



The Coordinator-General



Gold Coast Quarry project

Terms of reference for the environmental impact statement

July 2011

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Synopsis

Boral Resources (Queensland) Pty Ltd (Boral) proposes to establish a quarry on a greenfield site at Reedy Creek, Tallebudgera Valley, on the Gold Coast.

The proposed site is located on almost 220 hectares (ha) of land located approximately 500 metres to the west of the Pacific Motorway. Three and a half hectares of the site is a parkland reserve owned by the Gold Coast City Council, with the rest of the site owned by Boral.

On 19 November 2010, The Coordinator-General declared the Gold Coast Quarry 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*.

On 21 December 2010, the Australian Government determined that the project constitutes a controlled action pursuant to the *Environment Protection and Biodiversity Conservation Act 1999* (reference number EPBC 2010/5757).

The declaration of the project as a 'significant project' does not indicate support for, nor approval of, the project by the Coordinator-General or the Queensland Government. Rather, it is a requirement for the project to undergo a rigorous EIS process.

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

Terms of reference (TOR) set out the requirements, both general and specific, that the proponent should address in preparing the EIS. These TOR have been prepared having regard to comments and submission received on the draft TOR released for public comment over the period of 19 February 2011 to 1 April 2011.

The TOR are divided into two parts:

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



Part A General information and administrative procedures

1 Project summary

Boral proposes to establish a quarry on a greenfield site at Reedy Creek, Tallebudgera Valley, on the Gold Coast.

The site is located on almost 220 ha located approximately 500 metres to the west of the Pacific Motorway. Three and a half hectares of the site is a parkland reserve owned by the Gold Coast City Council (GCCC), with the rest of the site owned by Boral. Boral estimates that approximately 66 ha of the 220-ha site will be required to establish the project.

It is estimated that the site will produce two million tonnes per annum of meta-greywacke (hardrock) deposit for approximately 40 years. Hardrock is a construction resource quarried primarily for use in concrete, asphalt, bricks, pavers, pipes, landscaping and drainage.

Capital expenditure for the project is estimated at \$111 million. Should it proceed, the project is expected to generate approximately 140 jobs in construction over a seven-year construction phase.

A more detailed project description is contained in the project's initial advice statement (IAS), including a location map of the project site (page 48 of the IAS).

Further information on the project can be viewed on the department's website at www.deedi.qld.gov.au

2 Project proponent

The proponent for the Gold Coast Quarry project is Boral Resources (Qld) Pty Limited (Boral).

The contact details for the proponent are:

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Regional Manager (Qld/NT)
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www.boral.com.au/goldcoastquarry



3 Legislative framework

On 19 November 2010, the Coordinator-General declared the Gold Coast Quarry project to be a 'significant project' under section 26(1)(a) of the Queensland *State Development and Public Works Organisation Act 1971* (SDPWO Act). This declaration initiates the statutory environmental impact assessment procedure of Part 4 of the SDPWO Act, which requires the proponent to prepare an EIS for the project.

On 21 December 2010, the Australian Government Minister for Sustainability, Environment, Water, Population and Communities (Australian Government Minister for Environment) 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. The controlling provisions under the EPBC Act are:

- sections 18 and 18(a) (listed threatened species and communities)

Accordingly, 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 Australian Government minister under Part 9 of the EPBC Act before it can proceed.

DEEDI is managing the EIS process on behalf of the Coordinator-General. DEEDI has invited relevant Commonwealth, State and Local Government representatives, and other relevant authorities, to participate in the process as advisory agencies.

The first step in the impact assessment process was to develop TOR for an EIS for the project. The process involved formulating draft TOR that were made available for public and advisory agency comment. In finalising these TOR, the Coordinator-General had regard to all properly made submissions received on the draft TOR, and presented the final TOR to the proponent.

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

At the completion of the EIS phase, the Coordinator-General will prepare a report (Coordinator-General's report) evaluating the EIS and other relevant material, pursuant to section 35 of the SDPWO Act. The Coordinator-General's report will include an assessment and conclusion about the environmental effects of the project and any associated mitigation measures. Material that will be assessed includes:



- the EIS
- properly made submissions and other submissions accepted by the Coordinator-General
- other material the Coordinator-General considers relevant to the project such as a supplementary EIS, comments and advice from advisory agencies and other entities, and technical reports.

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

If a project requires an application for development approval under SPA, the Coordinator-General's report may, under section 39 of the SDPWO Act, state for the assessment manager one or more of the following:

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

Alternatively, the Coordinator-General's report must state for the assessment manager that:

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

The Coordinator-General's report may, under sections 47(c) or 49 of the SDPWO Act, state conditions for any proposed environmental authority under the *Environmental Protection Act 1994* (EP Act). If conditions are included in the report, the Coordinator-General must give the minister responsible for the EP Act a copy of the report.

As the project was determined to be a 'controlled action' under the EPBC Act, the report will also be provided to the Australian Government Minister for Environment.

4 EIS objectives

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

The EIS should include plain English throughout and not assume a reader has prior knowledge of the site. Discussion of 'sensitive receptors' must be consistent with the definition of that term under the *Environmental Protection Act 1994* and its subordinate policies.



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

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

The proponent is required to address the TOR to the satisfaction of the Coordinator-General before the EIS is made publicly available.

5 EIS guidelines

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

- scientific studies are used to predict environmental impacts and details of their methodology, reliability, and any relevant assumptions or scientific judgements are indicated
- the EIS is to present all technical data, sources or authority and other information used to assess impacts
- proposed measures to mitigate and manage identified issues are described and evaluated
- residual impacts that are not quantifiable are described qualitatively, in as much detail as reasonably practicable
- a discussion of the criteria adopted in assessing the proposed project and its impacts—for instance, compliance with relevant legislation, policies, standards, community acceptance is included



- the level of investigation of potential/uncertain impacts on the environment is proportionate to both the severity and the likelihood of those events occurring
- issues that may emerge during the investigations and preparation of the EIS are adequately addressed and the necessary studies are undertaken and reported
- all relevant matters concerning environmental values, impacts and proposed mitigation measures are addressed for the first time in the main text of the EIS and not in an appendix or the draft EMP
- adverse and beneficial effects should be presented in quantitative and/or qualitative terms as appropriate.

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

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

6 Stakeholder consultation

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

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

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

The consultation plan should detail how results of consultation will be considered by the proponent and integrated into the EIS process.



7 EIS format and copy numbers

7.1 General requirements

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

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

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

7.2 Specific format and copy requirements

The proponent must publish the EIS as follows:

- (1) On a website that is hosted at the proponent's own expense, in both HTML and PDF formats, as follows:
 - (a) pages produced in HTML format must meet the W3C web content accessibility guidelines (see www.w3.org/TR/WCAG10/). All cross-references to sections elsewhere in the EIS must be hyperlinked; and all external web links must be hyperlinked.
 - (b) PDF files must meet the following requirements:
 - (i) no larger than two megabytes in size (documents can be uploaded in sections to meet this requirement)
 - (ii) text size and graphics files included in the PDF documents should be of sufficient resolution to facilitate reading and enable legible printing
 - (iii) produced in accordance with Adobe's PDF accessibility best practice guides (see www.adobe.com/accessibility/products/acrobat/training.html) and meet the following minimum accessibility requirements:
 - A. document structure tags and proper read order
 - B. searchable text
 - C. alternative text descriptions
 - D. security that does not interfere with assistive technology.



- (2) As a single PDF file on a CD-ROM, DVD or other electronic memory device. This PDF file, which will be read by staff from DEEDI and other assessment agencies, must include:
 - (a) bookmarks (links) to all sections of the document (down to five heading levels); and the PDF file must be set to open with the bookmarks showing by default
 - (b) active (clickable) internal hyperlinks to any pages, sections or diagrams that have been cross-referenced within the EIS
 - (c) active (clickable) hyperlinks to any external websites/documents that have been included in the EIS.
- (3) Provide a PDF version of the executive summary, no larger than two megabytes in size, on a CD-ROM or DVD. This file will be placed on the department's website; and the PDF file must meet the accessibility requirements listed under point (1)(b) above.
- (4) Provide all maps/diagrams/figures in JPG format, on a separate CD-ROM, DVD or other electronic memory device. All JPG files should be a minimum of 300 dpi.
- (5) Limited copies of the EIS should be produced on A4-size paper capable of being photocopied, with maps and diagrams of A4 or A3 size (discuss this requirement with DEEDI staff in the early stages of the EIS process).

8 Contact details

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

EIS project manager—Gold Coast Quarry

Significant Projects Coordination

Department of Employment, Economic Development and Innovation

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www.dlgp.qld.gov.au/goldcoastquarry



Part B Contents of the EIS

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

Executive summary

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

The executive summary should include:

- project title
- proponent's name and contact details
- a discussion of previous projects undertaken by the proponent, if applicable, and their commitment to effective environmental management
- a concise statement of the aims and objectives of the project
- the legal framework, decision-making authorities and advisory agencies
- an outline of the background and need for the project, including the consequences of not proceeding with the project
- an outline of the alternative options considered and reasons for 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.

Include detailed maps of the proposed project location and any other critical figures.

Glossary of terms

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



1 Introduction

Clearly explain the function of the EIS, why it has been prepared and what it sets out to achieve. Include an overview of the structure of the document. Identify and define the audience for the document.

1.1 Project proponent

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

Provide a list of consultants working on behalf of the proponent to develop the EIS and detail their relevant qualifications and experience.

1.2 Project description

Describe the key elements of the project using illustrations or maps. Include detail of land ownership of the project and proposed development area. Summarise any major associated infrastructure requirements. Detailed descriptions of the project should follow in Section 2.

1.3 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; and explain the project's compatibility with relevant policy, planning and regulatory frameworks.

Discuss the project's development to date including a timeline.

1.4 Relationship to other projects

Describe how the project relates to any other infrastructure projects of which the proponent should reasonably be aware, that have been or are being taken or that have been approved in the area affected by the project. The Varsity Lakes to Elanora rail project should be included in this consideration.

Discuss the West Burleigh quarry operation, the timing of its decommissioning and overlap with operation of the proposed project.

As a result of this assessment, opportunities may exist for co-locating existing or proposed infrastructure and services, enabling efficiency gains and mitigating environmental and property impacts. These considerations should include, but not be limited to, discussion on integrating powerlines, stormwater and bushfire maintenance trails.

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.

1.5 Project alternatives

Describe feasible alternatives, including conceptual, technological and locality alternatives to the proposed project, and discuss the consequences of not proceeding with the project. Discuss alternatives in sufficient detail to enable the reader to understand the reasons for preferring certain options or courses of action and rejecting others (including the 'no action' option). When considering alternative sources of product supply in the region, discuss the feasibility and comparative cost of using alternatives. Discuss the methodology adopted to discern between the feasible options.

Explain the interdependencies of the project components, particularly in regard to how each of any infrastructure requirements relate to the viability of the project.

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.

For projects declared controlled actions under the bilateral agreement, compliance with the EPBC Act regulations listed in section 2.01(g) of Schedule 4 is required.

1.6 The environmental impact assessment process

1.6.1 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. Discuss timings and decisions to be made for relevant stages of the project.

The information in this section is required to ensure:

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

1.6.2 Objectives of the EIS

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.

1.6.3 Submissions

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

1.7 Public consultation process

The public consultation process should provide opportunities for community involvement and education. It may include interviews with individuals, stakeholders, 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 methodology adopted to:

- identify the stakeholders, including sensitive receptors and explain 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.

Provide a list of the stakeholders consulted during the program and 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.

1.8 Project approvals

1.8.1 Relevant legislation and approvals

Describe and list Commonwealth, State and local legislation and policies relevant to the planning, approval, construction and operation of the project. Identify all approvals, permits, licences and authorities that will need to be obtained for the proposed project. Outline the triggers for the application of each of these and identify the relevant approval requirements.



Relevant Commonwealth legislation may include, but not be limited to:

- *Aboriginal and Torres Strait Islander Heritage Protection Act 1994*
- *Environment Protection and Biodiversity Conservation Act 1999*
- *Native Title Act 1993.*

Identify and outline relevant Commonwealth obligations such as:

- protection of World Heritage values
- migratory animals (China–Australia Migratory Bird Agreement (CAMBA), Japan–Australia Migratory Bird Agreement (JAMBA), Republic of Korea–Australia Migratory Bird Agreement (ROKAMBA) and the Convention of Migratory Species of Wild Animals (Bonn Convention)
- biodiversity
- climate
- wetlands of international importance (Ramsar).

Where relevant, refer to applicable Queensland legislation, which may include, but is not limited to:

- *Aboriginal Cultural Heritage Act 2003*
- *Dangerous Goods Safety Management Act 2001*
- Environmental Protection Act 1994 and subordinate legislation
- Environmental Protection (Air) Policy 2008 (EPP (Air))
- Environmental Protection (Noise) Policy 2008 (EPP (Noise))
- Environmental Protection (Waste Management) Policy 2000
- Environmental Protection (Water) Policy 1997 (EPP (Water))
- *Explosives Act 1999*
- *Fisheries Act 1994*
- *Land Act 1994*
- *Local Government Act 2009*
- *Mineral Resources Act 1989*
- *Nature Conservation Act 1992*
- *Queensland Heritage Act 1992*
- *State Development and Public Works Organisation Act 1971*
- *Sustainable Planning Act 2009*
- *Transport Infrastructure Act 1994*
- *Transport Planning and Coordination Act 1994*
- *Transport Operations (Road Use Management) Act 1995*



- *Vegetation Management Act 1999*
- *Coastal Protection and Management Act 1995 (CPM Act)*
- *Water Act 2000.*

1.8.2 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.

1.8.3 Environmentally relevant activities

Briefly describe each environmentally relevant activity (ERA) and associated activities that are to be carried out in connection with the project. Present a detailed description of each ERA in Part B, Section 4, Environmental values and management of impacts; and provide details of the impact on land, water, air, noise and any other relevant environmental values identified.

The above information will allow for informed decisions to be made with respect to the project, consistent with the provisions of the EP Act.

1.8.4 Accredited process for controlled actions under Commonwealth legislation

The EIS will be developed pursuant to the bilateral agreement between the Commonwealth and Queensland governments for the purposes of the Australian Government's assessment under Part 8 of the EPBC Act. The EIS should address potential impacts on the matters of national environmental significance (MNES) that were identified when the project was determined to be a controlled action.

Part B, Section 10, Matters of national environmental significance outlines the requirements for this matter.

2 Description of the project

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

2.1 Overview of the project

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

- rationale explaining the selection of the preferred operating scenario, including details such as cost, environmental impacts, and the operational efficiencies of each option
- description of the key components of the project, using text, maps and design plans where applicable. Include transportation routes and truck waiting areas.



- description of the resource, including rates of extraction over time
- summary of any environmental design features of the project
- description, using plans and diagrams/maps, of the methods and facilities to be used for product storage and transferring product from the plant to storage, and from storage areas to transportation facilities
- the expected cost, timing, and overall duration of the project, including justification for any staging of the development
- description of development stages, including timeframes, of the project over its lifecycle
- discuss timings of progressive and final site rehabilitation and possible options for end use of the site.

2.2 Location

Describe, through 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 and boundaries of the project footprint, including easement widths and access requirements
- location and width (including dimensions) of any proposed buffers surrounding the working areas (for construction and operation)
- location of infrastructure relevant to the project, including, but not limited to, the state-controlled road network, local roads and railways
- location of natural features such as waterways (e.g. rivers, streams, creeks, other waterbodies and wetlands), shorelines and significant vegetation
- location of any proposed site offices and accommodation site
- views to and from the site
- location of areas of scenic amenity value
- topography of the property
- topography of the property over the extractive life of the site through the staging of the proposed works
- topographical maps that show the location of nearby sensitive receptors including residential areas.

Maps should include an overlay of the development footprint, including infrastructure.



2.3 Construction phase

Provide the following information on the pre-construction, construction and commissioning of the project, including detailed plans, drawings and maps.

2.3.1 Pre-construction activities

Describe all pre-construction activities, including:

- approvals required for this stage
- land acquisitions required, be it in full or as easements, leases etc.
- nature, scale and timing for vegetation clearing
- site access
- operating hours for undertaking of pre-construction works
- equipment to be used
- earthworks
- interference with watercourses and floodplain areas, including wetlands
- upgrade, relocation, realignment, deviation of, or impediment of access to roads and other infrastructure
- 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
- estimated numbers and roles of persons to be employed during the pre-construction phase of the project
- a detailed staging plan and approximate timeframes.

2.3.2 Construction

Describe the construction elements of the project, including:

- an indicative construction timetable, including expected commissioning and start-up dates and hours of operation
- major work programs for the construction phase, including an outline of construction methodologies
- construction equipment to be used
- construction inputs, handling and storage, including an outline of potential locations for source of construction materials
- 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 storage areas
- estimated numbers and roles of persons to be employed during the construction phase of the project
- a detailed staging plan and approximate timeframes.

2.3.3 Commissioning

Describe the commissioning process for each element of the project, detailing the associated environmental impacts.

For each of the pre-construction, construction and commissioning phases, include detail on traffic generation on state and local controlled road networks.

For both the local and state networks, discussion about volumes of construction traffic, including:

- worker traffic and service vehicles
- methods of transport
- the traffic routes (origin to destination)
- over-dimensional vehicle services
- any other construction-related transport activities.

2.4 Operation phase

Provide full details of the operation for all elements of the project, including drawings, maps and detailed plans, describing:

- the project site, including concept and layout plans of buildings, structures, plant and equipment to be employed
- nature of all key operational activities
- hours and days of operation, including details of public holidays
- the capacity of the project equipment and operations
- staging plan for works over the site throughout the life of the operations
- estimated numbers and roles of persons to be employed during the operation phase of the project
- summary of traffic generation information/traffic requirements for the operation of the quarry and facilities associated with the project, including movement of workers.

2.5 Associated infrastructure

Detail, using maps, concept and layout plans, requirements for all other infrastructure required to be constructed, upgraded, relocated or decommissioned for the construction and/or operation of the project.



Matters to be considered include, but are not limited to, infrastructure such as:

- access roads
- transportation (road/rail/air/ship)
- telecommunications
- water supply and storage
- energy supply
- telecommunications
- stormwater
- waste disposal
- sewerage

including the design and construction standards to be met.

Discuss alternative approaches or the opportunity of obtaining materials from alternative sources.

Briefly describe energy and water conservation and the reduction, re-use, recycling and recovery of waste in the context of relevant Commonwealth, State and Local Government policies.

Address potential impacts of the required infrastructure within the relevant technical chapter identified under in Part B, Section 4, Environmental values and management of impacts of this TOR.

2.5.1 Road transport

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

- any proposed new roads or road upgrades to provide access to, or within, the quarry
- any proposed truck waiting areas external or internal to the site
- existing traffic levels, including vehicle types and numbers and trip lengths
- pre-construction traffic, including vehicle types, anticipated timing and frequency of movements and number of vehicles likely to be used
- construction traffic, including vehicle types, anticipated timing and frequency of movements and number of vehicles likely to be used
- operational traffic, including vehicle types, anticipated timing and frequency of movements and number of vehicles likely to be used, across various stages of the project's development
- proposed transport routes, including any waterway crossings. Provide a map of haul routes



- need for increased road (and any waterway crossings) maintenance and upgrading
- communication of these issues to the public
- in association with the above matters and as a result of any highway overpass upgrade requirements, a discussion of any design impacts to the Varsity Lakes to Elanora rail project
- a summary of traffic generation information/transport requirements for the operations of the quarry and facilities associated with the project, including movement of workers.

More detailed information regarding transport infrastructure will be required in accordance with Part B, subsection 4.9, transport, of this TOR. Cross-reference the EIS accordingly.

2.5.2 Water management infrastructure

Describe the process and criteria used to select the preferred on-site water management scheme, including:

- stage/storage volume of any significant proposed water storages
- flood and stormwater management arrangements, including spillway and outlet arrangements, flow channels, energy dissipaters and detention arrangements
- the proposed stormwater drainage system, and the proposed disposal arrangements, including any off-site services
- the sources of stormwater and the quantity, quality and location of discharge to watercourses
- the standard of proposed stormwater treatment systems, including examples of quality improvement devices (sediment removal, gross pollutant traps) and potential discharge points (spread of flow and scour protection)
- yield assessments with allowance for environmental releases
- groundwater management systems
- dewatering systems
- associated water delivery pipelines and pumping systems
- the calculations which informed the proposed sizing of water storages
- diagrams to depict the location of the water management devices and their release locations (including groundwater management systems).

2.6 Decommissioning and rehabilitation

Describe the options, strategies and methods for progressive and final rehabilitation of the environment disturbed by the project, including:



- developing a landscape rehabilitation strategy, with a view to minimising the amount of land disturbed at any one time
- the final topography of excavations and any waste areas (shown on maps at a suitable scale)
- the means of decommissioning the project, in terms of removing equipment, structures and buildings, and the methods proposed to stabilise affected areas
- options and methods for the disposing of wastes from the demolition of the project infrastructure, discussed in sufficient detail for their feasibility and suitability to be established
- possible future land tenure arrangements post-decommissioning of the project
- a proposed staging plan for rehabilitation
- predicted timeframes for the implementing progressive rehabilitation measures
- preparing a lake water quality management plan in accordance with the *Australia and New Zealand Guidelines for Fresh and Marine Water Quality* (2000) and the *Queensland Water Quality Guidelines* (2009) for where a water body is likely to be created by the proposal.

Discuss the detail of the impacts of the preferred rehabilitation strategy in the appropriate subsections of Part B, Section 4, Environmental values and management of impacts of this TOR.

3 Planning and land use

3.1 Planning

Describe the project's consistency with the existing national, state, regional and local planning framework that applies to the project location. Describe the project's relationship with proposed development in the area and the planning scheme. Also, 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.

3.1.1 Relevant plans

Refer to all relevant statutory and non-statutory plans, planning policies, guidelines, strategies and agreements, which include, but are not limited to:

- *South East Queensland Regional Plan 2009–2031*
- *South East Queensland Infrastructure Plan and Program 2010–2031*
- *State Coastal Management Plan*
- State Planning Policy (SPP) 2/07: Protection of Extractive Resources (Department of Mines and Energy 2007)
- SPP 5/10 Guideline Air, Noise and Hazardous Materials
- SPP 4/10 for Healthy Waters



- SPP 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide (Department of Local Government and Planning & Department of Emergency Services 2003)
- SPP 2/10: South East Queensland Koala Conservation (Department of Environment and Resource Management 2010a)
- SPP 1/92: Development and the Conservation of Agricultural Land (Department of Primary Industries & Department of Housing, Local Government and Planning 1992)
- The Gold Coast Planning Scheme, including policies, relevant overlay maps and constraint codes, such as:
 - *GCCC Land Development Guidelines*
 - *GCCC Open Space Management Plan Guidelines*
 - *GCCC Burleigh to Springbrook Bioregional Corridor study*
 - *GCCC Nature Conservation Strategy 2009–2019*
 - *Reedy Creek Structure Plan*.

Other instruments that are currently in draft form, but which may be finalised prior to concluding the project's assessment, should be addressed to the best extent possible prior to finalising the EIS. Examples are the draft *Connecting SEQ 2031: An integrated regional transport plan for South East Queensland* (Department of Transport and Main Roads 2010) and *Building Nature's Resilience: a Draft Biodiversity Strategy for Queensland* (Department of Environment and Resource Management 2010a).

3.1.2 Potential impacts and mitigation measures

Consider and discuss the possible effect of the project on town planning objectives and controls, including local government rezoning and strategic plans.

Assess the proposal against the desired environmental outcomes of the Gold Coast Planning Scheme and the *Reedy Creek Structure Plan*. Consider other council policies and local laws as relevant. Discussion should consider, but not be limited to, the project's compliance with the Desired Environmental Outcomes, Land Use Themes, and Planning Strategies of the Gold Coast Planning Scheme 2003.

Discuss any potential conflicts of the project with designations of the site, and surrounding areas, under the *Reedy Creek Structure Plan*. Consider the suitability of the project's proposed land use having regard to the intent for the area as envisaged by the Gold Coast Planning Scheme.

Investigate, in the context of discussion of the suitability of the proposed land use, the surrounding areas to the project site and the project impacts on continued and planned land use of the surrounding areas.



Discuss how any future planning application would be structured given the site's current planning scheme designation.

3.2 Land

Detail the existing land environment values for all areas associated with, and potentially affected by, the project.

3.2.1 Land use and tenure

Description of the environment

Identify, with the aid of maps:

- land tenure for the site and vicinity
- existing land uses and facilities in the vicinity, including recreational uses and schools
- any areas of public open space adjacent to, or within the vicinity of, the site
- road use in the area and frequency of usage
- native title determinations, or evidence that native title does not exist
- areas of contamination on or adjacent to the site
- distance of the project from existing and planned residential and recreational areas, including details of the extent of vegetation buffer zones
- declared water storage catchments
- location of the project in relation to environmentally sensitive areas.

Potential impacts and mitigation measures

Discuss the potential for the construction and operation of the project to change existing and potential land uses of the project site and adjacent areas.

Describe the following:

- impacts on surrounding and downstream land uses and human activities and minimisation strategies, including, but not limited to, residential, educational, recreational, agricultural (refer to State Planning Policy 1/92: Development and the Conservation of Agricultural Land (Department of Primary Industries & Department of Housing, Local Government and Planning 1992) and *Planning guidelines: The identification of good quality agricultural land* (Department of Primary Industries & Department of Housing, Local Government and Planning 1993) and industrial uses
- management of the immediate environs of the project, including construction buffer zones
- impact on areas of open space adjacent to, or within the vicinity of, the site and strategies for minimisation of these impacts



- proposed land use change in any areas of high to moderate conservation value and information on how vegetation clearance in sensitive environmental areas will be minimised and protected
- potential issues involved in proximity of other current or proposed infrastructure services
- potential impacts on future road or rail upgrades
- identification of any land units requiring specific management measures.

3.2.2 Extractive resources

The EIS should provide a summary of the results of studies and surveys undertaken to identify and delineate the extractive resources within the project area.

The location, volume/tonnage and quality/end product use of the extractive resources within the project area should be detailed.

Potential impacts and mitigation measures

The EIS should analyse the effectiveness of the project in achieving the optimum utilisation of the extractive resources and consider its impacts on other extractive resources. It should demonstrate that the proposal would 'best develop' the extractive resources within the project area, minimise resource wastage and avoid any unnecessary sterilisation.

4 Environmental values and management of impacts

Detail the environmental protection and mitigation measures incorporated in the planning, construction, rehabilitation, commissioning, operation and decommissioning of all facets of the project. Measures should prevent, or where prevention is not possible, minimise environmental harm and maximise environmental benefits of the project. Preferred measures should be identified and described in more detail than other alternatives.

The objectives of subsequent sections are to:

- Describe the existing environmental values of the area that may be affected by the project, using background information and/or new studies to support. This shall include reference to all definitions of environmental values set out in relevant legislation, policies and plans.
- Describe the potential adverse and beneficial impacts of the project on the identified environmental values 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 by 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. These alternatives should be presented and compared in view of the stated objectives and standards to be achieved.
- Discuss the available techniques including best practice management to control and manage impacts in relation to the nominated objectives. Discuss implementation of available techniques and best practice management to the nominated objectives.

In accordance with the Queensland Government Environmental Offsets Policy (Environmental Protection Agency 2008c), and any relevant GCCC offsets policy, present proposals to offset impacts.

The EIS should follow the format and content outlined in these TOR; however, changes to the structure can be discussed with the EIS project manager (details are shown on page 7). The mitigation measures, monitoring programs etc., identified in this section of the EIS should be used to develop the EMP for the project (see Part B, Environmental management plan).

4.1 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 and natural or induced hazards. Provide a risk assessment and management plan detailing these potential threats to the construction, and operation of the project.

The most recent information on potential impacts of climatic factors should be addressed in the appropriate sections of the EIS.

Include an assessment of climate change risks and possible adaptation strategies, as well as:

- 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
- identify energy sources and required energy for the site and the ability to use renewable energies sources and technology. Identify the ability to substitute energy/fuels for low emission sources.

4.1.1 Flood plain management

Taking into account the location of the site, a comprehensive flood study should be included in the EIS which includes:



- quantification of flood impacts on 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.

The flood study should address any requirements of local or regional planning schemes for flood affected areas. 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.

Describe how SPP 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide (Department of Local Government and Planning 2003) would be addressed in the context of managing flood impacts.

Potential impacts and mitigation measures

Provide details on the:

- potential impacts of floods at a range of flood intervals, including the probable maximum flood event
- potential impacts of flooding on environmental values due to the identified likely increased flood levels, increased flow velocities or increased time of flood inundation as a result of the project. Include consideration of potential for contamination of external areas due to site materials
- impacts and mitigation measures for flooding, describing the construction of any flood protection levees (covering construction material, design and methods).

4.2 Land issues

4.2.1 Scenic amenity

Description of environmental values

Describe, in general terms, the existing character of the area and the general impression that would be obtained while travelling through and around it. Outline existing landscape features, panoramas and views that have, or could be expected to have, value to the community. Include information in the form of maps and photographs, particularly where addressing the following issues:

- major views, view sheds, outlooks, and features contributing to the amenity of the area, including assessment from private residences
- focal points, landmarks, waterways and other features contributing to the visual quality of the area and the project site
- character of the local and surrounding areas including vegetation and land use.



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

Detail 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.

Potential impacts and mitigation measures

Provide details of the likely height of buildings and structures across the entire site.

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. Depict and describe if the development will be buffered from surrounding areas with, for example, landscaping, retaining of vegetation, and architectural attenuation.

Provide details of any proposed landscape/vegetation buffer areas between roads, adjacent properties and waterways.

Discuss line-of-sight implications during pre-construction, construction and operation for areas including, but not limited to, Tuesday Drive, Sky Royal Terrace, Royal View Close, Chloe Court, Fenton Drive, Westminster Boulevard, Ladds Ridge Road, Chesterfield Drive, Tallebudgera Creek Road, Observatory Drive and Old Coach Road.

Provide views/simulations of the site for affected locations that will have line-of-sight to the project works during pre-construction, construction and/or operation.

Discuss the visual impact of the construction and operation of the project, including transportation, as it relates to the surrounding landscape. The assessment should address the local and broader visual impacts of the project buildings and structures. This should include views from places of residence, work, and recreation; from roads, cycle and walkways; from the air and other known vantage points day and night, during all stages of the project as it relates to the surrounding landscape.

Describe the potential beneficial and adverse impacts of the project on landscape character and visual qualities of the site and the surrounding area. Provide details about measures to be undertaken to mitigate or avoid the identified impacts.

4.2.2 Lighting

Description of environmental values

Identify and locate the existing light sources in and around the project site, and describe the possible use of these sources for the site activities. These should include street and any significant private lighting sources, e.g. sporting grounds, night-time industrial operations.

Describe the project's proposed lighting strategy for the construction and operation phases, including any scope for sustainable lighting solutions.



Potential impacts and mitigation measures

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

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

4.2.3 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 Australian height datum. Significant features of the landscape and topography should be included and commented 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 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.

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

An assessment of the potential for acid sulfate soils should be conducted in accordance with Queensland Acid Sulfate Soils Management Advisory Committee (QASSMAC) guidelines (see www.derm.qld.gov.au/land/ass/products.html) and SPP 2/02: Planning and Managing Development Involving Acid Sulfate Soils (Department of Natural Resources and Mines & Department of Local Government and Planning 2002a) and its accompanying *SPP 2/02 Guideline: Acid Sulfate Soils* (Department of Natural Resources and Mines & Department of Local Government and Planning 2002b).

Include information regarding the potential for acid producing rock and the potential for acid mine drainage.

Discuss overburden management including end use of such products and expected volumes.



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) and erosion management techniques to be used in an erosion management plan included in the EIS.

Outline an erosion monitoring program, including rehabilitation measures for erosion problems identified during construction, and identify acceptable mitigation strategies.

The report must 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.

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

- *Soil Erosion and Sediment Control—Engineering Guidelines for Queensland Construction Sites* (Institution of Engineers 1996)
- the guideline *EPA Best Practice Urban Stormwater Management: Erosion and Sediment Control* (Environment Protection Agency 2008b)
- *Best Practice Erosion and Sediment Control* (Witheridge & International Erosion Control Australia 2009)
- preventing soil loss in order to maintain land capability/suitability
- preventing degradation of local waterways or wetlands.

Prepare a sediment and erosion control plan that considers best practice.

Discuss the potential for acid generation by disturbance of acid sulfate soils or acid producing rock during earthworks and construction and propose measures for managing soils and mitigating 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 Queensland Acid Sulfate Soils Investigation Team (QASSIT) guidelines (available from:

www.derm.qld.gov.au/land/ass/products.html) and the requirements of 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) and its accompanying *SPP 2/02 Guideline: Acid Sulfate Soils* (Department of Natural Resources and Mines & Department of Local Government and Planning 2002b).



4.2.4 Land contamination

Description of environmental values

Present the following information in the EIS:

- mapping of any areas listed on the Environmental Management Register or Contaminated Land Register under the EP Act
- identification of any potentially contaminated sites not on the registers which may need remediation
- 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 the *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 managing any acid generation or managing chemicals and fuels to prevent spills or leaks.

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

4.3 Nature conservation

Detail 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, coastal and terrestrial ecosystems
- corridor connectivity.

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

Wherever possible, seek the involvement of the local Indigenous community in 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.

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

4.3.1 Sensitive environmental areas

Description of environmental values

On a map of suitable scale, identify areas that are environmentally sensitive in proximity to 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 which should be identified and mapped:

- important habitats of species listed under the *Nature Conservation Act 1992* (NC Act) and/or the EPBC Act as presumed extinct, endangered, vulnerable or near threatened
- regional ecosystems listed as 'endangered' or 'of concern' or 'least 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 from www.derm.qld.gov.au
- sites listed under international treaties such as Ramsar wetlands and World Heritage areas
- sites containing near threatened or bio-regionally significant species or essential, viable habitat for near threatened or bio-regionally significant species
- sites in, or adjacent to, areas containing important resting, feeding or breeding sites for migratory species of conservation concern listed under the Bonn Convention, and/or bilateral agreements between Australia and other countries
- sites adjacent to nesting beaches, feeding, resting or calving areas of species of special interest, for example, marine turtles, dugong and cetaceans
- sites containing common species that represent a distributional limit and are of scientific value or which contains feeding, breeding, resting areas for populations of echidna, koala, platypus and other species of special cultural significance
- sites containing high biodiversity that are of a suitable size or with connectivity to corridors, including the Springbrook to Burleigh Heads bioregional corridor and to 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, for example, high habitat diversity and areas of high endemism
- ecosystems that provide important ecological functions such as:
 - wetlands of national, state and regional significance
 - riparian vegetation
 - important buffer to a protected area
 - important habitat corridor between areas
- declared fish habitat areas and sites containing protected plants under the *Fisheries Act 1994*
- sites of palaeontologic significance, such as fossil sites
- sites of geomorphological significance, such as lava tubes or karst
- protected areas that have been proclaimed under the NC Act and *Marine Parks Act 1982* 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 *Vegetation Management Act 1999* (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
- 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. Also include human impacts and the control of any domestic animals introduced to the area.

Demonstrate how the project would comply with the following hierarchy:

- avoiding or minimising 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 avoidance and mitigation of impacts cannot be achieved.

Explain why the measures above would 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. Where the project area would impact upon a threatened community, the discussion should 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, discuss environmental offset requirements in accordance with the Queensland Government Environmental Offsets Policy (Environmental Protection Agency 2008c) and take into account the applicable specific-issue offset policies, as follows:

- Policy for Vegetation Management Offsets (Department of Environment and Resource Management 2009a)
- Draft Policy for Biodiversity Offsets (consultation draft) (Environmental Protection Agency 2008a).

Describe any departure from no net loss of ecological values.

4.3.2 Terrestrial flora

Description of environmental values

Provide vegetation mapping for all relevant project sites. Adjacent areas should also be mapped to illustrate interconnectivity. Mapping should also illustrate any larger scale interconnections between areas of remnant or regrowth vegetation, where the project site includes a corridor connecting those other areas.

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

- location and extent of vegetation types using the regional ecosystem type descriptions in accordance with the REDD
- location of vegetation types of conservation significance based on regional ecosystem types and occurrence of species listed as protected plants under the Nature Conservation (Wildlife) Regulation 1994 and subsequent amendments, as well as areas subject to the VM Act



- location of vegetation identified as significant through the *Gold Coast City Vegetation Community Representation Report 2009* (Gold Coast City Council 2009) and the Gold Coast Planning Scheme
- the current extent (bioregional and catchment) of protected vegetation types of conservation significance within the protected area estate (national parks, conservation parks, resource reserves, nature refuges and conservation reserves under the *Land Act 1991*)
- any plant communities of cultural, commercial or recreational significance
- 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 recorded in a form compatible with the Queensland Herbarium CORVEG database
- the minimum site size should be 10 by 50 metres
- a complete list of species present at each site should be recorded
- the surveys 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 2006, other than common species, are to be submitted to the Queensland Herbarium for identification.

Consideration should include, but not be limited to, the ribbon orchid (*Taeniophyllum muelleri*), silver leaf (*Argophyllum nullumense*), smooth scrub turpentine (*Rhodamnia maideniana*), and the long-leaved tuckeroo (*Cupaniopsis newmanii*).

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. Specify the methodology used for flora surveys 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, and discuss the indirect effects on remaining vegetation. Consider short- and long-term effects and comment on whether the impacts are reversible or irreversible.

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

- any management actions to minimise vegetation disturbance and clearance
- a discussion of the ability of identified vegetation to withstand any increased pressure resulting from the project and any measures proposed to mitigate potential impacts
- a description of the methods to ensure rapid rehabilitation of disturbed areas following construction, including the species chosen for revegetation, which should be consistent with the surrounding associations
- details of any post-construction monitoring programs
- a discussion of the potential environmental harm on flora due to any alterations to the local surface and groundwater environment with specific reference to impacts on riparian vegetation or other sensitive vegetation communities.

Also outline how these measures will be implemented in the overall EMP for the project. Weed management strategies are required to contain existing weed species (e.g. parthenium and other declared plants) and ensure no new declared plants are introduced to the area.

Refer to the local government authority's pest management plan and any strategies and plans recommended for the project area by Biosecurity Queensland. The strategies should be discussed in accordance with provisions of the *Land Protection (Pest and Stock Route Management) Act 2002* in the main body of the EIS and in the pest management plan within the EMP for the project.

4.3.3 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 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 listed species by the EPBC Act and the NC Act occurring in the project area; and any species listed by the DERM 'Back on Track' species prioritisation methodology.

Consideration should include, but not be limited to, the white bellied sea eagle (*Haliaeetus leucogaster*) and the glossy black cockatoo (*Calyptorhynchus lathami*).

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.

Surveying threatened frogs species should be guided by the methodology described in *Survey guidelines for Australia's threatened frogs* (Department of Environment, Water, Heritage and the Arts 2010).

Provide relevant site data to DERM in a format compatible with the Wildlife Online database for listed threatened species (formerly the WildNet database—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, sleeping, breeding/recruiting potential or movement corridors or as a result of hydrological change or lighting
- 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. With respect to mitigation strategies, provide the following:



- measures to avoid and mitigate the identified impacts, discussing any provision for buffer zones and movement corridors, nature reserves or special provisions for migratory animals in coordination 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.

Consideration needs to be given regarding displacement of species as a result of the proposal.

Prepare a koala management plan and include it in the EIS.

Address pest management strategies and practices, including, but not limited to, feral animals and insects such as mosquitoes and termites. The study should develop strategies to ensure that the project does not contribute to increased encroachment of pest species. Refer to the local government authority's pest management plan and any strategies and plans recommended for the project area by Biosecurity Queensland. The strategies should be discussed in accordance with provisions of the *Land Protection (Pest and Stock Route Management) Act 2002* in the main body of the EIS and in the pest management plan within the EMP for the project.

4.3.4 Aquatic ecology

Description of environmental values

Aquatic environment

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

- fish species, mammals, reptiles, amphibians, crustaceans and aquatic invertebrates occurring in the waterways within the affected area and any associated wetlands
- fish passage requirements of fish species present
- any rare or threatened marine or freshwater species
- 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.

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

This section should include reference to the draft *Tallebudgera Creek Catchment Management Plan (Oyster Creek)* and the *Robina Lakes Management Plan (Reedy Creek)* for the determination of environmental values and water quality objectives.

Describe estuarine and marine environments at a level of detail commensurate with the risks (including cumulative risks) the project poses to those environments.

Describe any potential discharges into the aquatic environment, including discussion of compliance with the Australian and New Zealand Environment and Conservation Council (ANZECC)/National Environment Protection Council (NEPC) guideline values regarding discharges, should these be made. Provide an assessment of environmental and health impacts of discharges and the potential for any chemicals/toxins to accumulate in the aquatic environment (flora and fauna). Consider risk of weed spread by the project to watercourses.

4.4 Water resources

4.4.1 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), *Australia 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) and the *Queensland Water Quality Guidelines 2009* (Department of Environment and Resource Management 2009).

Indicate the quality and quantity of water resources in the vicinity of the project area.

Describe 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 any current water uses.

Describe the environmental values of the surface waterways, wetlands 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 wetlands, waterways and groundwater
- sustainability, including both quality and quantity
- dependent ecosystems and dependent threatened species
- existing and other potential surface and groundwater users
- any 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 and transmissivity¹ rates between aquifers (defined from water level contours)
- interaction with surface water
- possible sources of recharge
- potential exposure to pollution
- current access to groundwater resources in the form of bores, springs, ponds, including quantitative yield of water and locations of access.

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.

Describe the project's proposed use of recycled water.

4.4.2 Potential impacts and mitigation measures

Assess potential impacts of the project on water resource environmental values identified in the previous section. Define and describe the objectives and practical measures for protecting or enhancing water resource environmental values, to describe how nominated quantitative standards and indicators may be achieved, and how the achievement of the objectives will be monitored, audited and managed.

Matters to be addressed include:

- 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

¹ Transmissivity refers to the rate which groundwater flows horizontally through an aquifer.



- 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, including the toxicity of effluent to flora and fauna
- potential impacts on wetlands or other downstream receiving environments
- potential impacts of recycled water use
- 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. Also outline how these strategies are incorporated into appropriate sections of the EMP.

A suitably qualified hydraulic engineer should prepare a stormwater quantity management plan addressing matters such as internal catchment, external catchment (if any), overland flow, and legal point of discharge issues. The plan should be developed in accordance with GCCC's *Land Development Guidelines* (Gold Coast City Council 2005) and the *Queensland Urban Drainage Manual* (Department of Natural Resources 2008).

A suitably qualified stormwater engineer/scientist should prepare a stormwater quality management plan in accordance with GCCC's *Water Sensitive Urban Design Guidelines* (Gold Coast City Council 2007).

Discuss 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.

4.5 Air quality

4.5.1 Description of environmental values

Describe the existing air quality that may be affected by the project in the context of environmental values as defined by the EP Act and 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 which may be affected by the project



- baseline monitoring results, sensitive receptors
- data on local meteorology and ambient levels of pollutants is to be gathered to provide a baseline for later studies or for the modelling of air quality environmental harms. Baseline data should be collected locally for determination of background ambient levels and meteorologic conditions.

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

Present the information on the existing air shed environment and potential impacts in a graphical and map form to depict the existing and predicted emission levels from the proposed activity.

4.5.2 Potential impacts and mitigation measures

Investigate the following air quality issues and discuss their mitigation:

- an inventory of air emissions from the project expected during construction and operational activities
- ‘worst case’ emissions that may occur during construction and operation—if these emissions are significantly higher than those for normal operations, it will be necessary to evaluate the worst-case impact as a separate exercise to determine whether the planned buffer distance between the facility and neighbouring sensitive receptors will be adequate
- assessment of potential off-site human health impacts from any hazardous and toxic air emissions from on-site works and transportation
- 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 and operation activities especially in areas where construction activities are adjacent existing road networks or are in close proximity to sensitive receivers
- climatic patterns that could affect dust generation and movement
- vehicle emissions and dust generation along major haulage routes both internal and external to the project site
- human health risks associated with emissions from the facility, and transportation of resource materials, of all hazardous or toxic pollutants should be assessed. Considering the risk to receptors including young children, the aged, and people suffering bronchial conditions (for example, asthma)
- impacts on terrestrial flora and fauna.

Best practice mitigation measures should be detailed together with pro-active and predictive operational and maintenance strategies that could be used to prevent and mitigate impacts.



Discuss potential air quality impacts from emissions, with reference to the National Environmental Protection Measure for Ambient Air Quality 1998 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. Particular attention should be made to particulate matter (PM₁₀) with a specific assessment regarding the health impact of respirable silica.

4.6 Greenhouse gas emissions

4.6.1 Description of environmental situation

Provide an inventory of projected annual emissions for each relevant greenhouse gas, with total emissions expressed in 'CO₂ equivalent' terms for the following categories:

- Scope 1 emissions—means direct emissions of greenhouse gases from sources within the boundary of the facility and as a result of the facility's activities
- Scope 2 emissions—means emissions of greenhouse gases from the production of electricity, heat or steam that the facility will consume, but that are physically produced by another facility

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

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

4.6.2 Potential impacts and mitigation measures

Discuss the potential for greenhouse gas abatement measures, including:

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

4.6.3 Potential benefits

Discuss any potential benefits of the project in terms of its overall greenhouse gas footprint.



4.7 Noise and vibration

4.7.1 Description of environmental values

Describe the existing noise and vibration environment that may be affected by the project in the context of environmental values as defined by the EPP (Noise). The *Noise Measurement Manual* (Environment Protection Agency 2000) and the *Guideline: Noise and Vibration from Blasting* (Environment Protection Agency 2006) are to be considered in describing the existing noise and vibration environment and the potential impacts from the proposed activity. The Australian Standard *AS2187.2-2006 Explosives: Storage and Use (Part 2—Use of Explosives)* (Standards Australia 2006) is also to be considered in this section.

The EIS should confirm that the impact on human health at the sensitive receivers is to be appropriately mitigated to achieve a satisfactory internal noise level for the preservation of health and well-being as identified within the EPP (Noise).

Identify likely sensitive noise receptors 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. The proponent is to provide management options at the sensitive receivers when noise attenuation at the source does not adequately reduce the emissions.

Sensitive noise receptors should also consider health, recreational and educational facilities.

As well as existing sensitive receptors, the EIS should consider the nature and extent of any potential impacts on areas identified for future development in the local area (either by existing approvals or by designations under the planning scheme).

4.7.2 Potential impacts and mitigation measures

The EIS should describe, in separate chapters, the impacts of noise and vibration generated during the pre-construction, construction, operation and decommissioning phases of the project. Noise and vibration impact analysis should include:

- an hierarchical impact mitigation methodology
- the levels of noise and vibration generated, including noise contours, assessed against current typical background levels, using modelling using computer modelling of a reputable nature which has been peer reviewed, such as the Environmental Noise Model or SoundPLAN
- a scaled plan depicting the location of the sensitive receptors, the source noises, the topography of the site and the noise levels at the sensitive receptors depicted as noise contours surrounding the premises
- the impact of noise, including low frequency noise (noise with components below 200Hz) and vibration at all potentially sensitive receivers within and around the study corridor, compared with the performance indicators and standards nominated above



- the potential impacts from noise and vibration on the neighbouring residences from a physical perception perspective, such as any sensation of buildings/structures/ground vibrating or emitting noise (for example, windows rattling or items on shelving moving)
- potential effects of noise and vibration on nearby buildings and structures such as private residences
- potential effects of noise and vibration on other infrastructure, including roads and rail
- within considerations on vibration, include separate discussion on possible settlement or lateral seam impacts
- impacts on terrestrial and aquatic fauna
- the EIS should include an outline of the scope and methodology of pre-construction building surveys including a preliminary identification of the type and location of properties that should be surveyed. The proponent should undertake any required pre-construction building surveys in the vicinity of the project prior to commencement of any quarrying operations.
- a proposed plan for managing impacts of, and/or complaints about, damage to structures caused by the project due to vibration should also be provided.
- proposals to minimise or eliminate the effects of noise, including details of any screening, lining, enclosing or bunding, construction methods, or timing schedules for construction that would minimise environmental harm and environmental nuisance from noise
- proposals to minimise or eliminate the effects of vibration, including blast design, that would minimise environmental harm and environmental nuisance from vibration
- any computer modelling used to suggest abatement measures must list the assumptions made for existing attenuation (for example, distance, atmospheric absorption, barriers, effects of intervening ground types and weather conditions)
- in addition, develop likely noise and vibration management measures for sensitive places and options if unable to achieve a satisfactory internal noise level.

4.8 Waste

4.8.1 Waste generation

Identify and describe all sources, likely volumes and quality (where applicable) of waste associated with construction, operation and decommissioning of all aspects of the project. 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.

4.8.2 Waste management

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

- Identification of Regulated Wastes listed in Schedule 7 of the Environmental Protection Regulation 2008
- options available for avoidance/minimisation/recycling
- operational handling and fate of all wastes including storage
- on-site treatment methods proposed for any wastes
- methods of disposal proposed to be used for any trade wastes, liquid wastes and solid wastes (including the need to transport wastes off site for disposal)
- the potential level of impact on environmental values
- measures to ensure stability of 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 and pests
- options available for using recycled materials
- management of waste at truck waiting areas external to the site
- market demand for recyclable waste (where appropriate)
- decommissioning of the construction site.

4.9 Transport

Present the transport assessment in separate reports for each project-affected mode as appropriate. These assessment reports should provide sufficient information to allow an independent assessment of how existing transport infrastructure will be affected by project transport locally and regionally.

Note that in all sections, both the construction and operations phases are to be addressed. Note that 'transport' in the following sections is to address all project-affected modes, including pedestrian walkways and bikeways.

4.9.1 Existing infrastructure

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



Include an overview map/or maps of the current and future local and state-controlled road networks which describes the site's relationship to the networks. The map/maps should also include the location of construction activities and access locations (existing and proposed).

4.9.2 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) and direction/splits and estimated distance of haulage
- traffic generated by workforce personnel including visitors (volume, composition, timing and routes)
- traffic trends of the affected road network. Include consideration of additional vehicle numbers due to project use
- likely heavy and oversize/indivisible loads (volume, composition, timing and routes) highlighting any vulnerable bridges and structures along proposed routes
- the potential for a direct road connection from the subject site (Old Coach Road) to the Burleigh Interchange (exit 87)/Bermuda Street.

4.9.3 Potential impacts and mitigation measures

Impact assessment reports should include details of the adopted assessment methodology (for impacts on roads: the road impact assessment report (RIA)) in general accordance with the *Guidelines for Assessment of Road Impacts of Development 2006* (Department of Main Roads 2006).

Assess project impacts and discuss mitigation measures for:

- capacity, local amenity, efficiency and condition of transport operations, services and assets (from either transport or project operations)
- potential impacts of product haulage on future road planning, including intersections
- possible interruptions and delays to transport operations, considering matters including, but not limited to, impacts on school and commuter peak times of road use in consideration of project trip timings
- safety, including consideration of schools and the community
- 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
- access to transport for people with a disability.



4.9.4 Infrastructure alterations

- Detail any alterations or new transport-related infrastructure and services relevant to the project (as distinct from impact mitigation works); also consider drainage and lighting infrastructure requirements as part of the transport task.
- Clearly identify any road widening and consider any impacts to identified buffers.
- Detail construction of any project-related plant and utilities, within or impacting on the jurisdiction of any transport authority.
- Undertake a parking and traffic study that details the likely parking demand and ability of the proposal to cater for the whole demand. For the construction phase, prepare a construction parking plan which avoids workforce parking on local or state roads.

4.9.5 Transport 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 by the proponent in close consultation with relevant transport authorities and consider those authorities' works program and forward planning.

For any impact on existing property access, traffic safety, roadway and intersection capacity, make appropriate recommendations regarding mitigation of impacts to ensure an appropriate level of service is maintained. Provide conceptual designs of these measures.

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

For road use by emergency services, consider matters such as designing sufficient width of roads to provide unobstructed access by vehicles (for example, fire trucks).

4.9.6 Road management planning

Outline:

- strategies to minimise the effects of project transport on existing and future public road corridors
- steps to be taken to prevent access from public roads to the project sites.

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

4.10 Indigenous cultural heritage

4.10.1 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, the cultural heritage values were ascertained, including for example, the results of any Aboriginal cultural heritage survey undertaken; the DERM Aboriginal Cultural Heritage Register and Database; and any existing literature relating to Indigenous cultural heritage in the project area.

4.10.2 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. Assess the likely effects on sites of Indigenous cultural heritage values, including but not limited to the following:

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

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

A native title agreement (NT agreement), as defined under the *Aboriginal Cultural Heritage Act 2003* (ACH Act), which includes management and protection strategies for Indigenous cultural heritage or a cultural heritage management plan under the ACH Act (CHMP), should be initiated during the EIS process. An NT agreement or an approved CHMP, in a form that 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, which addresses management and protection strategies for cultural heritage, subject to any confidentiality provisions, outlining the position of the relevant parties
- details of the proposed steps and timeframes for finalising the CHMP or NT agreement.

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

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

4.11 Non-Indigenous cultural heritage

4.11.1 Description of existing non-Indigenous cultural heritage values

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

- consultation with:
 - the Australian Heritage Places Inventory
 - the Queensland Heritage Register and other 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
- consideration of *The Burra Charter: The Australian ICOMOS Charter for Places of Cultural Significance* (International Council on Monuments and Sites 1999)
- liaison with relevant community groups/organisations (e.g. local historical societies) concerning:
 - places of non-Indigenous cultural heritage significance
 - opinion regarding significance of any cultural heritage places located or identified
- locations of culturally and historically significant sites, shown on maps, that are likely to be impacted by the project



- a constraints analysis of the proposed development area to identify and record non-Indigenous cultural heritage places.

4.11.2 Potential impacts and mitigation measures

Assess 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*.

5 Social values and management of impacts

5.1 Description of existing social environment

Conduct a social impact assessment (SIA) 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.

5.1.1 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. including integrity of social conditions, visual amenity and liveability, social harmony and wellbeing, and sense of community)
- Indigenous social and cultural characteristics such as native title rights and interests and cultural heritage.

5.1.2 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.

Detail the community engagement processes to be 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 for the operational phase, including how complaint resolution will be addressed.

5.1.3 Social baseline study

Include a targeted baseline study of the people residing in the social and cultural area to identify the 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.

Describe and analyse a range of demographic and social statistics determined relevant to the project's social and cultural area including corridor and suburbs intersected by and adjacent to the study corridor, or otherwise likely to be affected by the project, including:

- demographic characteristics, including the Indigenous population including age and gender
- major population trends or changes that are occurring
- estimates of population growth and population forecasts
- any other indicators determined through the community engagement process as relevant.

Describe:

- current social infrastructure and civic facilities, services and networks servicing the community and any perceived deficiencies in this infrastructure amongst the



community (for definition see *South East Queensland Plan 2005–2026 Implementation Guideline No.5—Social Infrastructure Planning* (Department of Infrastructure 2005))

- the availability of affordable housing and any plans for future development in the social and cultural area
- programs and plans announced by government that might be expected to alter the existing social character of the project social and cultural area—for example, transport oriented development
- the profile of the available local workforce to service to the project workforce needs and any competition from other major projects for project workers
- the identity, values, lifestyles, vitality, characteristics and aspirations of the communities including Indigenous communities, special needs and health services
- the extent to which land use patterns influence the social character of the social and cultural area, including:
 - the relative proportions of open space or recreational land uses, residential, commercial and/or industrial properties
 - the relative density of land uses—for example, detached housing versus medium to high density apartments
 - for predominantly residential areas, the patterns of home ownership—for example, proportion owned versus rented
 - local pedestrian connectivity.

5.1.4 Workforce profile

Include a profile of the workforce that describes the:

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

Provide an outline of recruitment schedules and policies for recruitment of workers, addressing recruitment of local and non-local workers including Indigenous workers, people from culturally and linguistically diverse backgrounds and people with a disability.

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



5.2 Potential impacts

Assess and describe the type, level and significance of the project's social impacts (both beneficial and adverse) on the social and cultural area, based on outcomes of community engagement processes and the social baseline study. Quantify the affected population. This section should:

- describe and summarise outcomes of community engagement processes including the known and likely response of the affected communities, including Indigenous people
- include sufficient data to enable affected local and state authorities to make informed decisions about the project's effect on their business and plans for the provision of social infrastructure in the project's social and cultural area
- address direct and indirect 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, including:
 - key population/demographic shifts and effects to existing lifestyles, the health and social wellbeing of families and communities
 - the needs of vulnerable groups including those that are socially disadvantaged, the aged and people with a disability
 - Indigenous peoples including cultural property issues
 - local and regional labour markets, with regard to the source of the workforce, and any proposed employment strategies targeted at disadvantaged 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
 - the quantity of service revenue and work from the project likely to flow to the project's social and cultural area
- impacts of construction and operational workforces, their families, and associated contractors on housing and accommodation availability and affordability, land use and land availability. Discuss the capability of existing housing and rental accommodation to meet any additional demands created by the project.

Include an evaluation of the potential cumulative social impacts resulting from the project including an estimation of the overall size, significance and likelihood of those impacts. Cumulative impacts in this context is defined as the additional impacts on population, workforce, accommodation, housing, and use of community infrastructure and services, from the project, and other proposals for development projects in the area, which are publicly known or communicated by DEEDI, if they overlap the proposed project in the same time frame as its construction period.



Discuss the concept of longitudinal cumulative impacts, or 'project fatigue', where the community in the study area has been subject to a number of large-scale construction projects in recent years.

Identify if there is a likelihood of these kinds of cumulative impacts and any special strategies that might be deployed by the proponent during the construction and operation of the project to mitigate these impacts.

5.2.1 Mitigation measures and management strategies

Address those identified social impacts, social impact mitigation strategies and measures that are relevant to the project by addressing:

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

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

5.2.2 Social impact management plan

Prepare a draft social impact management plan (SIMP) for the life of the project. The plan should cover:

- a summary of the project
- impact mitigation and management strategies and action plans
- monitoring, reporting and review mechanisms
- a stakeholder engagement strategy
- a practical mechanism to respond to public enquiries, complaints and to resolve disputes.

This section should also describe:

- community consultation about acceptance of proposed mitigation measures that address project impacts
- the extent to which mitigation measures suggested by the community would be adopted



- how practical management and monitoring regimes are proposed to be implemented.

For identified social impacts, social impact mitigation strategies and measures should be presented to address the issues identified above in subsection 5.2.1 and any other relevant matters identified in the social impact assessment process.

6 Economies and management of impacts

6.1 Economy

6.1.1 Description of affected local and regional economies

Describe the existing economy in which the project is located and the economies materially impacted by the project. Include:

- a map illustrating the local and regional economies that could be potentially affected by the project
- gross regional product or other appropriate measure of annual economic production
- population
- labour force statistics
- economic indicators
- the regional economy's key industries and their contribution to regional economic income
- the key regional markets relevant to the project:
 - labour market
 - housing and land markets
 - construction services and building inputs market
 - regional competitive advantage and expected future growth.

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.

6.1.2 Potential impacts and mitigation measures

An economic impact assessment is required to be undertaken to compare the public benefits of the proposal with any adverse impacts and how these would be distributed.



The potential impacts should consider local, regional, state and national perspectives as appropriate to the scale of the project. Local perspectives are to consider both the area in the immediate vicinity of the project and the wider local area.

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 (to be addressed in greater detail in the following section 'Impacts on adjacent properties')
- commercial land use
- industry output
- employment
- macro-economic effects of the project including employment impacts (number of jobs generated) and overall contribution to the Queensland economy (uplift in Gross State Product)
- the indirect impacts likely to flow to other industries and economies from the development of the project (also considering the implications of the project for future development)
- the contribution to local, regional and state government's economic objectives, strategies, plans and policies for the area or industry sector (including investment, industry, employment, skills plans and policies)
- stimulus (flow on/second order effects) for industry, small business, employment, incomes and innovation
- the distributional effects of the proposal including proposals to mitigate any negative impact on affected and disadvantaged groups.

All assumptions underpinning the analysis are to be outlined explicitly and the sensitivities of the analyses to key parameters are to be established. Summary measures used in the analysis should include benefit-cost ratio, net present value with per dollar invested and internal rate of return. Any considerations of benefit-cost ratio are to determine the public benefit of the project.

The analysis of economic impacts may also be undertaken using computable general equilibrium (CGE) analysis, and provide an estimate of contribution to the gross state product.

Care should be taken to ensure that benefits accounted for are the most appropriate and relevant to the objectives and scope of the project and that double counting does not occur. The analysis should also adhere generally to the economic assessment requirements of the Cost-Benefit Analysis supplementary guidelines contained under the Project Assurance Framework (see <http://www.dlgp.qld.gov.au/resources/guideline/project-assurance-framework/paf-cost-benefit-analysis.pdf>).



6.1.3 Likely impacts on adjacent properties

Address the likely economic impacts of the project on surrounding property and business owners arising from a change to the land use during both construction and operation. Discuss:

- the likely scale of impact of the project on residential, commercial and industrial land uses and property management
- measures proposed to mitigate real and potential disruptions to residential, commercial and industrial property uses and management practices
- the impact on property values, including an assessment of possible design and operational measures that may be implemented to address any risk to these values.

6.1.4 Strategies for local participation

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

- strategies for assessing the cost effectiveness of sourcing local inputs from the regional economy during the construction, operation and rehabilitation of the project
- employment strategies for local residents including members of Indigenous communities and people with a disability, including a skills assessment and recruitment and training programs to be offered
- strategies responding to relevant government policy, relating to:
 - the level of training provided for construction contracts on Queensland Government building and construction contracts, with regard to the *Queensland Government Building and Construction Contracts Structured Training Policy*—the 10 per cent policy (see <http://training.qld.gov.au/industry/10percent-policy.html>)
 - Indigenous employment opportunities, with regard to the *Indigenous Employment Policy for Queensland Government Building and Civil Construction Projects*—the 20 per cent policy (Department of Employment, Economic Development and Innovation 2008)
 - the use of locally sourced goods and services, with regard to the *Local Industry Policy* (Department of Employment, Economic Development and Innovation 2010).

7 Hazard and risk

7.1 Hazard and risk assessment

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



- identifying potential hazards, accidents, spills, landslides 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 and implications related to climate change.

A preliminary risk assessment for all components of the project shall be undertaken as part of the EIS process in accordance with Australia/New Zealand Standard *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 transportation, landslide and blasting risks
- the study should assess risks during the construction, operational and decommissioning phases of the project
- analyse the consequences of each hazard on safety in the project area should be conducted, examining the likelihood of both individual and collective consequences, involving injuries and fatalities to workers and to the public
- present quantitative levels of risks from the above analysis.

Provide details on the safeguards and technical recommendations that would reduce the likelihood and severity of hazards, consequences and risks to persons, within and adjacent to the project area. Consideration should include, but not be limited to, how SPP 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide (Department of Local Government and Planning & Department of Emergency Services 2003) would be addressed.

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

Discuss the results of early consultation with Queensland Fire and Rescue Service (QFRS), Queensland Ambulance Service (QAS) and Emergency Management Queensland (EMQ) on the site's risk classification to determine future emergency services delivery.

Develop a risk management plan in consultation with QFRS and QAS and provide the plan in the EIS.

The plan should consider interruption to QFRS, QAS and EMQ services in the event of any road closures required for project works.

Conduct a hazard identification study to identify the nature and scale of hazards that might occur during the construction and operation of the project. This would be expected to include hazards involving:

- construction accidents
- blasting events



- structural damage to external infrastructure
- landslides
- lateral seam impacts
- land settlement external to the project site
- site incursion by fauna
- groundwater alteration
- spills of materials during loading, unloading and transport
- natural events such as cyclones, earthquakes, bushfires or local flooding.

A set of representative incident scenarios should be selected. This set should include credible event scenarios (e.g. a catastrophic failure of a processing unit and the consequential zone of effect). This will require an evaluation of the likelihood of each scenario occurring in order to calculate the level of risk in surrounding areas due to the presence of the facility.

Assess the acceptability of the risk on site, and to surrounding land uses, by referring to nationally adopted risk criteria presented in *Hazardous Industry Planning Advisory Paper No. 4: Risk Criteria for Land Use Safety Planning* (Department of Planning (NSW) 2008). Present details of the methodology and results of each step described above in the EIS.

Prepare a bushfire management plan and include it in the EIS. Consultation with GCCC's Bushfire Management unit when developing the plan.

7.2 Health and safety

The EIS is to clearly demonstrate methods of protecting or enhancing human health for the construction and operation phases.

7.2.1 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, traffic, noise, vibration, pedestrian and bicycle use, and water.

Discuss provision of amenities such as water and waste management for any truck waiting areas internal or external to the site.

7.2.2 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.



The EIS should assess the cumulative effects on public health values and occupational health and safety impacts on the community and workforce from project operations and emissions. Recommend practical monitoring regimes in this section.

7.3 Emergency management plan

The development of emergency planning and response procedures within an Emergency Management Plan is to be determined in consultation with State and regional emergency service providers including QFRS, QAS, Queensland Police Service and EMQ.

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 during construction, operation and decommissioning.

8 Cumulative impacts

Summarise and describe the project's cumulative impacts in combination with those of existing or proposed project(s) publicly known or advised by DEEDI to be in the region, to the greatest extent practicable. Cumulative impacts should be assessed with respect to both geographic location and environmental values. Present the methodology used to determine the cumulative impacts of the project, detailing the range of variables considered, including where applicable, relevant baseline or other criteria upon which the cumulative aspects of the project have been assessed.

9 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).

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

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

10 Environmental management plan

Detail the EMPs for both the construction and operation phases of the project. The EMP should be developed from, and be consistent with, the information in the EIS. The 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
 - 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.
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).



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

11 Matters of national environmental significance

The project is a controlled action under the EPBC Act (Department of Sustainability, Environment, Water Population and Communities (DSEWPaC) reference number EPBC 2010/5757) and is a significant project under the SDPWO Act. The proponent elected to self-nominate the project as a controlled action.

The EIS will be developed pursuant to the bilateral agreement between the Commonwealth and Queensland governments for the purposes of the Australian Government's assessment under Part 8 of the EPBC Act. The EIS must address potential impacts on the MNES that were identified when the project was determined to be a controlled action.

The nominated 'controlling provision' for the proposed action is: listed threatened species and communities (sections 18 and 18A).

A stand-alone report must be provided as part of the EIS that exclusively and fully addresses the issues relevant to the controlling provisions.

The function of this section of the EIS is to describe the matters protected under the EPBC Act that may potentially be affected by the proposed action. This should include the listed threatened species and ecological communities. This information will serve as a baseline against which impacts, management of the proposal and alternatives can be assessed.

This section of the EIS 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.

This project should initially be assessed in its own right. This stand-alone assessment should be followed by an assessment of the cumulative impacts related to all known proposed similar developments in the region. This subsequent assessment should address 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. All sources of information relied upon should be referenced and an estimate of the reliability of predictions provided. Any positive impacts should also be identified and evaluated.



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.

11.1 Introduction

The introduction in this section of the EIS should provide background to the project, including:

- a description of the action including: location and property description, as well as planning, construction and decommissioning phases
- 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
- a list of persons and agencies consulted during the preparation of the EIS
- the names of, and qualifications and experience of the persons involved in preparing the EIS, including sub-consultants and reviewers
- the environmental record of the proponent, including details of their environmental policy and planning framework and details of any proceedings under a Commonwealth or state law for the protection of the environment against them.

11.2 Listed threatened species and ecological communities

Identify EPBC-listed threatened species and ecological communities that could be affected, directly and indirectly and as a consequence of the proposal.

Consider and assess all potential impacts to listed threatened species and ecological communities that are found to be, or may potentially be, present in areas that may be impacted by the project. Consideration must include, but not be limited to, the species listed below.

Targeted surveys for listed threatened species and ecological communities must be conducted to identify the likely presence of listed threatened species, and provide a high level of certainty of their presence or absence from the proposal site.

Additionally, a description of any mitigation measures proposed to reduce the impact on the listed threatened species and ecological communities and the anticipated benefit of proposed mitigation measures, must be discussed within the EIS, including details of any proposed offsets.

11.2.1 List of potential listed threatened species and ecological communities and their status

The EPBC-listed threatened species and ecological communities that are required to be addressed includes but is not limited to:

- small-leaved tamarind (*Diploglottis campbellii*)—listed endangered
- floyd's walnut (*Endiandra floydii*)—listed endangered



- sweet myrtle (*Gossia fragrantissima*)—listed endangered
- durobby (*Syzygium moorei*)—listed vulnerable
- rusty rose walnut (*Endiandra hayesii*)—listed vulnerable
- monkey nut (*Hicksbeachia pinnatifolia*)—listed vulnerable
- smooth-bark rose apple (*Syzygium hodgkinsoniae*)—listed vulnerable

Each EPBC-listed threatened species and ecological community requires a description of the distribution, ecology, habitat preferences and maps showing:

- all potential habitats for each species
- habitat components important for each species such as breeding habitat
- the location of known records (including those from databases and all surveys previously conducted in the project area).

Discuss the relationship between individuals and communities of EPBC-listed threatened species and ecological communities on the proposed site and the regional context of EPBC-listed threatened species and ecological communities.

11.3 Species surveys

Adequate and detailed surveys are required to provide baseline information to further refine information described above and may provide a baseline for monitoring. This section should:

- justify survey methods used, including seasonal timing and appropriateness of methods
- describe the expertise of staff undertaking surveys
- describe the survey effort including targeted survey effort for EPBC-listed species
- describe why certain areas required more detailed survey effort than other areas.

11.4 Relevant impacts

The function of this section of the EIS is to assess in detail the relevant impacts of the proposal addressing all the identified environmental values. Any technical data and other information used or needed to make a detailed assessment of the relevant impacts (reliability of forecasts and predictions, confidence limits and margins of error) should be indicated, and where necessary, included as an appendix.

Conduct and document a risk assessment to address potential impacts, including direct and indirect impacts and impacts possible in both the short and long-term, as well as consequential and cumulative impacts.

Include adaptive management response strategies that avoid or reduce impacts on EPBC-listed threatened species and ecological communities.



11.4.1 Land clearing

Clearly describe the potential impacts that clearing vegetation will have on EPBC-listed threatened species and ecological communities, including but not limited to:

- the approximate area in hectares of native vegetation to be cleared as a result of all project activities
- a map showing the approximate area to be cleared
- a description of the impacts of fragmentation and edge effects
- the impacts of vegetation loss on EPBC-listed threatened species and ecological communities
- the impacts of vegetation loss on corridor connectivity
- the impacts of vegetation loss on surface and groundwater hydrology.

Include an erosion and sediment control plan, written in accordance with the *Soil Erosion and Sediment Control – Engineering Guidelines for Queensland* (Institution of Engineers Australia 1996). This plan must make specific mention of dust management strategies.

11.4.2 Water resources and pollution

Describe all water consumption that will occur during the construction, operation and decommissioning of the proposed action, including but not limited to:

- a description of water sources
- approximate volumes (megalitres per annum) of all water that may be used during the construction and operation of the proposed quarry from the various sources.

Describe how much wastewater will be produced by the project, what pollutants wastewater may contain, and how wastewater will be managed, including:

- a description of the expected impacts upon surface and groundwater
- any consequential impacts on EPBC-listed threatened species and ecological communities in the environment downstream of the quarry
- a stormwater management plan.

11.4.3 Weeds and exotic fauna

Identify and describe the potential impacts of the proposed action on exotic fauna and weeds within and adjacent to the study area, including the potential:

- for project activities and infrastructure (such as roads) through increasing the threat of weeds and exotic fauna within the project area
- impacts that an increase or change in exotic fauna or weeds may have on listed species and communities.



11.5 Impact assessment for MNES

Include a detailed assessment of the impacts on listed threatened species and ecological communities in the EIS. Specific impacts that must be assessed in detail include (but should not be limited to):

- for each identified EPBC-listed threatened species and ecological community, discuss how potential impacts may affect EPBC-listed threatened species and ecological communities in the project area (and downstream of the project area) in the short-term and long-term
- cumulative impacts of the action on EPBC-listed threatened species and ecological communities, where potential impacts are in addition to impacts of other existing or planned activities.

11.6 Avoidance, mitigation and offset measures to reduce the impacts to MNES

11.6.1 Avoidance and reduction of impacts to MNES

Explore any feasible alternatives to the action, in particular, exploring options to avoid and/or reduce the impacts on listed species and communities.

Include how ecological values were defined in the referral to determine which features should be buffered and sufficient details to make it clear why any alternative is preferred to another.

11.6.2 Mitigation measures

Mitigation measures that must be considered in the EIS include:

- an outline of an EMP that sets out the framework for continuing management and mitigation
- a description of how the mitigation measures will be funded in the long-term
- evidence that demonstrates the efficacy of the proposed mitigation measures. This section must include the results of studies that have been used to test and demonstrate the techniques proposed.

11.6.3 Offset measures for residual impacts

Where impacts cannot be avoided or managed, provide proposed offset measures to compensate for any residual impacts of the proposed action on MNES. The proposed strategy must demonstrate how it will achieve long-term conservation outcomes.

11.7 Monitoring and reporting

This section of the EIS must:

- outline the ongoing environmental impacts to be monitored and reported



- identify any baseline monitoring that will be required before the proposal is commenced
- identify the parameters to be monitored, and their response trigger values and response activities, along with procedural and compliance audit programs and reporting requirements and arrangements to be implemented.

11.8 Ecologically sustainable development principles

Provide a brief discussion of how the proposal will conform to the principles of ecologically sustainable development (ESD)—refer to the *National Strategy for Ecologically Sustainable Development* (Ecologically Sustainable Development Steering Committee 1992).

12 Conclusions and recommendations

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

13 References

Present all references consulted in the EIS in a recognised format.

14 Appendices

14.1 Final TOR for this EIS

Include a copy of the final TOR in the EIS.

14.2 TOR cross-reference table

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

14.3 Project approvals

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

14.4 Consultation report

The report should include the methodology used in the public consultation plan including:

- criteria for identifying stakeholders and the communication methods used (the consultation plan)



- a list of stakeholders identified, including the Commonwealth, Queensland and Local government agencies, and/or the affected parties (as defined by the EP Act)
- a summary of the issues raised by stakeholders and the means by which the issues have been addressed
- plans for ongoing consultation to be outlined and included in the EMP.

14.5 Study team

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

14.6 Glossary of terms

Provide a glossary of technical terms.



14.7 Specialist studies

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

- air pollution, noise and vibration
- groundwater and surface water hydrology
- geology
- economic studies
- transport studies
- cultural heritage
- hazard and risk studies
- land use and land capability studies.

14.8 Corporate environmental policy

Attach a copy of the proponent's corporate environmental policy.

14.9 List of proponent commitments

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



Abbreviations

ACH Act	<i>Aboriginal Cultural Heritage Act 2003</i>
ANZECC	the Australian and New Zealand Environment Conservation Council
AS/NZS	Australian standard/New Zealand standard
ASS	Acid Sulphate Soils
Bonn Convention	Convention of Migratory Species of Wild Animals
CAMBA	China–Australia Migratory Bird Agreement
CGE	computable general equilibrium
CHMP	cultural heritage management plan
DERM	Department of Environment and Resource Management (Qld)
DEEDI	Department of Employment, Economic Development and Innovation (Qld)
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities (Cwlth)
EIS	environmental impact statement
EMP	environmental management plan
EMQ	Emergency Management Queensland
EP Act	<i>Environmental Protection Act 1994</i> (Qld)
EPA	former Queensland Environmental Protection Agency; now DERM
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cwlth)
EPP	Environmental Protection Policy (water, air, waste, noise)
ERA	environmentally relevant activity
ESD	ecologically sustainable development
ha	hectare/s
JAMBA	Japan–Australia Migratory Bird Agreement
MNES	matters of national environmental significance (under the EPBC Act)
NC Act	<i>Nature Conservation Act 1992</i>
NGA	National Greenhouse Accounts
NT agreement	Native Title Agreement



QAS	Queensland Ambulance Service
QASSIT	Queensland Acid Sulfate Soils Investigation Team
QASSMAC	Queensland Acid Sulfate Soils Management Advisory Committee
QFRS	Queensland Fire and Rescue Service
Ramsar	wetlands of international importance
REDD	Regional Ecosystem Description Database
ROKAMBA	Republic of Korea–Australia Migratory Bird Agreement
SDPWO Act	<i>State Development and Public Works Organisation Act 1971 (Qld)</i>
SIA	social impact assessment
SIMP	social impact management plan
SPP	state planning policy
SPA	<i>Sustainable Planning Act 2009</i>
TOR	terms of reference
VM Act	<i>Vegetation Management Act 1999</i>



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