under the Coastal Act on state land above high water mark—Coastal Act
  - removing or interfering with coastal dunes on land, other than state coastal land, that is in an erosion prone area and above high water mark—Coastal Act
- development permit for operational work that is the removal, destruction or damage of a marine plant—Fisheries Act
- approval to construct or raise waterway barrier works – Fisheries Act
- approval to carry out road works on a state-controlled road or to interfere with a state-controlled road or its operation—TI Act
- approval of vehicle access between an individual property and a state-controlled road—TI Act
- approval for permanent road closure—Land Act
- development permit for operational work that is the clearing of native vegetation—VM Act.

Identify the relevant approval agency for each of the approvals required.

The IAS indicates that the proponent intends to use extractive resource material, marine and/or terrestrial based, from existing approved sources. It would be incumbent on the proponent to advise the Coordinator-General of any change to this element of the project scope.

3.8.2. Relevant plans

Outline the project's consistency with the existing national, state, regional and local planning framework that applies to the project location. Refer to all relevant statutory and non-statutory plans, planning policies, guidelines, strategies and agreements including the SCRC Planning Scheme, SEQ Regional Plan 2009–2031 and the Queensland Greenspace Strategy 2011-2020.

Address, in the relevant sections below, relevant regional plan principles (e.g. biodiversity, managing the coast, air and noise, social planning, waste etc.) and desired regional outcomes (e.g. employment location, infrastructure, water management, integrated transport, engaging Aboriginal and Torres Strait Islander people, etc.).

If Moreton Bay is being considered as a potential site for sourcing fill material for the runway, the EIS must discuss the relationship of the proposal with the *Moreton Bay sand extraction study* (Environmental Protection Agency 2005) in this section and address it in detail in the relevant sections of the TOR.

4. Description of the project

Describe the project through its lifetime of pre-construction, construction, operation and potentially decommissioning. The project description also allows further assessment of the approvals that may be required, and how they may be managed through the life of the project.

4.1. Overview of the project

Provide an overview of the project to put it into context. Include:

- the rationale explaining why the preferred operating scenario was selected, 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
- a summary of any environmental design features of the project
- the expected cost, timing, and overall duration of the project, including details of and justification for, any staging of the development.

4.2. Location

Describe, using maps at suitable scales, the regional and local context of the project and all associated infrastructure. Provide real property descriptions of the project. 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, and details of the ownership of that land
- location, boundaries, and area and size of the project footprint, including easement widths and access requirements
- location and size of any proposed buffers surrounding construction work areas

- location of state, local and all associated infrastructure relevant to the project, including but not limited to, the state-controlled road network, local roads, public transport, railway corridors and marine infrastructure
- location of natural features such as waterways (e.g. rivers, streams, creeks, other water bodies and wetlands), shorelines, islands (including Mudjimba Island) and significant vegetation
- location of any proposed site offices and accommodation sites
- location of fill material sources
- State and Commonwealth marine parks and declared fish habitat areas within or adjacent to the project site (including proposed fill source areas).

4.3. Construction phase

Provide the following:

- a detailed staging plan and approximate timeframes for the project's construction activities.
- an estimate of the number and roles of persons to be employed during the construction phase of the project.
- an estimate of permanent, full-time, part-time and contract workers employed at each stage of the project.
- the following information on the pre-construction, construction and commissioning of the project, including detailed plans, drawings and maps.

4.3.1. Pre-construction activities

Describe all pre-construction activities, including nature, scale and timing of:

- land acquisitions required, be it in full or as easements, leases etc.
- vegetation clearing
- site access
- earthworks
- interference with watercourses and floodplain areas, including wetlands
- site establishment requirements for construction facilities, including access restriction measures and expected size, source and control of the construction workforce accommodation, services (water, sewage, communication, power, recreation) and safety requirements
- temporary works
- upgrade, relocation, realignment, deviation of, or restricted access to, roads and other infrastructure
- equipment to be used
- key road transport activities.

4.3.2. Construction

Describe all the construction elements of the project, including:

- an indicative construction timetable, including staging, expected commissioning and start-up dates and hours of operation
- major work programs for the construction phase, including construction methodologies
- construction equipment to be used
- construction inputs, handling and storage including an outline of potential locations for source of construction materials
- sourcing of fill material for the runway (including extractive equipment, methods and quantity of material required) (Section 4.3.3 below refers)
- key road transport activities
- major hazardous materials to be transported, stored and/or used on site, including environmental toxicity data and biodegradability
- clean-up and restoration of areas used during construction, including camp site(s) and storage areas.

4.3.3. Tidal works—dredging

If marine-based fill is proposed for the development, describe the location and extent of fill required and the likely dredging methodology.

Describe and map the location, area and volume of marine-based fill required. Provide maps and map overlays indicating areas that have been disturbed and those areas that have not been disturbed historically.

Provide details of the dredging methods (e.g. mechanical, cutter suction etc) and timing of dredging that would avoid or minimise impacts on, coral (if present), birds, marine mammals, turtles and fish, including migrations and marine plants (including seagrass if present).

Describe the works required for transportation of dredged material to the runway site.

Provide details of existing and proposed final levels of the land in relation to the Australian Height Datum (AHD).

Provide details of estimated commencement, completion, rate of progress and estimated cost of sourcing marine-based fill.

Provide details of the grading and composition of marine-based fill, including potential contaminants.

4.3.4. Marine structures

Describe all marine structures, including:

- locations and dimensions of buildings, piping and marine infrastructure associated with the transportation of marine fill to the airport site
- the likely construction and operational methodologies
- pollution control methods that will be used to prevent pollution entering marine areas during the construction

- modifications that may be needed to accommodate extreme weather events.

4.3.5. Commissioning

Describe the commissioning process including the associated environmental impacts.

4.4. Other project-specific infrastructure

Describe:

- all other infrastructure required to be constructed, upgraded, relocated or decommissioned for the construction and/or operation of the project, such as resource extraction areas, pipelines (to transport dredge material), access roads and transportation, water supply, energy supply, telecommunications, stormwater, waste disposal and sewerage
- the design and construction standards to be met (e.g. waterway crossings should be designed to meet the requirements of the Fisheries Act and in consultation with Department of Agriculture, Fisheries and Forestry staff)
- alternative approaches or the opportunity to obtain materials from alternative sources.

4.5. Operational phase

Describe the operation for all on-ground elements of the project, including:

- a description of the project site, including concept and layout plans of the runway, buildings, structures, plant and equipment to be employed
- nature and description of all key operational activities
- a description of the intended life of the infrastructure
- estimated numbers and roles of persons to be employed during the operational phase of the project.
- estimated number of permanent, full-time, part-time and contract workers employed at each stage of the project.

Describe airport runway operations including;

- the preferred operating modes for the runway (for both day and night, noting any seasonal variations)
- flight frequency on the runway system including expected number and percentage of aircraft movements by type, typical annual and daily movements
- daily and seasonal variations in aircraft movements and potential effects of varying weather conditions on operations and runway use
- operating hours and flexibility of operating arrangements
- possible legislative/regulatory enforcement of operating procedures (e.g. for noise abatement)
- a description of the potential effects and likely timing of implementing new technology and changes to operational standards and procedures for runway and airspace use

- flight paths and other operational procedures governing aircraft movements, including an estimate of normal variability of movements on defined fight paths and locational criteria governing flight path selection (including low level (below 10 000 feet) holding patterns)
- aircraft operating heights for approaches and departures.

4.6. Decommissioning and rehabilitation

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

5. Environmental values and management of impacts

Describe the environmental protection and mitigation measures incorporated in the planning, construction, rehabilitation, commissioning and operations 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. Identify and describe preferred measures in more detail.

The objectives of the following 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 statements (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 and the measures taken to avoid, minimise and/or mitigate those impacts
- describe any cumulative impacts on environmental values caused by the project, either in isolation or in combination with other known existing or planned projects
- present objectives, standards and measurable indicators that protect the identified environmental values
- examine viable alternative strategies for managing impacts (present and compare these alternatives 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.

Where negative impacts of the project cannot be avoided or adequately minimised or mitigated, present proposals to offset impacts in accordance with the Queensland Government Environmental Offsets Policy (Environmental Protection Agency 2008b).

The mitigation measures, monitoring programs etc. identified in this section of the EIS should be used to develop the EMP for the project. Refer to Part B, Section 10 (page 56).

5.1. Noise and vibration

5.1.1. Description of environmental values

Describe the existing noise and vibration environment that may be affected by all components of the project (including fill material extraction and delivery, airport construction activities and runway operations) in the context of the environmental values defined by the Environmental Protection (Noise) Policy 2008. Refer to both the *Noise Measurement Manual* (Environmental Protection Agency 2000) and the *Guideline: Noise and vibration from blasting* (Environmental Protection Agency 2006).

Identify sensitive noise receptors (such as residences, educational facilities, health/child/aged care centres, community facilities, environmentally sensitive areas (including Mudjimba Island)) adjacent to and/or impacted by all components of the project and estimate typical background noise and vibration levels based on surveys at representative sites. Discuss the potential sensitivity of such receptors and nominate performance indicators and standards.

5.1.2. Potential impacts and mitigation measures

In general, noise and vibration impact analysis should include:

- the levels of noise and vibration generated, including noise contours, assessed against current typical background levels, using modelling (such as the Environmental Noise model or SoundPLAN) where appropriate
- impact of noise, including low frequency noise (noise with components below 200 Hz) and vibration at all potentially sensitive receivers compared with the performance indicators and standards nominated above in Section 5.1.1
- impact on terrestrial and aquatic fauna
- proposals to minimise or eliminate these effects, including details of any screening, lining, enclosing or bunding 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 wellbeing as identified within the Environmental Protection (Noise) Policy 2008.

Construction

For the construction stage of the project, describe noise and vibration levels on-airport and off-airport from machinery, equipment, vehicles, compaction, blasting and dredging, if applicable. Describe possible mitigation measures to control noise and vibration impacts on surrounding communities.

Describe any night-time construction work that may be undertaken. Specifically include the:

- reasons why night-time work may be undertaken (e.g. to avoid peak traffic periods)
- likely duration of work (if known)
- proposed hours of the work

- nature of the work to be undertaken
- likely impact on residents and the associated mitigation measures to be undertaken by the proponent
- methods that will be used to communicate with affected residents.

Aircraft noise

Aircraft noise is addressed in Part C, Section 3.

5.2. Nature conservation

Describe the existing nature conservation values that may be affected by the proposal. Describe the environmental values 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 and terrestrial ecosystems.

Surveys should 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 conducting field observations and survey activities to identify the traditional and contemporary Indigenous uses of species.

Also outline the proposed strategies to avoid, or minimise and mitigate, impacts on the identified values within the project's footprint.

Identify key flora and fauna indicators for ongoing monitoring.

Any clearing requires a vegetation clearing application under the VM Act. Any application will need to comply with the Regional Vegetation Management Code for South East Queensland Bioregion – version 2, 6 November 2009 (or latest version)— refer to **www.derm.qld.gov.au/vegetation/regional_codes.html**

The application may also need to be assessed against the Policy for Vegetation Management Offsets, version 3, 30 September 2011 (or latest version) (Department of Environment and Resource Management 2011a). Consult with the Department of Environment and Heritage Protection's Vegetation Management Unit when preparing this information.

5.2.1. Sensitive environmental areas

Description of environmental values

Identify, on a map of suitable scale, environmentally sensitive areas which may be directly or indirectly impacted by the project. This should include areas classified as having national, state, regional or local biodiversity significance, or flagged as important

for their integrated biodiversity values. Refer to both Queensland and Commonwealth 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 NC Act and/or the EPBC Act as presumed extinct, endangered, vulnerable or rare
- regional ecosystems listed as 'endangered' or 'of concern' under state legislation, and/or ecosystems listed as presumed extinct, endangered or vulnerable under the EPBC Act
- good representative examples of remnant regional ecosystems or regional ecosystems that are described as having 'medium' or 'low' representation in the protected area estate as defined in the Regional Ecosystem Description Database (REDD) available at **www.derm.qld.gov.au**
- sites listed under international treaties such as Ramsar wetlands, World Heritage areas, JAMBA, CAMBA and ROKAMBA
- 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 other countries
- sites adjacent to nesting beaches, feeding, resting or calving areas of species of special interest (e.g. marine turtles, dugongs and cetaceans)
- sites containing common species that represent a distributional limit and are of scientific value or that contain feeding, breeding, resting areas for populations of echidna, koala, platypus and other species of special cultural significance
- sites of 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 support high levels of biodiversity or act as an important corridor for maintaining high levels of biodiversity in the area
- a site containing other special ecological values (e.g. high habitat diversity and areas of high endemism)
- ecosystems that 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

- declared fish habitat areas and sites containing protected marine plants under the Fisheries Act
- sites of palaeontologic significance such as fossil sites
- sites of geomorphological significance, such as lava tubes or karst
- areas of environmental significance as defined by the *Queensland Coastal Plan* (Department of Environment and Resource Management 2011c)
- protected areas that have been proclaimed under the NC Act and *Marine Parks Act 2004* (Qld) or are under consideration for proclamation
- areas of major interest, or critical habitat declared under the NC Act or high nature conservation value areas or areas vulnerable to land degradation under the VM Act.

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

Potential impacts and mitigation measures

Discuss the impact of the project on species, communities and habitats of local, regional or national significance in sensitive environmental areas as identified above. Include human impacts and the control of any domestic animals introduced to the area.

Discuss the potential impacts of the project on habitat connectivity particularly in the area between the two sections of Mount Coolum National Park to the north and the South of the airport site. Ensure all flora and fauna species are considered in the assessment. Discuss relevant mitigation measures to address any impacts. Cross reference to sections 5.2.2 and 5.2.3 below.

Demonstrate how the project would comply with the following hierarchy:

- avoiding impact on areas of remnant vegetation and other areas of conservation value including listed species and their habitat
- mitigating 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 avoiding and mitigating impacts cannot be achieved.

Explain why the measures above may not apply in areas where loss would occur.

Discuss the boundaries of the areas impacted by the project within or adjacent to an endangered ecological community, including details of footprint width. If the project area will impact upon a threatened community, include reasons for the preferred alignment and the viability of alternatives.

Address any actions of the project or likely impacts that require an authority under the NC Act, and/or would be assessable development for the purposes of the VM Act.

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

(Environmental Protection Agency 2008b) and take into account the applicable specific-issue offset policies, as follows:

- Policy for Vegetation Management Offsets (Department of Environment and Resource Management 2011a)
- Queensland Biodiversity Offset Policy (Department of Environment and Resource Management 2011b)
- Fish Habitat Management Operational Policy FHMOP 005: Mitigation and Compensation for Works or Activities Causing Marine Fish Habitat Loss (Department of Primary Industries 2002).

Describe any departure from 'no net loss' of ecological values.

5.2.2. Terrestrial flora

Description of environmental values

Provide vegetation mapping for all relevant project sites. Adjacent areas should 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.

Describe the terrestrial vegetation communities within the affected areas 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 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 (Qld) and subsequent amendments, as well as areas subject to the VM Act
- the current extent (bioregional and catchment) of protected vegetation types of conservation significance within the protected area estate (national parks, conservation parks, resource reserves, nature refuges and conservation reserves under the NC Act)
- any plant communities of cultural, commercial or recreational significance
- the location of any horticultural crops in the vicinity of the project area
- location and abundance of any exotic or weed species.

Highlight sensitive or important vegetation types, 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 × 50 metres
- a complete list of species present at each site should be recorded
- surveys to include species structure, assemblage, diversity and abundance
- the relative abundance of plant species present to be recorded
- any plant species of conservation, cultural, commercial or recreational significance to be identified
- specimens of species listed as protected plants under the Nature Conservation (Wildlife) Regulation, 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. The methodology used for flora surveys should be specified in the appendices to the report.

Potential impacts and mitigation measures

Describe 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 removing vegetation. Discuss the indirect effects on remaining vegetation. Consider short- and long-term effects and comment on whether the impacts are reversible or irreversible.

For all components of the project, 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 groundwater environment with specific reference to impacts on riparian vegetation or other sensitive vegetation communities.

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. Consult with Council in relation to its pest management plan and any strategies and plans recommended for the project area by Biosecurity Queensland. Discuss the strategies in accordance with provisions of the *Land Protection (Pest and Stock Route Management) Act 2002* (Qld) in the main body of the EIS and in the pest management plan within the EMP for the project.

Reference habitat connectivity requirements noted in section 5.2.1 above.

5.2.3. Terrestrial fauna

Description of environmental values

Describe the terrestrial and riparian fauna occurring in the areas affected by the proposal, noting the broad distribution patterns in relation to vegetation, topography and substrate. The description of the habitat and 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)
- habitat requirements and sensitivity to changes, including movement corridors and barriers to movement
- an estimate of commonness or rarity for the listed or otherwise significant species
- use of the area by migratory fauna.

Identify any species listed by the EPBC Act and the NC Act occurring in the project area. Identify any species listed by the DEHP 'Back on Track' species prioritisation methodology (refer to **www.derm.qld.gov.au/wildlife-ecosystems/wildlife/back_on_track_species_prioritisation_framework/index.html**).

Indicate how well any affected communities are represented and protected elsewhere in the bio-region where the project occurs. Specify the methodology used for fauna surveys. Provide relevant site data to DEHP in a format compatible with the Wildlife Online database for listed threatened species (refer to **www.derm.qld.gov.au/wildlife-ecosystems/wildlife/wildlife_online/index.html**).

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 native species, particularly species of conservation significance
- cumulative effects of direct and indirect impacts

- threatening processes leading to progressive loss.

Address any actions of the project or likely impacts that require an authority under the NC Act. Provide the following information on mitigation strategies:

- 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
- 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.

Address feral animal management strategies and practices. The study should develop strategies to ensure that the project does not contribute to increased encroachment of a feral animal species. Consult with Council in relation to its pest management plan and any strategies and plans recommended for the project area by Biosecurity Queensland. Discuss the strategies in accordance with the 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.

Address any actions of the project or likely impacts that require an authority under the relevant legislation including the NC Act and/or the Fisheries Act. Outline how these measures will be implemented in the overall EMP for the project.

Reference habitat connectivity requirements noted in section 5.2.1 above.

5.2.4. Aquatic biology and ecology

Description of environmental values

Describe the aquatic flora and fauna present or likely to be present in the areas affected by the proposal (i.e. dredging site, barge routes, marine infrastructure and on airport property). Include:

- fish species, mammals, reptiles, amphibians, crustaceans and aquatic invertebrates occurring in the waterways within the affected area and any associated wetlands (as defined under section 5 of the Fisheries Act
- any rare or threatened marine species
- a description of the 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
- 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.

Describe any wetlands listed by DEHP as areas of national, state or regional significance and detail 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 subtidal lands and marine vegetation (e.g. salt couch, seagrass and mangroves) within the proposed area of development and in the areas adjacent to the project.

Conduct field assessments for plant species, preferably in both pre- and post-wet season conditions, as follows:

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

Benthic macro invertebrates

Benthic macro invertebrate 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.

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 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.

Show the location of any declared Fish Habitat Areas proximal to the proposed dredging site and marine infrastructure for transportation of fill.

Potential impacts and mitigation measures

Discuss the potential impacts of the project on the aquatic ecosystems and describe proposed mitigation actions, including:

- potential impacts to flora and fauna communities from any dredging works and transportation of marine fill to the airport site. This should include modelling of the potential impacts of the dredge plume (e.g. increased turbidity) on seagrass and other aquatic species
- potential impacts to habitat or life cycle of a native species dependent upon the Moreton Bay Ramsar wetland
- 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 riparian vegetation and other sensitive vegetation communities, including mangrove stands and seagrass meadows
- proposed location, type and design of marine infrastructure, with an appropriately scaled map, that would impact on aquatic resources, particularly fish movement
- potential mechanism to ensure adequate fish passage is provided at marine infrastructure
- offsets proposed for unavoidable, permanent loss of fisheries habitat (if applicable)
- methods to minimise the potential for introducing or spreading weed species or plant disease
- monitoring aquatic biology health, productivity and biodiversity in areas subject to direct discharge
- measures to prevent direct impacts on marine fauna and flora by any dredging works
- potential impacts from climate change and the project's potential to increase the susceptibility of aquatic ecological communities and species, e.g. coral bleaching
- proposed stream diversions, causeway construction and crossing facilities, stockpiled material and other impediments that would restrict free movement of aquatic fauna
- measures to avoid fish spawning periods, such as seasonal construction of waterway crossings and measures to facilitate fish movements through water crossings
- alternatives to waterway crossings where possible
- offsets proposed for any unavoidable, permanent loss of fisheries habitat from construction-related activities
- methods to minimise the potential for introducing or spreading weed species or plant disease
- monitoring aquatic biology health, productivity and biodiversity in areas subject to direct discharge.
- methods to minimise the potential of pest aquatic species.

Consult with Council in relation to the management of pest aquatic species. Address any actions of the project or likely impacts that require an authority under the relevant legislation including the NC Act and/or the Fisheries Act. Outline how these measures will be implemented in the overall EMP for the project.

5.3. Coastal environment

Describe the existing coastal environment that 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.

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* (Coastal Act).

Assess the project's consistency with all relevant coastal plans and policies. Note the Queensland Government's *Queensland Coastal Plan* (Department of Environment and Resource Management 2011c) under the Coastal Act commenced on 3 February 2012. The *Queensland Coastal Plan* includes the State Planning Policy 3/11: Coastal Protection (Department of Environment and Resource Management 2011e) under SPA and the State Policy for Coastal Management (Department of Environment and Resource Management 2011f) under the Coastal Act.

Project activities should be considered in relation to the *Historic Shipwrecks Act 1976* (Cwlth). The Maritime Heritage Section of SEWPaC is responsible for administering that Act.

Should any shipwreck or article associated with a shipwreck be discovered, the Historic Shipwrecks Act requires the find to be reported.

5.3.1. Hydrodynamics and sedimentation

Description of environmental values

Assess the physical and chemical characteristics of sediments within the littoral and marine zone.

Describe the physical processes of coastal environment (i.e. within Moreton Bay where dredging may occur and at the proposed site of marine infrastructure for piping of fill to the airport site) related to the project including:

- waves
- currents
- tides
- storm surges
- freshwater flows
- 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.

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. Describe water levels and flows associated with historical and predicted storm surges.

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

Describe the hydrology of the 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. Describe the interaction of freshwater flows with different tidal states, including storm tides. Describe inter-annual variability and details of historical and predicted floods, including extent, levels and frequency. Flood studies should include a range of annual exceedence probabilities for affected waterways, where data permits.

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.

Potential impacts and mitigation measures

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 impact on bank erosion and/or bed degradation within adjacent waterways
- an assessment of the erosive effects of vessel wash associated with boat traffic generated by the proposal. This would be supported by a vessel traffic impact assessment to determine the increase of vessels (size and number) that can be expected as a result of the project relative to the existing situation.

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

When assessing the hydrodynamics of the area and movement of sediment along the coast, consider coastal processes such as erosion and accretion at adjacent locations.

5.3.2. Water quality

Description of environmental values

Provide baseline information on water quality of coastal waters. This information should include (but is not necessarily be limited to) general physical chemical water quality parameters such as dissolved oxygen, pH, heavy metals, nutrients, temperature, salinity, oil in water and turbidity.

For coastal areas potentially affected by sediment run-off or dredging, also include suspended solids concentration and turbidity. 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
- values identified in the *Environmental Protection (Water) Policy 2009* (EPP (Water)).

Potential impacts and mitigation measures

Define and describe the water quality objectives and practical measures for protecting, mitigating or enhancing coastal environmental values. This includes how nominated quantitative standards and indicators may be achieved, and how the achievement of the water quality objectives will be monitored, audited and managed.

Describe the potential environmental harm caused by the project on coastal resources and processes in the context of controlling such effects. Address the:

- *State Planning Policy 2/02: Planning and Managing Development Involving Acid Sulfate Soils* (Department of Natural Resources and Mines & Department of Local Government and Planning 2002a)
- *Restoration of fish habitats: Fisheries guidelines for marine areas* (Fisheries Habitat Guideline 002) (Hopkins, White, & Clarke 1998)
- all relevant coastal plans.

Specific issues to be addressed include:

- the water quality objectives used (including how they were developed), and how predicted activities will meet these objectives—refer to:
  - the *Queensland Water Quality Guidelines 2009* (Department of Environment and Resource Management 2009)
  - *The Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (Australian and New Zealand Environment and Conservation Council & Agriculture and Resource Management Council of Australia and New Zealand 2000)
- potential threats to the water quality and sediment quality of the coastal environment within the project footprint, specifically associated with constructing and operating 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 marine precinct
- release of contaminants from marine structures and vessels, including potential for introducing marine pests
- flooding of relevant river systems and other extreme events (refer Section 5.4.1 below).

Describe strategies for protecting the Moreton Bay Ramsar wetland; and discuss any obligations imposed by state or Commonwealth legislation or policy, or international treaty obligations (i.e. JAMBA, CAMBA and ROKAMBA). Part C, Section 2.2 refers.

5.3.3. Sediment quality and dredging

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

If Moreton Bay is being investigated as an option for accessing sand for fill for the airport site, provide a cumulative impacts assessment based on the Moreton Bay sand extraction study which considers the cumulative environmental impacts and resource allocation issues of extracting an additional 3 million cubic metres of sand (or greater amount if required) from Moreton Bay and specific justification for sand extraction from Middle Banks, Spitfire Channel or other site.

Consideration must be given to any approvals required under the CPM Act, Marine Parks Act and EP Act. Also consider the requirements of the EPBC Act due to the proximity of the proposed dredging to the Ramsar areas and migratory shorebirds.

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

Describe specific measures to maintain sediment quality to nominated quantitative standards within the project and surrounding areas.

Discuss disposal options for contaminated material, if encountered.

5.4. Climate, natural hazards and climate change

Describe the climatic conditions that may affect management of the project. This includes a description of the vulnerability of the project area to seasonal conditions, extremes of climate (e.g. cyclones) and natural or induced hazards (including bushfire and landslide). These matters should be discussed in relation to *SPP 1/03: Mitigating the adverse impacts of flood, bushfire and landslide.*

Provide a risk assessment (as part of the requirements of Section 8.1 of these TOR) and management plan detailing these potential climatic threats to the construction, and operation of the project. Include 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.

Address the most recent information on potential impacts of climatic factors in the appropriate sections of the EIS.

5.4.1. Flood management

Due to the location of the site, a comprehensive flood study is to be included in the EIS that includes:

- quantification of flood impacts on the airport site and properties surrounding and external to the project site from redirection or concentration of flows
- identification of likely increased flood levels, increased flow velocities or increased time of flood inundation as a result of the development for a range of flood events
- consideration of the impacts of climate change.

The flood events studied are to be based on the annual exceedance probability.

The flood study should address any requirements of relevant local and regional planning schemes for flood affected areas (including impact of any stored hazardous materials (refer section 9 of SPP 1/03). The study report should include details of all calculations along with descriptions of base data, any potential for loss of flood plain storage, and triangulated surface meshes produced in terrain modelling software. Reference must be made to any studies undertaken by the local council in relation to flooding.

5.4.2. Bushfire and Landslide

Include in the EIS a bushfire study and a landslide study that addresses the requirements of the Appendix 3 and Appendix 4 (respectively) of SPP 1/03.

5.5. Land

Describe the existing land environment values for all areas associated with the project. Describe the potential for the construction and operation of the project to change existing and potential land uses of the project sites and adjacent areas.

5.5.1. Scenic amenity and lighting

Description of environmental values

Describe the scenic and landscape values of the area, focusing on the visual absorption capacity of the site, including any relevant World Heritage and National Heritage values of the area.

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

Potential impacts and mitigation measures

Describe the potential beneficial and/or adverse impacts of the project on landscape character and visual qualities of the site and the surrounding area. Address the local and broader visual impacts of the project buildings and other land-based and marine structures. This should include views from:

- places of residence, work, and recreation
- road, cycle and walkways
- the air
- other known vantage points day and night

during all stages of the project as it relates to the surrounding landscape.

Use sketches, diagrams, computer imaging/simulation and photos where possible to portray the near views and far views of the completed structures and their surroundings from visually sensitive locations.

Describe the measures to be undertaken to mitigate or avoid identified adverse impacts.

Lighting

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

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

5.5.2. Topography, geology and soils

Description of environmental values

Provide maps locating the project in state, regional and local contexts. The topography should be detailed with contours at suitable increments, shown with respect to AHD. Include significant features of the landscape and topography, and accompanying comments on the maps.

Provide a description, map and a series of cross-sections of the geology of the project area relevant to the project components. Describe the geological properties that may influence ground stability, occupational health and safety, or the quality of stormwater leaving any area disturbed by the project. 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.

Conduct a soil survey of the sites affected by the project, at a suitable scale, with particular reference to the physical and chemical properties of the materials that will influence erosion potential and stormwater run-off quality. Provide information on soil stability and suitability for construction of project facilities.

Soils should be described and mapped at a suitable scale and described according to the *Guidelines for Surveying Soil and Land Resources* (McKenzie et al. 2008) and *Australian soil classification* (Isbell & CSIRO 2002).

Undertake an appraisal of the depth and quality of useable soil. Assess each soil's agricultural land suitability in accordance with:

- *Guidelines for agricultural land evaluation in Queensland* (Department of Primary Industries 1990)
- *Planning guidelines: the identification of good quality agricultural land* (Department of Primary Industries & Department of Housing, Local Government and Planning *1993)*

- *State Planning Policy 1/92: Development and the Conservation of Agricultural Land* (Department of Primary Industries & Department of Housing, Local Government and Planning 1992).

Identify any areas of land within the project study area identified as 'strategic cropping land or potential strategic cropping land' (SCL) as identified by the *Strategic Cropping Land Act 2011* (Qld) (SCL Act) trigger maps (available from **www.derm.qld.gov.au/land/planning/strategic-cropping/mapping.html**).

Provide a map and description of:

- the location of key tidal planes such as:
  - the Highest Astronomical Tide
  - Mean High Water Spring Tide
  - Mean High Water Neap Tide
  - Mean Sea Level
  - Mean Low Water Neap Tide
  - Mean Low Water Spring Tide
  - Lowest Astronomical Tide.
- the bathymetry of the project area and surrounds
- relevant coastal geomorphology.

Potential impacts and mitigation measures

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 the possible soil erosion rate for all permanent and temporary landforms and describe the techniques used to manage the impact. Identify all soil types and outline the erosion potential (both wind and water). Include an assessment of likely erosion effects, especially those resulting from removing vegetation, and constructing retaining walls both on-site and off-site for all disturbed areas.

Identify erosion management techniques to be used. Provide details of an erosion-monitoring program (including rehabilitation measures for erosion problems identified during construction), and detail acceptable mitigation strategies. Summarise methods proposed to prevent or control erosion with regard to:

- the *Soil Erosion and Sediment Control—Engineering Guidelines for Queensland Construction Sites* (Institution of Engineers Australia 1996)
- the *Guideline: EPA Best Practice Urban Stormwater Management—Erosion and Sediment Control* (Environmental Protection Agency 2008a)
- preventing soil loss in order to maintain land capability/suitability
- preventing degradation of local waterways.

Undertake and comprehensive acid sulphate soils investigation to meet the requirements of:

- *Acid Sulfate Soil Laboratory Methods Guidelines* (Ahern et al. 2004)
- *State Planning Policy 2/02: Planning and Managing Development Involving Acid Sulfate Soils* (Department of Natural Resources and Mines & Department of Local Government and Planning 2002a)
- *State Planning Policy 2/02 Guideline: Planning and Managing Development Involving Acid Sulfate Soils* (Department of Natural Resources and Mines & Department of Local Government and Planning 2002b).

Discuss the potential for acid generation through disturbance of acid sulfate soils during earthworks and construction, and propose measures to manage soils and mitigate impacts for all site earthworks and construction activities. Should action criteria be triggered by acid generating potential as a result of testing, outline management measures in an acid sulfate soils management plan prepared in accordance with policies and guidelines noted immediately above.

Cross reference to groundwater assessment requirements in sections 5.6.1 and 5.6.2 below.

Identify any areas within the project footprint likely to temporarily or permanently impact SCL. Where areas of identified SCL are likely to be permanently alienated by the project, the proponent should contact DEHP to discuss undertaking the SCL assessment process defined by the SCL Act.

5.5.3. Land contamination

Description of environmental values

Include:

- 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

Discuss the management of any contaminated land and potential for contamination from construction, commissioning and operation, in accordance with *Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland* (Department of Environment 1998) and the National Environment Protection (Assessment of Site Contamination) Measure 1999.

Describe strategies and methods to be used to prevent and manage any land contamination resulting from the project, including the management of any acid generation or management of chemicals and fuels to prevent spills or leaks.

State any intentions concerning the classification of land contamination after project completion.

5.5.4. Land use and tenure

Description of environmental situation

Identify, with the aid of maps:

- land tenure, including reserves, tenure of special interest such as protected areas and forest reserves, existing and proposed gas infrastructure, water pipelines, power lines and transport corridors, including local roads, state-controlled roads and rail corridors
- existing land uses and facilities surrounding the project
- distance of the project from residential and recreational areas
- declared water storage catchments
- location of the project in relation to environmentally sensitive areas.

Potential impacts and mitigation measures

Describe the potential for the construction and operation of the project to change existing and potential land uses of the project site and adjacent areas, including:

- impacts on surrounding land uses and human activities and strategies for minimisation, such as:
  - good quality agricultural land—refer to *State Planning Policy 1/92: Development and the conservation of agricultural land* (Department of Housing, Local Government and Planning & Department of Primary Industries 1992) and *Planning guidelines: The identification of good quality agricultural land* (Department of Primary Industries & Department of Housing, Local Government and Planning 1993)
  - strategic cropping land—refer to *State Planning Policy 1/12: Protection of Queensland's strategic cropping land* (Department of Environment of Environment and Resource Management 2012)
  - key resource areas—refer to: *State Planning Policy 2/07: Protection of Extractive Resources* (Department of Mines and Energy 2007a) and *State Planning Policy 2/07 Guideline: Protection of Extractive Resources* (Department of Mines and Energy 2007b)
  - residential and industrial uses
- 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
- management of the immediate environs of the project including construction buffer zones
- 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
- any land units requiring specific management measures.
- Potential impacts from sites considered for land fill.

5.6. Water resources

5.6.1. Description of environmental values

Describe 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
- EPP (Water)
- *The Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (Australian and New Zealand Environment and Conservation Council & Agriculture and Resource Management Council of Australia and New Zealand 2000)
- *Queensland Water Quality Guidelines 2009* (Department of Environment and Resource Management 2009).

Provide an indication of the quality and quantity of water resources in the vicinity of the project area, describing the existing:

- surface and groundwater in terms of physical, chemical and biological characteristics
- surface drainage patterns, flows, history of flooding including extent, levels and frequency and present water uses.

Describe the environmental values of the surface waterways and groundwater of the affected area 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
- water resource plans relevant to the affected catchments.

If the project is likely to use or affect local sources of groundwater, describe 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 and ponds (including quantitative yield of water and locations of access).

The groundwater assessment should also be consistent with relevant guidelines for the assessment of acid sulfate soils including spatial and temporal monitoring to accurately characterise baseline groundwater characteristics. Reference section 5.5.2 above.

5.6.2. Potential impacts and mitigation measures

Assess the potential impacts of all components of the project on water resource environmental values identified in the previous section. 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 objectives will be monitored, audited and managed. Include the following:

- potential impacts on the flow and the quality of surface and groundwaters from all phases of the project, with reference to their suitability for the current and potential downstream uses and discharge licences
- 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 wastewater (including stormwater at the point of discharge into natural surface waters), and the toxicity of effluent to flora and fauna
- 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 potential to contaminate surface and groundwater resources and measures to prevent, mitigate and remediate such contamination.

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. Describe the monitoring programs that will assess the effectiveness of management strategies for protecting water resources during the construction, operation and decommissioning of the project. Outline how these strategies are incorporated into appropriate sections of the EMP.

Surface water and water courses

Assess the hydrological impacts of the proposal on surface water and water courses, particularly with regard to stream diversions, scouring and erosion, and changes to flooding levels and frequencies both upstream and downstream of the project. If

flooding levels will be affected, modelling of afflux should be provided and illustrated with maps.

Discuss the need or otherwise for licensing of any dams (including referable dams) or creek diversions, under the Water Act. Water allocation and water sources, including impacts on existing water entitlements, including water harvesting, should be established in consultation with DEHP.

Wastewater treatment

Reference should be made to the properties of the land to be used for the management of seawater, and the techniques to be used in managing the seawater that will accompany the deposition of dredged sand on the site.

In relation to water supply and usage, and wastewater disposal, discuss anticipated flows of water to and from the proposal area. Where dams, weirs or ponds are proposed, investigate the effects of predictable climatic extremes (storm events, floods and droughts) on:

- the capacity of the water storages (dams, weirs, ponds) and the ability of these storages to retain contaminants
- the structural integrity of the containing walls
- relevant operating regime
- the quality of water contained
- flows and quality of water discharged.

The design of all water storage facilities should follow the technical guidelines on site water management.

Discuss the mitigation options and the effectiveness of mitigation measures, with particular reference to sediment, acidity, salinity and other emissions of a hazardous or toxic nature to human health, flora or fauna.

Groundwater

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 impacts of acid sulphate soils.

Describe the response of the groundwater resource to the construction and operation of the project.

Assess the impact of the project on the local groundwater regime caused by the altered porosity and permeability of any land disturbance.

Assess and describe any potential for the project to impact on groundwater-dependent vegetation; describe avoidance and mitigation measures.

Assess the potential impacts of primary and secondary salinity as a result of the project in accordance with the *Salinity Management Handbook: 2nd edition* (Department of Environment and Resource Management 2011d).

Reference section 5.5.2 above.

5.7. Air quality

5.7.1. Description of environmental values

Describe the existing air quality that may be affected by all components of the project in the context of environmental values as defined by the EP Act and Environmental Protection (Air) Policy 2008 (EPP (Air)).

Discuss the existing air shed environment, both local and regional, including:

- background levels and sources of particulates, gaseous and odorous compounds and any major constituent
- pollutants (including greenhouse gases)
- baseline monitoring results, sensitive receptors
- data on local meteorology and ambient levels of pollutants should be gathered 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.

5.7.2. Potential impacts and mitigation measures

For the construction stage of the proposal, address the following air quality issues and their mitigation:

- an inventory of air emissions from the project expected during pre-construction, construction and operational activities (including source, composition and levels of emissions)
- ground level predictions should be made at any site that includes the environmental values identified by the EPP (Air), including any sites that could be sensitive to the effects of predicted emissions
- dust generation from construction activities, especially in areas where construction activities are adjacent to existing road networks or are in close proximity to sensitive receivers
- vehicle emissions and dust generation along major haulage routes both internal and external to the project site
- dredge emissions.

Specific air quality issues to be investigated and assessed for the operational stage include:

- emissions (source, composition and levels) that may occur during operation. If these emissions are significantly higher than those for normal operations, separately evaluate the worst-case impact to determine whether the planned buffer distance between the facility and neighbouring sensitive receptors will be adequate
- increased air traffic and airport vehicle emissions during operations (including refuelling operations)
- human health risk associated with emissions from hazardous or toxic pollutants

- climatic patterns that could affect aircraft emission movement, and dust generation and movement
- impacts on terrestrial flora and fauna.

Describe the mitigation measures (pollution control equipment), together with proactive and predictive operational and maintenance strategies that could be used to prevent and mitigate impacts for all stages of the project.

Discuss potential air quality impacts from emissions, with reference to the National Environmental Protection (Ambient Air Quality) Measure 2003 (Cwlth) and the EPP (Air). If an emission is not addressed in these legislative instruments, the emission should be discussed with reference to its risk to human health, including appropriate health-based guidelines/standards.

5.8. Greenhouse gas emissions

Provide an inventory of projected annual emissions for each relevant greenhouse gas, with total emissions expressed in 'CO_2 equivalent' terms.

Briefly describe method(s) by which estimates were made.

The Australian Government Department of Climate Change and Energy Efficiency's *National Greenhouse Accounts (NGA) Factors* (Commonwealth of Australia 2010) 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.

Consider using the Australian Government Department of Infrastructure and Transport carbon footprinting software (TNIP Carbon Counter) to compute carbon emissions from aircraft operations.

Discuss the potential for greenhouse gas abatement measures during all stages of the project, including:

- commitments to proposed measures (alternatives and preferred) to avoid and/or minimise direct greenhouse gas emissions
- how the preferred measures minimise emissions and achieve energy efficiency
- any opportunities to further offset greenhouse gas emissions through indirect means, including renewable energy uses, sequestration and carbon trading
- a process for regularly reviewing new technologies to identify opportunities to reduce emissions and use energy efficiently, consistent with best practice environmental management.

5.9. Waste

5.9.1. Waste generation

Identify and describe all sources, likely volumes and quality (where applicable) of waste associated with pre-construction, construction, operation and decommissioning of all

aspects of the project. Refer to regulated waste listed in Schedule 7 of the Environmental Protection Regulation 2008 (Qld). 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
- hazardous materials to be stored and/or used on site, including environmental toxicity data and biodegradability.

5.9.2. Waste management

Assess the potential impact of all wastes generated during construction and operation, with regard for best practice waste management strategies, the Environmental Protection (Waste) Policy 2000 and the Environmental Protection (Waste) Regulation 2000 (Qld). Provide details of each waste in terms of:

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

5.10. Transport

Present the transport assessment in separate reports for each project-affected mode (road, rail, air and sea) as appropriate for each phase of the project. These assessment reports should provide sufficient information to allow an independent assessment of how existing and future transport infrastructure will be affected by the project expansion and/or project transport at the local and regional level.

5.10.1. Existing infrastructure

Describe the extent, condition and capacity of the existing transport infrastructure on which the project will depend.

Describe the project's impact on the local and state-controlled road networks. Include an overview map(s) of the current and future local and state-controlled road networks

which describes the project's relationship to the networks. Include in the map(s) the location of construction activities and access locations (existing and proposed).

5.10.2. Transport tasks and routes

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 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.

5.10.3. 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 in accordance with the *Guidelines for Assessment of Road Impacts of Development*) (Department of Main Roads 2006).

Assess project impacts on:

- local and state road networks
- associated road infrastructure (e.g. stormwater drainage systems in the vicinity of State-controlled roads such as the Sunshine Motorway and David Low Way)
- capacity, safety, local amenity, efficiency and condition of transport operations, services and assets (from either transport or project operations)
- possible interruptions to transport operations
- the natural environment within the jurisdiction of an affected transport authority (e.g. road and rail corridors)
- the nature and likelihood of product-spill during transport, if relevant
- any existing or proposed strategies for public passenger transport (including links to other transport modes, e.g. public rail and bus, shuttle bus, etc.) and active transport and address, where relevant, requirements of Part 2A of the *Transport Planning and Coordination Act 1994* (Qld)
- access to transport for people with a disability.

5.10.4. Infrastructure alterations

Describe:

- 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.

5.10.5. Transport impact management strategies

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 in close consultation with relevant transport authorities and consider those authorities' works programs and forward planning.

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

Road/rail management planning

Outline:

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

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

The Regional Harbour Master should be consulted regarding maritime issues relating to potential dredging operations and transporting fill material to the airport site. The EIS should discuss the results of the consultation.

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

- management of barge waste, in particular quarantine waste, domestic garbage, oil and sewage
- 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
- monitoring, prevention and mitigation plans for invasive marine pests.

Additional marine transport issues that should be considered include the potential of the proposal to impact on recreational craft.

5.11. Indigenous cultural heritage

5.11.1. Description of existing Indigenous cultural heritage values

Describe the existing Indigenous 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.

Also describe how, in conjunction with the appropriate Indigenous people, subject to confidentiality requirements, the cultural heritage values were ascertained. This could include:

- the results of any Aboriginal cultural heritage survey undertaken
- the DEHP Aboriginal Cultural Heritage Register and Database
- any existing literature relating to Indigenous cultural heritage in the project area.

5.11.2. Potential impacts and mitigation measures

Define and describe the objectives and practical measures for protecting or enhancing Indigenous 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 Indigenous 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.

During the EIS process, the proponent should initiate a native title agreement (NT agreement), as defined under the *Aboriginal Cultural Heritage Act 2003* (Qld) (ACH Act) that includes management and protection strategies for Indigenous cultural heritage or a cultural heritage management plan (CHMP) under the ACH Act. 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, when the EIS is submitted to the Coordinator-General the following must be provided:

- an outline of the draft CHMP or draft plan within the NT agreement that 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/Indigenous parties and should address and include the following:

- a process for including Indigenous people associated with the development areas in protection and management of Indigenous cultural heritage
- processes for mitigating, managing and protecting 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 managing the accidental discovery of cultural material, including burials
- a clear recording process to assist initial management and recording of accidental discoveries
- a cultural heritage induction for project staff
- developing a cultural heritage awareness program to be incorporated into the contractor/employee manual and induction manual. This is to be in the form of a plain language, short document that is easy for contractors and staff 'on the ground' to understand
- a conflict resolution process.

If an NT agreement is not finalised or a CHMP has not been approved when the EIS is submitted to the Coordinator-General, the following must be provided:

- an outline of the draft CHMP or draft plan within the NT agreement that 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.

5.11.3. Native title

Identify areas covered by applications for native title claims or native title determinations, providing boundary descriptions of native title representative body(ies), and whether it is necessary to notify the representative body(ies) or if there is evidence that native title does not exist.

Identify the potential for native title rights and interests likely to be impacted upon by the project and the potential for managing those impacts by an Indigenous land use agreement or other native title compliance outcomes.

5.12. Non-Indigenous matters

5.12.1. Description of existing non-Indigenous cultural heritage values

Include a cultural heritage study/survey 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:

- review of:
  - the Australian Heritage Places Inventory
  - the Queensland Heritage Register and other information 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 located or identified
- locations of culturally and historically significant sites, shown on maps, which could potentially be impacted by the project
- a constraints analysis of the proposed development area to identify and record non-Indigenous cultural heritage places.

5.12.2. Potential impacts and mitigation measures

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.

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*.

6. Social values and management of impacts

6.1. Description of existing social values

Conduct a social impact assessment and consider:

- the social and cultural area, which should include the suburbs intersected by and adjacent to the study corridor
- community engagement
- a social baseline study
- a workforce profile
- potential impacts and mitigation measures
- management strategies.

6.1.1. Social and cultural area

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

6.1.2. Community engagement

Consistent with national and international good practice, and with regard to local and regional strategies for community engagement, 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.

Describe the community engagement processes used to conduct open and transparent dialogue with stakeholders. Such processes should include, but not be limited to, the use of community reference group forums. 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.

Discuss engagement strategies and processes, including how complaint resolution will be addressed, for all stages of the project.

6.1.3. Social baseline study

Include a targeted baseline study of the people residing in the project's social and cultural area 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 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 as relevant through the community engagement process.

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 Regional Plan 2005–2026: Implementation Guideline No.5: Social infrastructure planning* (Department of Infrastructure 2007)
- 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.

6.1.4. Workforce profile

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

- workforce demand:
  - the estimated composition of workforce by occupation, status (permanent, full-time, part-time and contract), project stage and duration (including any planned construction prior to final investment decision)
- supply issues and strategies:
  - analysis of relevant local, state and national workforce profiles and labour supply
  - strategies and proposed programs for:
    - recruitment and attraction
    - population groups (including Indigenous, women, secondary school students and unemployed and underemployed)
    - unskilled and semi-skilled labour requirements
    - structured training (apprenticeships, traineeships, graduates)
    - analysis of impact on local community workforce.

6.2. Potential impacts

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. This section should:

- describe and summarise outcomes of community engagement processes including the likely response of the affected communities, including Indigenous people
- 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. Consider the following:
  - local, regional and state labour markets, with regard to the source of the workforce, and any proposed employment strategies targeted at disadvantages groups in the study area
  - proposed new skills and training related to the project including the occupational skill groups required and potential skill shortages anticipated
  - impacts of construction and operational workforces, their families, and associated contractors on housing and accommodation availability and affordability, land use and land availability
  - impacts on community greenspace (specifically address the Queensland Greenspace Strategy 2011-2020).

Evaluate and discuss the potential cumulative social impacts resulting from the project including an estimation of the overall size, significance and likelihood of those impacts.

6.2.1. Mitigation measures and management strategies

For identified social impacts provide detail of proposed social impact mitigation strategies and measures and how these will be implemented.

Prepare an Indigenous participation plan.

Describe any consultation about acceptance of proposed mitigation strategies and how practical management and monitoring regimes are proposed to be implemented.

7. Economics and management of impacts

7.1. Economics

7.1.1. 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. Include:

- a map illustrating the local and regional economies (local government areas) that could be potentially affected by the project
- gross regional product or other appropriate measure of annual economic production
- demographic and employment profile of the study area as a whole and disaggregated by local government area. Include:
  - existing population (size, age, distribution)
  - existing community profiles of the local government areas directly affected by the project (household type, size, average income)
  - existing employment statistics (part-time/full-time, by occupation)
  - the regional economy's key industries and their contribution to regional economic income
- sufficient baseline economic data to underpin a comprehensive assessment of the direct, indirect, cumulative, costs and impacts of the project
- 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.

With regard to the region's key industries and factor prices, provide information on:

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

7.1.2. 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 (including increased demand for tourism accommodation)
- the distributional effects of the proposal including proposals to mitigate any negative impact on disadvantaged groups.

7.2. Strategies for local participation

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

- 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 (see **http://training.qld.gov.au/industry/10percent-policy.html**)
  - development of a Local Industry Participation Plan in accordance with the Local Industry Policy (Department of State Development, Infrastructure and Planning 2008b) and the Local Industry Policy Guidelines in consultation with the Office of Advanced Manufacturing, Department of State Development, Infrastructure and Planning, to embrace the use of locally sourced goods and services.

7.3. Impact upon property management

Address the impact of the project on adjacent residential, commercial and industrial land uses, property values and property management practices.

7.4. Sustainable development

Provide a comparative analysis of how the project conforms to the objectives for 'sustainable development'—see the *National Strategy for Ecologically Sustainable Development* (Ecologically Sustainable Development Steering Committee 1992).

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.

8. Hazard and risk

8.1. Hazard and risk assessment

Describe the potential hazards and risks to people and property that may be associated with all components of the project, which may include but are not restricted to:

- identifying potential hazards, accidents, spillages and abnormal events that may occur during all stages of the project, including possible frequency of occurrence
- identifying all hazardous substances to be used, stored, processed or produced and the rate of usage
- potential wildlife hazards
- natural events (e.g. cyclone, storm surge, flooding, bushfire, landslide) and implications related to climate change.

Undertake a preliminary risk assessment for all components of the project, as part of the EIS process in accordance with *Australia/New Zealand AS/NZS ISO 31000:2009 Risk management—Principles and guidelines* (Standards Australia & Standards New Zealand 2009). With respect to risk assessment, the EIS should:

- deal comprehensively with external and on-site risks including transport risks
- assess risks during the pre-construction (e.g. dredging), construction, operational and decommissioning stages of the project
- include an analysis of the consequences of each hazard on safety in the project area, examining the likelihood of both individual and collective consequences, involving injuries and fatalities to workers and to the public
- present quantitative levels of risks from the above analysis.

Describe the safeguards that would reduce the likelihood and severity of hazards, consequences and risks to persons, within and adjacent to the project area(s).

Present a comparison of assessed and mitigated risks with acceptable risk criteria for land uses in and adjacent to the project area(s).

Provide a draft risk management plan.

8.1.1. Airport operations

Provide a comparative assessment of risk currently experienced at the SCA to that with a new runway operating. The assessment should include:

- probability analysis of aircraft accidents with reference to aircraft incidents within Australia and, to the extent relevant, world-wide
- consequences of aircraft accidents (including crashes on the airport, residential areas, industrial areas, over the ocean and beaches, crashes with other aircraft etc.)
- the effect of flight paths and frequency of aircraft movements on the risk of accidents involving residential and industrial areas and State and local roads (within the public safety area around the airport)
- identification of sites on or near the airport that attract birds or bats and the typical routes used by birds and bats, taking into account seasonal variations

- the relative risk of bird strike (including how the risk is currently managed)
- airport security issues during construction and operation.

8.2. Cumulative risk

The risk analysis is to address the potential impacts that may occur on the normal on-site day-to-day activities during the construction and/or operation of the facilities. Furthermore, determine the level of change that may result on the risk contours of other relevant existing or proposed industrial facilities in the area, as a result of the proposed project (where details of such proposed facilities are provided by OCG or otherwise published). Individual risk criteria should be used to limit risks to individual workers and members of the public. Societal risk criteria should be used to limit risk to the affected population as a whole.

Identify and adopt, where appropriate, any changes to operating or storage procedures that would reduce the possibility of these events occurring, or reduce the severity of the events should they occur.

8.3. Health and safety

8.3.1. Description of public health and safety community values

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.

8.3.2. Potential impact and mitigation measures

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.

Assess the cumulative effects on public health values and occupational health and safety impacts on the community and workforce and regional health services from all components of the project including those relating to noise and vibration, air quality, hazards and risks etc. Recommend any practical monitoring regimes in this section.

Include relevant consultation with the appropriate regional health service providers.

8.4. Emergency management plan

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

Provide an outline of the proposed integrated emergency management planning procedures (including evacuation plans, if required) for the range of situations identified in the risk assessment developed in this section. This includes strategies to deal with natural disasters (e.g. bushfire, cyclones, flooding and storm surge) during pre-construction, construction and operation.

Present preliminary information on the design and operation of proposed safety/contingency systems to address significant emergency issues delineated in the risk assessment, together with at least the following areas of emergency:

- aircraft crash/collision
- terrorist attack (refer Section **Error! Reference source not found.**)
- fire prevention/protection
- leak detection/minimisation
- release of contaminants
- emergency shutdown systems and procedures
- marine collision minimisation, if dredging required.

In addition, undertake an assessment of businesses that may be affected in the event of an emergency, including strategies to mitigate the impact on these businesses.

In regard to fires, 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 *State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide* (Department of Local Government and Planning & Department of Emergency Services 2003)
- on-site firefighting 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, firefighting equipment, etc.
- an outline of any dangerous goods stores associated with the plant operations, including fuel storage and emergency response plans.

Present outlines of emergency planning and response strategies to deal with relevant incidents above, which have been determined in consultation with state and regional emergency service providers, and which show integration of emergency services into the plans.

Present plans for emergency medical response and transport and first aid matters with involvement of the relevant state agencies (such as the Queensland Ambulance Service, Queensland Fire and Rescue Service and Emergency Management Queensland).

9. Cumulative impacts

Summarise the project's cumulative impacts and describe these impacts in combination with those of existing or proposed project(s) publicly known or advised by OCG to be in the region, to the greatest extent practicable. Cumulative impacts should be assessed with respect to both geographic location and environmental values. Explain the methodology used to determine the cumulative impacts of the project,

detailing the range of variables considered (including relevant baseline or other criteria upon which the cumulative aspects of the project have been assessed, where applicable).

10. Environmental management plan

Describe the environmental management plans (EMPs) for the pre-construction (i.e. sourcing fill material), construction and operational phases of the project. The EMP should be developed from, and be consistent with, the information in the EIS. The EMP must address discrete project elements and provide life-of-proposal control strategies. It 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
  - where relevant, 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. List the implementation agency for each element of the EMP.
Monitoring	The monitoring requirements to measure actual performance (e.g. 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).

The proponent's commitments to environmental performance, as described in the EMP, may be included as Coordinator-General's conditions to ensure the commitments are met. Therefore, the EMP is a relevant document for project approvals, environmental authorities and permits, and may be referenced by them.

11. Conclusions and recommendations

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

12. References

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

13. Appendices

Final TOR for this EIS

Include a copy of the final TOR in the EIS.

TOR cross-reference table

Provide a cross-reference table that links the requirements of each section of the TOR with the corresponding section of the EIS, where those requirements have been addressed

Project approvals

Provide a list of the all project approvals required by the project.

Consultation report

Attach the consultation report, as described in Part B, Section 3.7 (page 10).

Study team

List the relevant qualifications and experience of the key study team members and specialist sub-consultants.

Glossary of terms

Provide a glossary of technical terms.

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

Corporate environmental policy

Attach a copy of the proponent's corporate environmental policy and planning framework document.

List of proponent commitments

Provide a list of all commitments made by the proponent in the EIS, together with a reference to the relevant section in the report.

Part C. Contents of the EIS for Australian Government matters

1. Background and context

On 7 October 2011, the Commonwealth Environment Minister determined that the project is a 'controlled action' under the EPBC Act, due to the likely potential impacts on MNES (reference number EPBC 2011/5823).

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

- sections 16 and 17(b) (wetlands of international importance)
- sections 18 and 18(a) (listed threatened species and communities)
- sections 20 and 20(a) (listed migratory species).

As a consequence, the project requires assessment and approval under the EPBC Act. The Australian Government has accredited the EIS process, to be conducted under the SDPWO Act, under a bilateral agreement between the Australian and Queensland governments. This will enable the EIS to meet the impact assessment requirements under both Commonwealth and Queensland legislation. The project will require approval from the responsible Commonwealth minister under Part 9 of the EPBC Act before it can proceed.

On 7 October 2011, the Australian Government also determined that the associated aviation airspace management referral (EPBC 2011/6104), made under section 160 of the EPBC Act by CASA and Airservices Australia, requires assessment under the EPBC Act.

Once the EIS has been prepared to the satisfaction of the Coordinator-General, and MNES and airspace matters addressed to the satisfaction of the Australian Government, the EIS will be made available for public comment.

The proponent may be required by the Coordinator-General or the Commonwealth Environment Minister to provide additional material to address matters raised in submissions on the EIS.

At the conclusion of the environmental assessment process, the Coordinator-General will provide a copy of the report to the Commonwealth Environment Minister, in accordance with Part 5, section 17(2) of the State Development and Public Works Organisation Regulation 1999.

After receiving the evaluation report and sufficient information about the relevant impacts of the action, the Commonwealth Environment Minister has 30 business days to decide whether or not to approve each controlling provision.

The minister's decision is separate to the approval decisions made by Queensland State agencies and other agencies with jurisdiction on State matters.

Section 2 below sets out the requirements to be addressed in the EIS, in relation to MNES. Section 3 sets out the requirements to be addressed by the proponent in relation to aircraft noise and other airspace matters (refer to page 63).

2. Matters of national environmental significance

2.1. General requirements

In accordance with Section 3.1 of Schedule 1 of the bilateral agreement, the EIS must:

- assess all the relevant impacts that the action has, will or is likely to have
- provide enough information about the action and its relevant impacts to allow the Commonwealth Environment Minister to make an informed decision whether or not to approve the action

- address the matters set out in Schedule 4 of the Environment Protection and Biodiversity Conservation Regulations 2000 (Cwlth). Schedule 4 is provided at Appendix 1 of this TOR.

This section should bring together assessments of impacts on MNES in other chapters (e.g. water resources, flora and fauna, cultural heritage and cumulative impacts etc.) and produce a stand-alone assessment in a format suited for assessment under the EPBC Act.

The project should initially be assessed in its own right followed by an assessment of the cumulative impacts related to all known proposed similar developments in the region with respect to each controlling provision and all identified consequential actions. Cumulative impacts not solely related to the project development should also be assessed.

Predictions of the extent of threat (risk), impact and the benefits of any mitigation measures proposed, should be based on sound science and quantified where possible. Reference all sources of information relied upon and provide an estimate of the reliability of predictions. Also identify and evaluate any positive impacts.

The extent of any new field work, modelling or testing should be commensurate with risk and should be such that when used in conjunction with existing information, provides sufficient confidence in predictions that well informed decisions can be made.

Project alternatives must be discussed in accordance with Schedule 4, section 2.01(g) of the EPBC Regulations 2000 (refer to Appendix 1).

The following content requirements are based on these matters and considerations, with the addition of directions specific to the proposed action and the receiving environment.

2.2. Impact on wetlands of international importance

As dredging of sand from Moreton Bay for fill for the proposed development is being investigated as part of the project, discuss the potential impacts on wetlands of international importance including:

- a description of the ecological character of the Moreton Bay Ramsar site, including its physico-chemical status and any native species dependent upon the wetland. Provide maps outlining habitat for these species and an outline of how these species use the wetland
- a description of the potential impacts of the proposal on those elements of the ecological character of the Moreton Bay Ramsar site that may be impacted by activities associated with the proposal
- an outline of the measures that will be used to manage and mitigate impacts identified.
- identify any residual impacts to the ecological character of the Moreton Bay Ramsar site that cannot be managed or mitigated.

2.3. Impact on listed threatened species and ecological communities and listed migratory species.

2.3.1. Description of environmental values

Identify EPBC Act listed threatened or migratory species or listed ecological communities potentially present on or off-site that could be affected, directly or indirectly, as a consequence of the proposal. For each MNES, provide the following information:

- information on the distribution, ecology, and habitat preferences of the species or ecological community (both on and off-site)
- maps showing the location of known records (including those from databases and all surveys previously conducted for the proposal). A copy of the surveys should be included in the assessment information
- maps showing the potential habitat within and in the vicinity of the proposed site. These maps must highlight habitat components important for each relevant species or ecological community, such as breeding habitat, wetlands, vine forests, rock outcrops, etc
- maps showing the potential habitat for each species or ecological community within the region
- information on the survey methodology used, including any limitations of the methodology and data collected for each species or ecological community, as well as a justification for the survey methodology and survey sites employed
- information on the scientific reliability of survey investigations and conclusions, including the degree of certainty or statistical confidence where appropriate
- a detailed analysis using the maps prepared, judgments of qualified experts and recent and historical species records to determine the importance of the populations of listed threatened species or ecological communities and habitat at the proposed development site, including:
  - current known threats and future predicted threats
  - risks to the viability of listed species populations or ecological communities locally, regionally and nationally
  - presence in conservation reserves
  - population trends in the region
  - conservation programs being undertaken in the region
  - monitoring data that describes population responses to climate, disturbance or any other source of perturbation.

2.3.2. Potential impacts

Provide a description of the relevant impacts, including:

- the potential and likely short-term and long-term impacts of the action on MNES, including quantities of habitat likely to be impacted, (detailing direct, indirect, and cumulative impacts)

- a statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible
- analysis of the potential magnitude of the relevant impacts
- any technical data and other information used or needed to make a detailed assessment of the relevant impacts
- information on the scientific reliability of investigations and conclusions drawn, including the degree of certainty or statistical confidence where appropriate. This must include any assumptions or limitations of any models used to make predictions.

'Direct impact' is an event or circumstance that is a direct consequence of the action.

'Indirect impact' refers to impacts which are a consequence of a secondary event or circumstance, for which the action would be a substantial cause. This may include the actions of third parties that are facilitated by proposed action, such as increased shipping or road traffic.

Cumulative impact refers to the incremental impacts of the action when combined with other past, present and reasonably foreseeable future actions (both related and unrelated).

2.3.3. Proposed safeguards and mitigation measures

Provide a description of the proposed safeguards and mitigation measures, including:

- a description, and an assessment of the expected or predicted effectiveness, of the proposed mitigation measures
- any statutory or policy basis for the proposed mitigation measures
- an outline of an EMP (or plans) that set out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the action (both on and off site), including any provisions for independent environmental auditing
  - the plan(s) must allow for the collection of baseline environmental data, and ongoing monitoring, management and mitigation for the duration of the action and subsequent mine rehabilitation, so impacts on MNES can be adequately measured
  - the plan(s) must also detail how any management strategy or monitoring program would influence environmental practices on site, including trigger values and response measures where appropriate
- the name of the agency responsible for endorsing or approving each proposed mitigation measure or monitoring program
- describe the scope, timing, duration and methods that will be employed to monitor the impacts of the action during operation and post construction and how the principles of adaptive management will inform the mitigation of impacts throughout the project life
- a consolidated list of proposed mitigation measures to be undertaken to prevent, minimise or compensate for the relevant impacts of the action, including mitigation measures proposed to be taken by state or local governments or the proponent

- an assessment of impacts on MNES, should contingency measures for the proposed action need to be undertaken.

2.3.4. Proposed offset measures

Provide a description of proposed offset measures, including a proposed strategy to offset any impacts of the proposed action on MNES. The proposed strategy must:

- demonstrate how it will achieve long-term conservation outcomes
- have regard to the scale and intensity of impact from the development on the site.

Further guidance may be found in the Department of Sustainability, Environment, Water, Population and Communities' draft policy statement on the use of environmental offsets under the EPBC Act and associated discussion paper, both of which are available at: **www.environment.gov.au/epbc/publications/consultation-draft-environmental-offsets-policy.html**

3. Aircraft noise and other airspace environmental issues

This section lists the requirements of the Australian Government relating to a referral made under section 160 of the EPBC Act by CASA and Airservices Australia for the management of aviation airspace issues for the SCA project.

3.1. Communication strategy

Formulate and implement an effective plan to convey aircraft noise information to the community and to facilitate community discussion about the potential noise impacts.

3.2. Aircraft noise impacts on recipients

Fully assess the potential disturbance to everyday activities created by aircraft noise with reference to current research. This assessment is to extend to aircraft activities within a 20 nautical mile radius of SCA. This must include, but not necessarily be limited to:

- assessment of aircraft noise impacts on educational and health facilities, including effects on student communication, concentration and learning abilities, and on other sensitive community facilities identified above
- discussion of the effects of aircraft noise on particular groups of people who may be especially vulnerable to such effects. These groups may include:
  - preschool children
  - students
  - the aged
  - hospital and nursing home patients
  - shift workers
- discussion of the impact of changes to the noise environment on interruptions to everyday activities (in particular, sleep disturbance resulting from night-time

operations), level of annoyance and effects on the physical and psychological health of the affected population

- discussion of the implications of aircraft noise on sensitive times of the day (e.g. late evening and early morning) and proposed noise mitigation strategies discussion of the impact of the changes to the noise environment on the amenity of residents, including outdoor activities
- discussion of aircraft noise impacts on existing or proposed recreational, conservation, heritage or wilderness areas (including Mudjimba Island), including impacts on amenity and the wildlife using those areas
- discussion of aircraft noise impacts on everyday activities existing on the SCA and proposed in the SCA Master Plan.

3.3. Aircraft track mile and fuel changes

Provide an estimate of the potential changes in current aircraft track miles and associated aviation fuel use over 5, 10, 15 and 20-year time periods from the commencement of the operation of the new SCA runway.

3.4. Equity of changes in aircraft traffic pattern

Discuss equity issues and explain the principles behind the development of new flight tracks, justifying the approach taken. In this respect, also consider any resultant effects on traffic patterns for nearby airports.

3.5. Land use planning implications

Clearly show the land use planning implications for each of the nominated alternative runway operating configurations through the use of an Australian noise exposure forecast (ANEF) analysis. This must include, but not necessarily be limited to the:

- generation of Australian noise exposure concept (ANEC) for each of the alternatives with a planning horizon of 20 years
- estimation of the number of people, houses, schools, hospitals, community facilities and other land use types in each contour
- discussion of the potential restrictions on future use of land under each of the options
- assessment of impacts upon existing, developing and potential or proposed areas of residential development.

3.6. Flight paths and noise levels

In addition to expressing aircraft noise impact in terms of average measures, the EIS must include information and discussion about peak noise, frequency of the overflights, and the times of day overflights could occur. The EIS must also compare maximum aircraft noise levels with existing ambient noise levels and characteristics and discuss the effects of changes in noise exposure. The public must be able to easily access the following information for each of the nominated potential runway operating configurations:

- where the flight paths for the new runway are likely to be, and the likely height of aircraft using those flight paths
- at what times aircraft are likely to use a flight path and in particular, usage during sensitive times—night, early morning, evening and weekends
- how often aircraft are likely to use each flight path
- variations in activity levels from hour to hour, day to day, week to week, month to month and long-term trends
- noise levels from individual flights to indicate the extent to which the noise decays with distance from the airport and height above ground level (it may be useful to supplement this information with graphics showing aircraft heights along each of the flight paths)
- any change to flight paths for nearby airports.

Provide specific sound pressure level information in addition to the information on flight paths and aircraft movement numbers/times. This must include, but not necessarily be limited to, information showing:

- single event decibel (dB)(A) levels for all aircraft types on all flight paths, including an assessment of the impact of variations in flight paths on maximum dB(A), and discuss the effects of varying aircraft operating procedures (e.g. use of flaps or full engine thrust for landings) on the noise exposure levels
- N70s—the number of noise events per unit time above 70dB(A) (and any other relevant sound pressure such as 80 dB(A); this information must include scenarios showing variations in noise patterns due to seasonal and meteorological factors
- N60—the number of noise events per unit time above 60 dB(A) for night-time operations as this is relevant to the indoor sound levels for sleeping areas as per AS2021.

The above information must be provided for the current situation and also for 20 years from the operational date, to present a clear picture of the potential changes that may be brought about in the acoustic environment. Information must also be generated for the period at the time when the runway opens in order to inform, in particular, the occupants of the areas that are newly exposed to aircraft noise and who may react differently to those previously exposed. As it is not known what time of the year the runway will open, options for each distinctive season must be provided. The uncertainties in this information must be discussed.

Discuss the potential impacts on current Visual Flight Rule (VFR) recommended routes and any subsequent new VFR-recommended route aircraft noise impacts that may arise within a 20 nautical mile radius of the SCA.

3.7. Aircraft noise amelioration

Examine the need for, and discuss the implications of, noise amelioration measures being implemented in the higher noise zones. This analysis must include, but not necessarily be limited to:

- the generation of ANEC contours for the year when the airport is predicted to open and for a 20-year horizon

- estimation of the number of people, houses, schools, hospitals, community facilities and other land use types in each contour
- description of the effects of different types of structure and design (including type of ventilation openings) and building materials upon noise levels inside residential dwellings and other noise sensitive facilities
- estimation of the costs (capital and ongoing), effectiveness and feasibility of insulating houses (and where necessary installing air conditioning) and other buildings affected by aircraft noise and discuss any relevant government policies regarding the acquisition and insulation of buildings affected by aircraft noise. The costs must be included in the economic analysis.

3.8. Predicting changes in aircraft noise

Given the difficulty in predicting aircraft noise (due, for example, to weather-related variations in runway and flight path use, and changes in passenger demand on specific routes), the EIS must report the likely range in any predictions and indicate the sensitivity of the predictions to errors/changes in the individual components of the predictions. For long-term horizons, an approach based on 'feasible scenarios' rather than 'predictions' may give a more useful picture of possible future aircraft noise exposure patterns.

3.9. Options for managing aircraft noise

Present options for managing aircraft noise as the number of aircraft movements at the airport increases over time. In particular, strategies for monitoring and reporting noise and tracking changes in aircraft noise must be developed and concepts for facilitating community involvement in the discussion of ways to manage change in the noise. Also discuss how Noise Abatement Procedures (NAPs) could be developed and the potential locations in the vicinity of SCA where NAPs may be applicable.

3.10. Airspace architecture (established pursuant to the *Airspace Act 2007*)

Assess the present airspace architecture associated with the current operation of the SCA and also other airspace architecture in the vicinity of this airport. In addition, assess and detail any proposed change in the airspace architecture associated with the operation of the SCA, and which may impact other surrounding airspace resulting from the implementation of the SCA expansion project.

3.11. Other aircraft noise issues

A range of other related noise issues needs to be addressed. These include, but are not limited to:

- assessment of noise associated with ground running of aircraft, and other noise associated with aircraft operations and maintenance testing
- discussion of the impact on residential and other property values due to aircraft operations

- discussion of modifying effects on ground noise exposure levels, including topography, weather (e.g. temperature inversions), masking, deviation from standard instrument departure routes
- discussion of any expected trends in the noise environment due to fleet replacement, compliance with government requirements to phase out the use of noisier jet aircraft, and/or technological changes to aircraft.

Abbreviations and acronyms

Abbreviation/ acronym	Definition
ACH Act	*Aboriginal Cultural Heritage Act 2003* (Qld)
ANEC	Australian noise exposure concept
ANEF	Australian noise exposure forecast
AS/NZS	Australian standard/New Zealand standard
CAMBA	China–Australia Migratory Bird Agreement
CASA	Civil Aviation Safety Authority
CHMP	cultural heritage management plan
DEEDI	Department of Employment, Economic Development and Innovation, Queensland (now Department of State Development and Planning)
DEHP	Department of Environment and Heritage Protection (formerly DERM)
DERM	Department of Environment and Resource Management, Queensland (now Department of Environment and Heritage Protection)
EIS	environmental impact statement
EMP	environmental management plan
EP Act	*Environmental Protection Act 1994* (Qld)
EPA	former Queensland Environmental Protection Agency
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)
EPP	Environmental Protection Policy (water, air, waste, noise)
ERA	environmentally relevant activity
Fisheries Act	*Fisheries Act 1994* (Qld)
JAMBA	Japan–Australia Migratory Bird Agreement
Land Act	*Land Act 1994* (Qld)
MNES	matters of national environmental significance (under the EPBC Act)
NAP	Noise abatement procedures
NC Act	*Nature Conservation Act 1992* (Qld)
NGA	National Greenhouse Accounts
NT agreement	native title agreement
N70s	the number of noise events per unit time above 70dB(A)
N60	the number of noise events per unit time above 60dB(A)
OCG	Office of the Coordinator-General
PDF	portable document format
The proponent	Sunshine Coast Regional Council (Sunshine Coast Airport is a business unit of the Sunshine Coast Regional Council)
QASSIT	Queensland Acid Sulfate Soils Investigation Team
REDD	Regional Ecosystem Description Database
ROKAMBA	Republic of Korea–Australia Migratory Bird Agreement
SCA	Sunshine Coast Airport

APPENDIX A9:A

Terms of Reference for an EIS for the Project

Abbreviation/ acronym	Definition
SCL	Strategic cropping land
SCRC	Sunshine Coast Regional Council (the proponent)
SDPWO Act	*State Development and Public Works Organisation Act 1971* (Qld)
SEWPAC	Australian Government Department of Sustainability, Environment, Water, Population and Communities
SPA	*Sustainable Planning Act 2009* (Qld)
TI Act	*Transport Infrastructure Act 1994* (Qld)
TMR	Department of Transport and Main Roads, Queensland
TOR	terms of reference
VFR	Visual Flight Rule
VM Act	*Vegetation Management Act 1999* (Qld)

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APPENDIX A9:A

Terms of Reference for an EIS for the Project

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Appendix 1. Extract from EPBC Regulations 2000

Schedule 4 Matters to be addressed by draft public environment report and environmental impact statement

(regulation 5.04)

1 General information

1.01 The background of the action including:

(a) the title of the action;

(b) the full name and postal address of the designated proponent;

(c) a clear outline of the objective of the action;

(d) the location of the action;

(e) the background to the development of the action;

(f) how the action relates to any other actions (of which the proponent should reasonably be aware) that have been, or are being, taken or that have been approved in the region affected by the action;

(g) the current status of the action;

(h) the consequences of not proceeding with the action.

2 Description

2.01 A description of the action, including:

(a) all the components of the action;

(b) the precise location of any works to be undertaken, structures to be built or elements of the action that may have relevant impacts;

(c) how the works are to be undertaken and design parameters for those aspects of the structures or elements of the action that may have relevant impacts;

(d) relevant impacts of the action;

(e) proposed safeguards and mitigation measures to deal with relevant impacts of the action;

(f) any other requirements for approval or conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action;

(g) to the extent reasonably practicable, any feasible alternatives to the action, including:

(i) if relevant, the alternative of taking no action;

(ii) a comparative description of the impacts of each alternative on the matters protected by the controlling provisions for the action;

(iii) sufficient detail to make clear why any alternative is preferred to another;

(h) any consultation about the action, including:

(i) any consultation that has already taken place;

(ii) proposed consultation about relevant impacts of the action;

(iii) if there has been consultation about the proposed action — any documented response to, or result of, the consultation;

(i) identification of affected parties, including a statement mentioning any communities that may be affected and describing their views.

3 Relevant impacts

3.01 Information given under paragraph 2.01 (d) must include:

(a) a description of the relevant impacts of the action;

(b) a detailed assessment of the nature and extent of the likely short term and long term relevant impacts;

(c) a statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible;

(d) analysis of the significance of the relevant impacts;

(e) any technical data and other information used or needed to make a detailed assessment of the relevant impacts.

4 Proposed safeguards and mitigation measures

4.01 Information given under paragraph 2.01 (e) must include:

(a) a description, and an assessment of the expected or predicted effectiveness of, the mitigation measures;

(b) any statutory or policy basis for the mitigation measures;

(c) the cost of the mitigation measures;

(d) an outline of an environmental management plan that sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the action, including any provisions for independent environmental auditing;

(e) the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program;

(f) a consolidated list of mitigation measures proposed to be undertaken to prevent, minimise or compensate for the relevant impacts of the action, including mitigation measures proposed to be taken by State governments, local governments or the proponent.

5 Other approvals and conditions

5.01 Information given under paragraph 2.01 (f) must include:

(a) details of any local or State government planning scheme, or plan or policy under any local or State government planning system that deals with the proposed action, including:

(i) what environmental assessment of the proposed action has been, or is being, carried out under the scheme, plan or policy;

(ii) how the scheme provides for the prevention, minimisation and management of any relevant impacts;

(b) a description of any approval that has been obtained from a State, Territory or Commonwealth agency or authority (other than an approval under the Act), including any conditions that apply to the action;

(c) a statement identifying any additional approval that is required;

(d) a description of the monitoring, enforcement and review procedures that apply, or are proposed to apply, to the action.

6 Environmental record of person proposing to take the action

6.01 Details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:

(a) the person proposing to take the action; and

(b) for an action for which a person has applied for a permit, the person making the application.

6.02 If the person proposing to take the action is a corporation — details of the corporation's environmental policy and planning framework.

7 Information sources

7.01 For information given in a draft public environment report or environmental impact statement, the draft must state:

(a) the source of the information; and

(b) how recent the information is; and

(c) how the reliability of the information was tested; and

(d) what uncertainties (if any) are in the information.

PO Box 15517
City East Qld 4002 Australia

Tel. 13 25 23 or +61 7 3404 6999
www.projects.industry.qld.gov.au