The Coordinator-General

Terms of reference for an environmental impact statement

Kevin's Corner project

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

The Coordinator-General
February 2010

Toward Q2 Tomorrow's Queensland

Queensland Government

Contents

Synopsis

Hancock Galilee Pty Ltd (HGPL), a wholly owned subsidiary of Hancock Prospecting Pty Ltd (HPPL), proposes to establish a new 30 million tonnes per annum combined open cut and underground coal mine in the Galilee Basin, Central Queensland, primarily to service international export energy markets for thermal coal. The Kevin's Corner project (the project) is the second for HPPL in the Galilee Basin, with the Alpha Coal project, which has also been declared a significant project, on adjoining land to the south.

Infrastructure to be constructed for the mine includes overland conveyors, a run of mine facility, a coal handling and preparation plant, storage facilities, access and haul roads, a water pipeline, raw water dams, a rail spur and an accommodation village. The project proposes to utilise the transport infrastructure of the Alpha Coal project that includes the multi-user rail line, port facilities and the aerodrome.

The Coordinator-General has declared the Kevin's Corner 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*.

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

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

The EIS process is being coordinated by the Department of Infrastructure and Planning 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 submissions received on draft TOR released for public comment over the period 31 October 2009 – 30 November 2009. These TOR are presented in two broad categories:

- Part A—general information and administrative procedures
- Part B—specific requirements and structure of the EIS

Abbreviations

The following abbreviations have been used in this document:

ACH Act	*Aboriginal Cultural Heritage Act 2003* (Qld)
CHMP	Cultural heritage management plan
CHPP	Coal handling and preparation plant
CLR	Contaminated Land Register
DERM	QLD Department of Environment and Resource Management
DIP	QLD Department of Infrastructure and Planning
DTMR	QLD Department of Transport and Main Roads
EIS	Environmental impact statement
EMP	Environmental management plan
EP Act	*Environmental Protection Act 1994* (Qld)
EPA	Former QLD Environmental Protection Agency
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)
EPC	Exploration permit for coal
EPP	*Environmental Protection Policy* (water, air, waste, noise)
GQAL	Good quality agricultural land
HGPL	Hancock Galilee Pty Ltd
HPPL	Hancock Prospecting Pty Ltd
MDL	Mineral development licence
ML	Megalitres
MNES	Matters of national environmental significance (under the EPBC Act)
MRA	*Mineral Resources Act 1989* (Qld)
Mtpa	Million tonnes per annum
NTA	Native Title Agreement
QASSMAC	Queensland Acid Sulfate Soils Management Advisory Committee
QASSIT	Queensland Acid Sulfate Soils Investigation Team
REDD	Regional Ecosystem Description Database
ROM	Run of mine facility
SDPWO Act	*State Development and Public Works Organisation Act 1971* (Qld)
SIA	Social impact assessment

SPA	*Sustainable Planning Act 2009* (Qld)
The proponent	Hancock Galilee Pty Ltd (HGPL)
The project	Kevin's Corner project
TOR	Terms of reference
WRP	Water resource plan

Part A: General information and administrative procedures

1. Project summary

Key elements of the Hancock Prospecting Pty Ltd (HPPL) proposed Kevin's Corner project include the following:

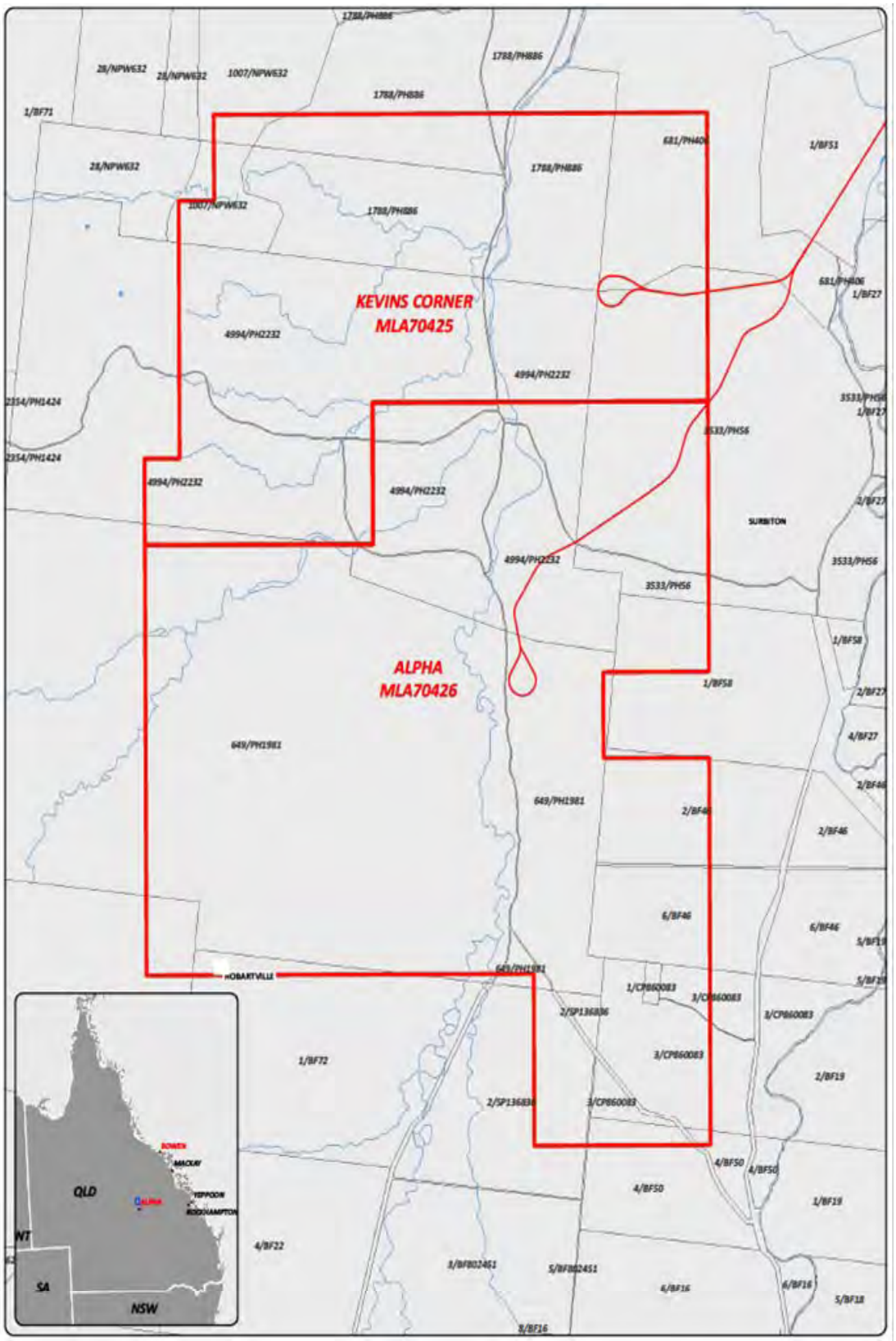
- **Project:** Hancock Galilee Pty Ltd (HGPL) proposes to develop a combined open cut and underground greenfield coal mine to service export markets for thermal coal.
- **Location:** the project site is located in the Galilee Basin, Central Queensland approximately 56 kilometres (km) north of the township of Alpha (Figure 1), 130 km south-west of the township of Clermont and approximately 360 km south-west of Mackay in Central Queensland.
- **Tenure:** HGPL has a mining lease application (MLA) (MLA 70425) and intends to apply for a mining lease covering the mining area of the project (Figure 2).
- **Coal resource:** to date, HGPL has identified a measured, indicated and inferred resource of approximately 1.45 billion tonnes of coal.
- **Mine capacity and life:** the final capacity of the mine is expected to be 30 Mtpa, which will be comparable with HPPL's neighbouring Alpha Coal Mine which was the largest proposed coal mine in Australia at the time it was declared as a significant project. The mine life is expected to be in excess of 30 years.
- **Infrastructure requirements:** Infrastructure to be constructed for the mine includes overland conveyors, surface portals, mine administration facilities, mine exhaust fans, a run of mine (ROM) facility, coal handling and preparation plant (CHPP), storage facilities, access and haul roads, a water pipeline, raw water dams, a rail spur and an accommodation village.
- **Investment:** The expected capital expenditure for the project is $7.5 billion, which consists of capital for the construction of the mine and the relevant portion of rail and port capital.
- **Development timetable:** subject to project approvals, the target commencement date for construction is 2011 and initial coal exports are expected in 2013.
- **Employment, accommodation and transportation:** during construction the mine workforce is expected to be approximately 2500 employees and during operation, a permanent work force of 2000 people is anticipated to be employed. Due to the location of the project and distance from an available and qualified workforce, both during construction and operation, employees would be housed in an accommodation village located on the project site. The workforce would be based on a fly-in-fly-out operation utilising the Alpha Coal project's proposed aerodrome that is presently being assessed in the Alpha Coal project EIS.
- **Water requirements and supply:** the project's total annual water demand would be approximately 11 500 megalitres (ML) per annum and is expected to come from a combination of local groundwater sources and a clean water pipeline from the Connors River Dam or suitable alternative. Of the 11 500 ML, approximately 11 465 ML would be for the mine and 35 ML would be potable water. Raw water will be stored on site in two dams and potable water will be treated at a packaged water treatment plant.

- **Power requirements and supply:** the mine would require up to 248 megawatts of electricity, which could be sourced from the existing 275 kilovolt power grid, which would be extended from Lilyvale to the project site. An option to develop a new power station adjacent to the mine site, based on low value and waste coal and opportunity to supply surplus power to adjacent mining operations, is also to be examined and would be considered as a separate stand alone project.
- **Coal extraction:** there are four main coal seams which are to be targeted by a single open-cut operation and a further one or two seams that would be targeted through longwall underground mining. Draglines, shovels and trucks will be used to expose the open-cut seams for the duration of the mine life. Truck and shovel mining methods and conveyors will be used to extract the coal and deliver it to the CHPP. Modern underground development and longwall systems would be used to extract the deeper coal reserves.
- **Coal processing and waste disposal:** raw coal will be processed at a ROM facility where it will be reduced in size for further processing. Sized raw coal will be transferred via conveyor to a multi-module coal handling and preparation plant consisting of single stage dense medium cyclone and spiral circuits. Coarse rejects will be deposited to a stockpile adjacent to the CHPP, while tailings material would be pumped to a tailings dam for future rehabilitation. Overburden will be stockpiled in out-of-pit spoil dumps and will also be used to partially backfill the pits.
- **Coal product transportation requirements:** transportation of the coal to port would be via a railway spur line to be connected to the proposed Alpha Coal project's rail line and export terminal on the coast. The rail line and export terminal infrastructure are presently being assessed as part of the Alpha Coal project EIS.

For further information on the project, as well as the Alpha Coal project, please go to the Department of Infrastructure and Planning's (DIP) website at www.dip.qld.gov.au/projects

Figure 1: Project locality map

Figure 2: Project tenement map



2. Project proponent

HGPL is a wholly owned subsidiary of HPPL. HPPL is a diversified Australian prospecting and mining company that has discovered mineral deposits throughout Australia. Founded by the late Lang Hancock over 50 years ago, Hancock has a long history in the minerals, exploration and development industries across Australia. The company has held coal tenements in Queensland for almost 30 years.

Contact details for HGPL are as follows:

Hancock House
355 Queen Street
Brisbane
QLD 4000

Phone: (07) 3231 9600

3. Legislative framework

On 10 August 2009, HPPL lodged an initial advice statement (IAS) for its proposed Kevin's Corner project (the project) with the Queensland Coordinator-General to seek 'significant project' declaration under the *State Development and Public Works Organisation Act 1971* (SDPWO Act). The IAS provides an outline of the proposed project, including the project rationale and its potential impacts.

On 11 September 2009, the Coordinator-General declared the Kevin's Corner project to be a 'significant project' under section 26(1)(a) of SDPWO Act. This declaration initiates the statutory environmental impact assessment procedure of Part 4 of the SDPWO Act, which requires the proponent to prepare an environmental impact statement (EIS) for the project.

On 11 August 2009, the proponent referred the project to the Commonwealth Government Minister for the Environment, Heritage and the Arts for a decision as to whether the project constitutes a 'controlled action' under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) (referral No. 2009/5033).

On 8 September 2009, the delegate of the Australian Minister for Environment, Heritage and the Arts determined that the project was a 'controlled action' under the EPBC Act due to the likely potential impacts on matters of national environmental significance (MNES). The controlling provisions under the EPBC Act are: sections 18 and 18A (listed threatened species and ecological communities); sections 20 and 20A (listed migratory species).

As a consequence, the project requires assessment and approval under the EPBC Act. In accordance with the Minister's decision on the assessment approach, determined on 24 September 2009, the project will be assessed under the bilateral agreement with the Queensland Government. 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 Australian and Queensland legislation. The project will require approval from the responsible Australian Minister under Part 9 of the EPBC Act before it can proceed.

Consequently, the term EIS used in these terms of reference (TOR) should be interpreted as satisfying the impact assessment requirements of all relevant Queensland and Australian Government legislation.

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

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

The proponent will prepare an EIS to address the TOR. Once the EIS has been prepared to the satisfaction of the Coordinator-General, a public notice will be advertised in relevant newspapers circulating in the region and nationally. The notice will state where copies of the EIS can be viewed or purchased, the submission period and where submissions should be sent. The proponent may also be required to prepare 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 evaluation report) evaluating the EIS and other relevant material, pursuant to section 35 of the SDPWO Act. The Coordinator-General's evaluation 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; and any other material the Coordinator-General considers relevant to the project such as a supplementary EIS, comments and advice from advisory agencies and other entities, technical reports and legal advice.

The Coordinator-General's evaluation report will be publicly notified by placing it on the DIP website (www.dip.qld.gov.au). The Coordinator-General's evaluation report will also be presented to the proponent, the *Sustainable Planning Act 2009* (SPA) assessment manager, the Queensland Minister administering the *Environmental Protection Act 1994* (EP Act) and the Queensland Minister administering the *Mineral Resources Act 1989* (MRA) if relevant. As the project was determined to be a 'controlled action' under the EPBC Act, the report will also be provided to the Commonwealth Minister responsible for administering Part 9 of the EPBC Act.

Similarly, the Coordinator-General's evaluation report may, under section 47C or 49 of the SDPWO Act, state conditions for any draft environmental authority under the EP Act for the proposed environmental authority (mining activities). If conditions are included in the report:

- the Coordinator-General must give the Minister responsible for the EP Act a copy of the report
- the environmental authority must include the conditions.

Similarly, under section 45 of the SDPWO Act, the Coordinator-General's evaluation report may state conditions for the proposed mining lease(s) under the MRA. If Coordinator-General conditions are included in the report:

- the Coordinator-General must give a copy of the report to the Minister responsible for the MRA
- the conditions of the proposed mining lease, subject to any inconsistency with native title conditions that have paramountcy under section 47 of the SDPWO Act, are taken to include the Coordinator-General conditions.

If the project involves development requiring an application for a development approval under SPA, the Coordinator-General's evaluation 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 only part of the development
- that the approval must be a preliminary approval only.

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

- that there are no conditions or requirements for the project or

- that the application for development approval be refused.

The Coordinator-General's evaluation report must state the reasons if the application for development is to be refused.

4. Terms of reference

These TOR are for an EIS for the Kevin's Corner project proposed by HGPL. The TOR have been prepared in accordance with the requirements of sections 29 and 30 of the SDPWO Act and section 101 of the EPBC Act.

The objective of the TOR is to identify those matters that should be addressed in the EIS. The TOR are based on the outline of the proposed project provided in the IAS and the Commonwealth referrals.

While the interpretation of these TOR remains with the Coordinator-General, in order to clarify the nature and level of investigations that are envisaged in the TOR, the proponent is encouraged to consult further with relevant government bodies (known as advisory agencies), peak organisations and community interest groups as necessary during the preparation of the EIS.

The TOR should not be interpreted as excluding from consideration any matters that are currently unforeseen, may arise during ongoing scientific studies or may arise from any changes in the nature of the project during the preparation of the EIS, the community consultation process and associated documentation.

Culturally sensitive information should not be disclosed in the EIS or any associated documents and the disclosure of any such information should only be in accordance with the arrangements negotiated with the traditional custodians. Confidential information to be taken into consideration in making a decision on the EIS should be marked as such and be included as a separate attachment to the main report.

The EIS should address, as a minimum, the requirements as set out in these TOR.

5. EIS objectives

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

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

- **for interested bodies and persons:** a basis for understanding the project, prudent and feasible alternatives, affected environmental values, impacts that may occur and the measures to be taken to mitigate all adverse impacts
- **for affected groups or persons:** that is, groups or persons with rights or interests in land, as defined under section 38 of the *Environmental Protection Act 1999* or water as defined under the *Water Act 2000*
- **for government agencies and referral bodies:** a framework for decision-makers to assess the environmental aspects of the proposed project with respect to legislative and policy provisions, and based on that information, to make an informed decision on whether the project should proceed or not and if so, subject to what conditions, if any
- **for the proponent:** a mechanism by which the potential environmental impacts of the project are identified and understood, including information to support the development of management measures, such as an environmental management plan, to mitigate the effects of adverse environmental impacts of the development.

The proponent is required to address the TOR to the satisfaction of the Coordinator-General before the EIS is made publicly available. It should be noted that the Coordinator-General does not evaluate the EIS until public notification is completed and the Coordinator-General has obtained any other material the Coordinator-General considers relevant to the project, including additional information or comment about the EIS and the project from the proponent.

6. 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 appendices containing relevant data, technical reports and other sources of the EIS analysis. In preparing the EIS, the approach to be adopted requires that:

- scientific studies are used to predict 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 environmental management plan
- 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 etc.) should be presented.

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

7. Stakeholder consultation

The proponent should undertake a comprehensive and inclusive consultation plan with the stakeholders identified in Part A–section 5. 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.

8. General EIS format

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. There should be clear demarcation between material in the EIS that refers to any separate project components to allow assessment agencies and other readers to differentiate between the project components.

The EIS should contain (possibly as part of the executive summary) a one page, brief guide as to where a range of categories of information for various readers are located in the report. This should particularly cover subjects that are presented in a number of places in the EIS.

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

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.

The EIS should be produced in a format suitable for publishing on the proponent's web site and an executive summary, no larger than 2 MB in size, should be provided for placement on the DIP web site. Both sites should include hyperlinks to each other.

Consideration should be given to publishing the EIS as a website in HTML for the main body of the report with supporting material as PDF files. If the EIS is published on a website in HTML, it must meet the *W3C web content accessibility guidelines (WCAG)* as outlined at www.w3.org/WAI/intro/wcag.php.

Alternatively the EIS may be produced completely as PDF documents which must be no larger than 2 MB in size. Documents can be provided in sections to meet this size requirement. Text size and graphics files included in the PDF document should be of sufficient resolution to facilitate reading and enable legible printing. PDF documents must be accessible and it is recommended they are produced in accordance with Adobe's PDF accessibility best practice guides available at: www.adobe.com/accessibility/products/acrobat/training.html.

PDF documents must, at a minimum, meet the following accessibility requirements:

- document structure tags and proper read order
- searchable text
- alternative text descriptions
- security that does not interfere with assistive technology.

The EIS should also be produced on CD-ROM or other electronic memory device in Adobe®PDF format. All compression must be down-sampled to 72 dpi (or ppi).

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

9. DIP contact details

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

EIS Project Manager—Kevin's Corner project
Significant Projects Coordination
Department of **Infrastructure and Planning**
PO Box 15009
City East Qld 4002
tel: +61 7 3224 4736
fax: +61 7 3225 8282
email: kevinscorner@dip.qld.gov.au

www.dip.qld.gov.au

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 DIP. Detailed cross-references describing where the EIS responds to the TOR should be included in the appendices.

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 able to be reproduced on request and distributed to interested parties who may not wish to read or purchase the EIS as a whole.

The executive summary should include:

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

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

Glossary of terms

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

1 Introduction

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

1.1 Project proponent

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

1.2 Project description

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

1.3 Project rationale

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

1.4 Relationship to other projects

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

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

1.5 Alternatives to the project

This section should describe feasible alternatives including conceptual, technological and locality alternatives to the proposed project, as well as discussion of the consequences of not proceeding with the project. Alternatives should be discussed in sufficient detail to enable an understanding of the reasons for preferring certain options or courses of action and rejecting others. This should include a discussion of the 'no action' option. A discussion of the methodology adopted to discern between the feasible options should be included.

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

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.

This section should also comply with the EPBC Act regulations listed in section 2.01(g) of Schedule 4.

1.6 Co-location opportunities

Opportunities may exist for co-location of existing or proposed infrastructure enabling efficiency gains and the mitigation of environmental, social and property impacts. The proponent should identify any proposals to develop infrastructure within the vicinity of the proposed project. Such proposals would be limited to those projects which are in the public arena during the period of preparation of this EIS and for which a proponent can be readily identified.

Whilst it may be inappropriate for this EIS to evaluate the environmental impacts of other infrastructure not directly required for this project, the EIS should describe the broad implications of locating other forms of linear infrastructure within or near the proposed project infrastructure. Where co-location may be likely, the EIS should consider opportunities to coordinate or enhance any of the impact mitigation strategies proposed through cooperation with other proponents in the locality.

1.7 The environmental impact assessment process

1.7.1 Methodology of the EIS

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

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

1.7.2 Objectives of the EIS

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

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

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

1.7.3 Submissions

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

1.8 Public consultation process

The public consultation process should provide opportunities for community involvement and education. It may include interviews with individuals, public communication activities, interest group meetings, production of regular summary information and updates (i.e. newsletters), and other consultation mechanisms to encourage and facilitate active public consultation. Public consultation processes (community engagement) for all parts of the EIS should be integrated.

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

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

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

Information about the consultation process that has taken place and the results should be provided.

1.9 Project approvals

1.9.1 Relevant legislation and approvals

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

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

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

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

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

- *Aboriginal Cultural Heritage Act 2003*
- *Environmental Protection Act 1994*
- *Fisheries Act 1994*
- *Land Act 1994*
- *Land Protection (Pest and Stock Route Management) Act 2002*
- *Mineral Resources Act 1989*
- *Nature Conservation Act 1992*
- *Queensland Heritage Act 1992*
- *Sustainable Planning Act 2009*
- *Torres Strait Islander Cultural Heritage Act 2003*
- *Transport Infrastructure Act 1994*
- *Vegetation Management Act 1999*
- *Water Act 2000.*

1.9.2 Relevant plans

This section should outline the project's consistency with the existing national, state, regional and local planning framework that applies to the project location. This should include reference to all relevant statutory and non-statutory plans, including Water Resources Plans under the *Water Act 2000*, planning policies, guidelines, strategies and agreements.

1.9.3 Accredited process for controlled actions under Australian Government legislation

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

Section 9 outlines the requirements in relation to this matter.

2 Description of the project

The objective of this section is to describe the project through its lifetime of construction, operation and potentially decommissioning. 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

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

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

2.2 Location

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

- the location and boundaries of current or proposed land tenures, that the project area is or will be subject to
- the location and boundaries of the project footprint, including easement widths and access requirements
- the location of any proposed buffers surrounding the working areas (for construction and operation)
- the location of existing infrastructure such as roads, weirs, powerlines, and marine infrastructure as relevant
- the location of geomorphic features such as waterways (e.g. rivers, streams, creeks and other waterbodies), shorelines and wetlands
- the location of any proposed project infrastructure requirements (e.g. site offices and accommodation sites), with reference to size, type and use, during all project phases.

2.3 Construction

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

2.3.1 Pre-construction activities

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

- any land acquisitions required, be it in full or as easements, leases, etc.
- vegetation clearing
- site access
- earthworks
- interference with watercourses (e.g. rivers, streams, creeks other waterbodies and wetlands)
- site establishment requirements for construction facilities, including access restriction measures
- temporary works
- upgrade, relocation, realignment or deviation of roads and other infrastructure.

2.3.2 Construction

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

- an indicative construction timetable, including expected commissioning and start-up dates and hours of operation
- description of major work programs for the construction phase, including an outline of construction methodologies
- 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 camp site(s) and storage areas.

2.3.3 Commissioning

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

2.4 Operation

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

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

2.5 Associated infrastructure

This section should detail, with concept and layout plans, requirements for new infrastructure or the upgrading/relocating of existing infrastructure to service the project. Matters to be considered include such infrastructure as transportation, water supply, energy supply, telecommunications, stormwater, waste disposal, accommodation and sewerage.

The associated rail infrastructure component of the project should contain the:

- location of the rail corridor, railway and associated rail infrastructure
- location and boundaries of land tenures, in place or proposed, to which the rail component is or will be subject
- point of interface between the main rail corridor, branch line and proposed balloon loop
- location and boundaries of the rail project footprint showing all key aspects including excavations, stockpiles, areas of fill, watercourses, bridges, culverts, handstands, etc
- location of all proposed project rail transport and coal loading infrastructure.

As such, consideration should also be given to resource extraction areas, access roads, and connection to sewerage or water supply, should be described including the design and construction standards to be met (e.g. waterway crossings should be designed to meet the requirements of the *Fisheries Act 1994* and in consultation with the Department of Employment, Economic Development and Innovation). Alternative approaches or the opportunity of obtaining materials from alternative sources should be discussed.

2.5.1 Water distribution infrastructure

The process and criteria used for the selection of the preferred design and preferred construction techniques should be described, including:

- the method of extracting and/or releasing water from the storage
- any treatment methods proposed
- if distribution is by pipe:
  - provision for route refinement and right of way.
  - pipeline design parameters, including capacity and design life
  - above ground facilities–physical dimensions and construction materials for surface facilities along the pipeline route, including information on pipeline markers
  - the location and/or frequency of (if applicable) cathodic protection points, off-take valves, pump stations, balance tanks, control valves (isolation points), pigging facilities and any other project facilities and linkages to existing water supply infrastructure along the pipeline route
  - design measures to prevent inter-basin transfer of aquatic flora and fauna.

2.6 Decommissioning and rehabilitation

This section should describe the options, strategies and methods for progressive and final rehabilitation of the environment disturbed by the project, including:

- a preferred rehabilitation strategy should be developed with a view to minimising the amount of land disturbed at any one time

- the final topography of any excavations, waste areas and dam sites and subsidence areas should be shown on maps at a suitable scale
- the means of decommissioning the project, in terms of the removal of equipment, structures and buildings, and the methods proposed for the stabilisation of the affected areas
- options and methods for the disposal of wastes from the demolition of the project infrastructure should be discussed in sufficient detail for their feasibility and suitability to be established
- a discussion of future land tenure arrangements post decommissioning of the project.

Detail of the impacts of the preferred rehabilitation strategy should be discussed in the appropriate subsections of section 3.

Reference should also be made to infrastructure that is not intended to be decommissioned. In this situation the entity, to which the infrastructure is intended to be transferred, should be described with the proposed environmental management regimes.

3 Environmental values and management of impacts

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

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 environmental protection objectives, standards and measurable indicators to be achieved
- examine viable alternative strategies for managing impacts. These alternatives should be presented and compared in view of the stated objectives and standards to be achieved.
- discuss the available techniques to control and manage impacts in relation to the nominated objectives.

Proposals to offset any impacts should be presented in accordance with the *Queensland Government Environmental Offset Policy* (2008),

Offsets must be discussed with regard to impacts on EPBC Act matters, reference should be made to the eight principles set out in the DEWHA's Draft *Policy Statement: Use of Environmental Offsets under the Environment Protection and Biodiversity Conservation Act 1999* or the finalised policy if available when the EIS is produced and its accompanying Discussion Paper in August 2007.

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

3.1 Climate, natural hazards and climate change

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

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

An assessment of climate change risks and possible adaptation strategies should be included, as well as the following:

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

3.1.1 Flood plain management

Due to the site location a comprehensive flood study should be included in the EIS,including:

- 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.

3.1.1.1 Potential impacts and mitigation measures

Details should be provided 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, and
- impacts and mitigation measures for flooding. The construction of any flood protection levees should be described with regards to construction material, design and methods.

3.2 Land

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

3.2.1 Scenic amenity and lighting

3.2.1.1 Description of environmental values

This section should describe in general terms the existing character of the landscape and the general impression that would be obtained while travelling through and around it. It should outline existing landscape features, panoramas and views that have, or could be expected to have, value to the community. Information in the form of maps and photographs should be used, particularly where addressing the following issues:

- major views, view sheds, outlooks, and features contributing to the amenity of the area, including assessment from private residences

- focal points, landmarks, waterways (e.g. rivers, streams, creeks other waterbodies and wetlands) and other features contributing to the visual quality of the area and the project site(s)
- character of the local and surrounding areas including vegetation and land use.

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.

3.2.1.2 Potential impacts and mitigation measures

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

3.2.1.3 Lighting

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

- the 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.

3.2.2 Topography, geology and soils

3.2.2.1 Description of environmental values

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

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

Existing land system and reconnaissance soil data sets for the project area should be reviewed and discussed. A soil survey of the sites affected by the project must be conducted at 1:25 000 scale or larger as set out in Land Suitability Assessment Techniques in the *Technical Guidelines for the Environmental Management of Exploration and mining in Queensland* (1995), the *State Planning Policy 1/92: Development and the conservation of agricultural land* and described according to the *Australian Soil and Land Survey Field Handbook* (NCST 2009) and *Australian Soil Classification* (Isbell, 1996).

The soil physical and chemical properties of the materials that will influence topsoil stripping suitability for cropping and grazing, erosion potential, storm water run-off quality, rehabilitation and agricultural productivity of the land should be recorded and discussed. Information must also be provided on the engineering properties of the soils such as soil stability and suitability for construction of project facilities.

Mineral resources

The EIS should provide a summary of the results of studies and surveys undertaken to identify and delineate the mineral resources within the project area (including any areas underlying related infrastructure).

The location, tonnage and quality of the mineral resources within the project area should be described in detail as indicated below. For coal projects, where possible it should be presented on a 'seam by seam' basis and include the modifying factors and assumptions made in arriving at the estimates. The mineral resources should be estimated and reported in accordance with the *Australasian code for reporting of mineral resources and ore reserves* (the JORC Code - available at www.jorc.org/main.php) and the principles outlined in the *Australian guidelines for the estimating and reporting of inventory coal, coal resources and coal reserves* (available at www.jorc.org/pdf/coalguidelines.pdf).

In addition, maps (at appropriate scales) should be provided showing the general location of the project area In particular the:

- location and aerial extent of the mineral resources to be developed or mined
- location and boundaries of mining tenures, granted or proposed, to which the project area is, or will be subject
- location of the proposed mine excavation(s)
- location and boundaries of any project sites
- location and boundaries of any other features that will result from the proposed mining including waste/spoil dumps, water storage facilities and other infrastructure
- location of any proposed buffers, surrounding the working areas, and
- any part of the resource not intended to be mined and any part of the resource that may be sterilised by the proposed mining operations or infrastructure.

3.2.2.2 Potential impacts and mitigation measures

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

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

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

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

It should summarise methods proposed to prevent or control erosion with regard to (a) the *Soil Erosion and Sediment Control - Engineering Guidelines for Queensland Construction Sites* (Institute of Engineers Australia (Qld Division) 1996); (b) the EPA Guideline–*EPA Best Practice Urban Stormwater Management: Erosion and Sediment Contro*l; (c) preventing soil

loss in order to maintain land capability/suitability; and (d) preventing degradation of local waterways.

The potential for acid generation by disturbance of acid sulfate soils during earthworks and construction should be discussed and measures for management of soils and mitigation of impacts should be proposed for all site earthworks and construction activities. Should action criteria be triggered by acid generating potential as a result of testing, management measures are to be outlined in an Acid Sulfate Soils Management Plan prepared in accordance with Queensland Acid Sulfate Soils Investigation Team (QASSIT) guidelines and the requirements of State Planning Policy 2/02: *Planning and Managing Development Involving Acid Sulfate Soils* and its accompanying Guideline 2/02.

Resource utilisation

The EIS should analyse the effectiveness of the mining proposal in achieving the optimum utilisation of the coal/mineral resources within the project area and consider its impacts on other resources. It should demonstrate that the mining proposal will 'best develop' the mineral resources within the project area, minimise resource wastage and avoid any unnecessary sterilisation of these or any other of the state's coal, mineral, and petroleum (including gas and coal seam methane) resources that may be impacted upon or sterilised by the mining activities or related infrastructure.

Subsidence

This section will provide comprehensive surface subsidence predictions taking into account factors such as topographic variations and geological complexities, with a full description of the methodology and including an assessment of the reliability of the predictions. The results of the predictions will be shown on maps with one metre contour increments and a scale appropriate for assessment of surface subsidence impacts. Mitigation measures will be proposed to deal with any significant impacts that would result from subsidence.

Land disturbance

A strategy should be developed that will minimise the amount of land disturbed at any one time. The strategic approach to progressive rehabilitation of landforms and final decommissioning should be described. The methods to be used for the proposal, including backfilling, covering, re-contouring, topsoil handling and revegetation, should be described.

Where waterways are proposed to be diverted, the impact on land use due to hydrology changes, both upstream and downstream, should be described. Also, the final drainage and seepage control systems and any long-term monitoring plans should be detailed.

Where dams, roads, levee banks, waterway diversions, other waterway barriers and other infrastructure are to remain upon project decommissioning, proposals for the management and maintenance of these structures should be given. All proposals should protect any residual voids from 'probable maximum flood level' based on the Bureau of Meteorology's 'probable maximum precipitation' forecast for the locality from nearby watercourses such that the protection is sustainable for the foreseeable future. The EIS should also demonstrate where final voids and uncompacted overburden and workings at the end of mining would lie in relation to flood levels up to and including the probable maximum flood level. Management and maintenance arrangements should be supported by appropriate erosion and stability monitoring to substantiate long-term rehabilitation sustainability.

The EIS should include, but not limited to:

- the predicted storage capacity of void water during AEP 1 in 25, 1 in 50, 1 in 100, 1 in 200 and 1 in 1000 year rainfall events and potential for discharge
- the predicted quality of void water during potential release events

- the predicted impact on the environment caused by the release of any void water
- modelling and assessment of practicable management measures to mitigate contaminant increases in storage dams
- develop a monitoring program to be undertaken both during and after mining, to assess the performance of the proposed management measures, and
- the ability of the final void water to meet the rehabilitation criteria being safe, stable and non-polluting.

The mitigation measures for land disturbance to be used on decommissioning the site should be assessed in sufficient detail to decide their feasibility. In particular, the EIS should address the long-term stability of final voids and spoil dumps, safety of access to the site after surrender of the lease, and the residual risks that will be transferred to the subsequent landholder.

A description of topsoil management should consider transport, storage and replacement of topsoil to disturbed areas. The topsoil management should also outline how soil from good quality agricultural land will be best utilised. Minimising topsoil storage times (to reduce fertility degradation) should also be addressed. Erosion and sediment control measures should be described, particularly in relation to the management of sodic and saline overburden material.

If geological conditions are conducive, the proponent should consider the possibility that significant fossil specimens (such as of dinosaurs or their tracks) may be uncovered during construction/operations and propose strategies for protecting the specimens and alerting the Queensland Museum to the find.

3.2.3 Land contamination

3.2.3.1 Description of environmental values

The following information needs to be presented in the EIS:

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

3.2.3.2 Potential impacts and mitigation measures

The EIS should discuss the management of any contaminated land and potential for contamination from construction, commissioning and operation, in accordance with Department of Environment and Resource Management (DERM – formerly EPA) *Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland* (1998) and the *National Environment Protection (Assessment of Site Contamination) Measure* (1999).

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

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

3.2.4 Land use and tenure

3.2.4.1 Description of environmental situation

The EIS should identify, with the aid of maps:

- land tenure, including reserves, tenure of special interest such as protected areas and forest reserves, identification of existing and proposed gas, water pipelines, power lines and transport corridors, including local roads, state-controlled roads and rail corridors
- existing land uses and facilities surrounding the project. The land use suitability of the project area in terms of the physical and economic attributes, in particular for broadscale rainfed cropping and grazing should be assessed. The assessment should set out soil and landform subclasses assigned to soil mapping units in order to derive land suitability classes. The limitations and land suitability classification system should comply with that in Attachment 2 of Land Suitability Assessment Techniques in the *Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland* (1995)
- The Agricultural Land Classes should be assessed and Good Quality Agricultural Land identified according to State Planning Policy 1/92 Guidelines: *The Identification of Good Quality Agricultural Land* (DHLGP 1993).
- areas covered by applications for native title claims or native title determinations, providing boundary descriptions of native title representative body(ies). The proponent should also identify in the EIS whether there are any necessary notifications required to the representative body(ies) or evidence that native title does not exist
- include the identification of affected stock routes and consultation with Stock Route Management Unit staff of DERM
- distance of the project from residential and recreational areas
- declared water storage catchments
- location of the project in relation to environmentally sensitive areas.

3.2.4.2 Potential impacts and mitigation measures

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

A description of the following should be included:

- impacts on surrounding land uses and human activities and strategies for minimisation, such as:
  - good quality agricultural land
  - key resource areas (refer to *State Planning Policy 2/07: Protection of Extractive Resources and Guideline*)
  - residential and industrial uses
- possible effect on town planning objectives and controls, including local government zoning and strategic plans
- constraints to potential developments and possibilities of rezoning adjacent to the development area
- management of the immediate environs of the project including construction buffer zones
- the identification of the potential native title rights and interests likely to be impacted upon by the project and the potential for management of those impacts by an Indigenous Land Use Agreement or other native title compliance outcomes
- include mitigation strategies for potential adverse impacts of the project on the State's stock route network in consultation with Stock Route Management Unit staff of DERM
- proposed land use changes in any areas of high conservation value and information on how easement widths and vegetation clearance in sensitive environmental areas will be minimised
- potential issues involved in proximity and/or co-location of other current or proposed infrastructure services
- potential impacts on future road and rail upgrades
- identification of any land units requiring specific management measures.

3.3 Nature conservation

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

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

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

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

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

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

3.3.1 Sensitive environmental areas

3.3.1.1 Description of environmental values

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

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

- important habitats of species listed under the *Nature Conservation Act 1992* and/or Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* as presumed extinct, endangered, vulnerable or rare
- regional ecosystems listed as 'endangered' or 'of concern' under State legislation, and/or ecosystems listed as presumed extinct, endangered or vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
- good representative examples of remnant regional ecosystems or regional ecosystems which are described as having 'medium' or 'low' representation in the protected area estate as defined in the *Regional Ecosystem Description Database* available at the DERM website 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 Convention of Migratory Species of Wild Animals, and/or bilateral agreements between Australia and Japan (JAMBA) and between Australia and China (CAMBA)
- sites adjacent to nesting beaches, feeding, resting or calving areas of species of special interest, for example, marine turtles, dugong and cetaceans
- sites containing common species which represent a distributional limit and are of scientific value or which contains feeding, breeding, resting areas for populations of echidna, koala, platypus and other species of special cultural significance
- sites containing high biodiversity that are of a suitable size or with connectivity to corridors/protected areas to ensure survival in the longer term; such land may contain:
  - natural vegetation in good condition or other habitat in good condition (e.g. wetlands)
  - degraded vegetation or other habitats that still supports high levels of biodiversity or acts as an important corridor for maintaining high levels of biodiversity in the area
- a site containing other special ecological values, for example, high habitat diversity and areas of high endemism

- ecosystems which provide important ecological functions such as: wetlands of national, state and regional significance; coral reefs; riparian vegetation; important buffer to a protected area or important habitat corridor between areas
- sites of palaeontologic significance, such as fossil sites
- sites of geomorphological significance, such as lava tubes or karst
- protected areas which have been proclaimed under the *Nature Conservation Act 1992* and *Marine Parks Act 1982* or are under consideration for proclamation
- areas of major interest, or critical habitat declared under the *Nature Conservation Act 1992* or high nature conservation value areas or areas vulnerable to land degradation under the *Vegetation Management Act 1999*.

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

3.3.1.2 Potential impacts and mitigation measures

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

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

- avoiding impact on areas of remnant vegetation and other areas of conservation value
- mitigation of impacts through rehabilitation and restoration including, where relevant, a discussion of any relevant previous experience or trials of the proposed rehabilitation
- measures to be taken to replace or offset the loss of conservation values where avoidance and mitigation of impacts cannot be achieved
- explanation of why measures above would not apply in areas where loss would occur.

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

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

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

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

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

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

3.3.2 Terrestrial flora

3.3.2.1 Description of environmental values

This section should 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:

- 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 Vegetation Management Act 1999
- 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*)
- location of any horticultural crops in the vicinity of the project area
- location and abundance of any exotic or weed species. Reference should be made to Biosecurity Queensland's Annual Pest Distribution Survey 2008 data and predictive maps available on the DEEDI website and be used in conjunction with Queensland Herbarium naturalised flora data to source the occurrence of pest plants in the project area. Local Government Area Pest Management Plans should also be utilised to source the occurrence of priority pest plants in the project area.
- any plant communities of cultural, commercial or recreational significance should be identified.

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

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

- the relevant *Regional Vegetation Management Codes*
- site data should be recorded in a form compatible with the Queensland Herbarium *CORVEG* database
- the minimum site size should be 10 by 50 metres
- a complete list of species present at each site should be recorded
- the surveys 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 1994*, other than common species, are to be submitted to the Queensland Herbarium for identification.

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

3.3.2.2 Potential impacts and mitigation measures

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

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

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

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

If offsets are proposed as a result of the unavoidable loss of vegetation, it must be explained how the offsets would be managed in a way consistent with the Queensland Governments Environmental Offsets Policy.

3.3.3 Terrestrial fauna

3.3.3.1 Description of environmental values

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

- 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. Reference should be made to Biosecurity Queensland's Annual Pest Distribution Survey 2008 data and predictive maps available on the DEEDI website www.deedi.qld.gov.au. Local Government Area Pest Management Plans should also be utilised to source the occurrence of priority pest animals in the project area
- 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.

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

3.3.3.2 Potential impacts and mitigation measures

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

- impacts due to loss of range/habitat, food supply, nest sites, breeding/recruiting potential or movement corridors or as a result of hydrological change
- impacts on species of conservation significance
- cumulative effects of direct and indirect impacts
- threatening processes leading to progressive loss.

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

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

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

Feral animal management strategies and practices should be addressed. The study should develop strategies to ensure that the project does not contribute to increased encroachment of a feral animal species. Reference should be made to the local government authority's pest management plan and any strategies and plans recommended for the project area by

Biosecurity Queensland. The strategies should be discussed in accordance with provisions of the *Land Protection (Pest and Stock Route Management) Act 2002* in the main body of the EIS and in the pest management plan within the EMP for the project.

3.3.4 Aquatic biology

3.3.4.1 Description of environmental values

The aquatic flora and fauna occurring in the areas affected by the proposal should be described, noting the patterns and distribution in the waterways (e.g. rivers, streams. creeks and other waterbodies) and any associated wetlands. The description of the flora and fauna 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
- any rare or threatened marine species
- description of the habitat requirements, including movement 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. Reference should be made to Biosecurity Queensland's Annual Pest Distribution Survey 2008 data and predictive maps available on the DEEDI website www.deedi.qld.gov.au and used in conjunction with Queensland Herbarium naturalised flora data to source the occurrence of aquatic pest plants in the project area. Local Government Area Pest Management Plans should also be utilised to source the occurrence of priority aquatic pest plants in the project area.
- aquatic and benthic substrate
- habitat downstream of the project or potentially impacted due to currents in associated lacustrine and marine environments
- identification of all types of groundwater dependent ecosystems occurring within and outside the project area and potentially impacted by project activities. An assessment should be made of the environmental water requirements for the protection of the indentified groundwater dependent ecosystems. Groundwater dependent ecosystems may include:
  - subterranean ecosystems
  - phreatophytic terrestrial and riparian vegetation
  - springs and other wetlands. and
  - stream communities dependent on baseflow.
- aquatic substrate and stream type, including the locations and extent of any permanent and semi-permanent water holes or streams potentially affected by the mine and its operations.

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.

3.3.4.2 Potential impacts and mitigation measures

This section should provide a discussion of the potential impacts of the project on the aquatic ecosystems and a description of proposed mitigation actions, including:

- details of proposed stream diversions, causeway construction and crossing facilities, stockpiled material and other impediments that would restrict free movement of aquatic fauna

- measures to avoid fish spawning periods, such as seasonal construction of waterway crossings or other waterway barriers and measures to facilitate fish movements through water crossings
- details of alternatives to waterway crossings or other waterway barriers where possible
- offsets proposed for unavoidable, permanent loss of fisheries habitat
- a description of methods to minimise the potential for the introduction and/or spread of weed species or plant disease
- measures to avoid or mitigate potential impacts on groundwater dependant ecosystems. Describe the proposed monitoring for each identified groundwater dependent ecosystem.
- monitoring of aquatic biology health, productivity and biodiversity in areas subject to direct discharge.

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

3.4 Water resources

3.4.1 Description of environmental values

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

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

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

The surface water quality should be described considering seasonal variations in flow. This should include water quality indications likely to be affected by the proposal such as electrical conductivity, sulfate, metals (dissolved), turbidity, suspended sediments and pH. All sampling should be performed in accordance with the *Water Quality Sampling Manual* (EPA, 1999) or the most current edition.

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

- values identified in the EPP (Water)
- physical integrity, fluvial processes and morphology, including riparian zone vegetation and form, if relevant
- any impoundments (e.g. dams, levees, weirs etc.) or natural (e.g. cascades) waterway barriers
- hydrology of waterways and groundwater
- sustainability, including both quality and quantity
- dependent ecosystems

- existing and other potential surface and groundwater users
- details of any proposed buffer widths between project activities and waterways (e.g. rivers, streams, creeks, other waterbodies and wetlands) and other fisheries values, as well as any potential temporary and/or permanent impacts to aquatic flora and fauna (if any)
- any water resource plans relevant to the affected catchments.

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

- a comprehensive hydrogeological description covering: the coal seams and surrounding aquifers, both artesian and sub-artesian; inter-aquifer connectivity; flow of water; recharge and discharge mechanisms; and hydrogeological processes at work
- current extraction regime
- geology/stratigraphy
- aquifer type–such as confined, unconfined
- depth to and thickness of the aquifers
- depth to water level and seasonal changes in levels
- groundwater flow directions (defined from water level contours)
- interaction with surface water
- possible sources of recharge
- potential exposure to pollution
- current access to groundwater resources in the form of bores, springs, ponds, including quantitative yield of water and locations of access.

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

For the taking of groundwater, the EIS should review the significance of groundwater in the project area, together with groundwater use in neighbouring areas. Specific reference should be made to relevant legislation or water resource plans for the region. The review should also provide an assessment of the potential take of water from the aquifer and how current users and the aquifer itself and any connected aquifers will be affected.

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

- location, type and status of existing water entitlements and associated infrastructure (bores, wells or excavations)
- pumping parameters
- draw down and recharge at normal pumping rates
- seasonal variations (if records exist) of groundwater levels.

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

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

3.4.2 Potential impacts and mitigation measures

This section should assess potential impacts of the project on water resource environmental values identified in the previous section. It should also define and describe the objectives and practical measures for protecting or enhancing water resource environmental values, to describe how nominated quantitative standards and indicators may be achieved, and how the achievement of the objectives will be monitored, audited and managed. 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
- an assessment of the potential environmental impact caused by the project (and its associated project components) to local groundwater resources, including the potential for groundwater induced salinity
- the response of the groundwater resource to the progression and finally cessation of the proposal should be described
- an assessment the project's impact on the local ground water regime caused by the altered porosity and permeability of any land disturbance
- any potential for the project to impact on groundwater dependent vegetation should be assessed and described, including avoidance and mitigation measures
- potential impacts of surface water flow on existing infrastructure, with reference to the EPP (Water) and the *Water Act 2000*
- chemical and physical properties of any waste water including stormwater at the point of discharge into natural surface waters, including the toxicity of effluent to flora and fauna
- potential impacts on other downstream receiving environments considering the available assimilative capacity of the receiving waters, if it is proposed to discharge water to a riverine system
- if it is proposed to discharge water to a riverine system, mitigation measures for water treatment should be discussed
- 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 ground water resources and measures to prevent, mitigate and remediate such contamination.

The environmental values of the surface waters potentially affected by the project should be identified in accordance with the EPP (Water). Surface water quality objectives should be determined after consideration of the *Queensland Water Quality Guidelines* (EPA, 2007) and the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC & ARMCANZ 2000).

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

Management strategies should be adequately detailed to demonstrate best practice management and that environmental values of receiving waters will be maintained to nominated water quality objectives. Monitoring programs, which will assess the effectiveness of management strategies for protecting water resources during the construction, operation

and decommissioning of the project, should be described. It should also outline how these strategies are incorporated into appropriate sections of the EMP.

The principles and objectives of the proposed monitoring in the coal seams and surrounding aquifers should be identified and include a supporting rationale for the monitoring. The approach should describe the parameters to be monitored, the frequency of monitoring and the proposed recording mechanisms and reporting arrangements.

3.5 Air quality

3.5.1 Description of environmental values

This section should describe the existing air quality that may be affected by the project in the context of environmental values as defined by the EP Act and *Environmental Protection (Air) Policy 2008*.

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

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

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

3.5.2 Potential impacts and mitigation measures

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

- an inventory of air emissions from the project expected during construction and operational activities
- identify 'worst case' emissions that may occur during operation. If these emissions are significantly higher than those for normal operations, it will be necessary to evaluate the worst-case impact as a separate exercise to determine whether the planned buffer distance between the facility and neighbouring sensitive receptors will be adequate
- ground level predictions should be made at any sensitive receptor including residential, industrial, agricultural, commercial and community developments believed to be sensitive to the effects of predicted emissions
- dust generation from construction activities especially in areas where construction activities are adjacent existing road networks or are in close proximity to sensitive receivers
- climatic patterns that could affect dust generation and movement
- vehicle emissions and dust generation along major road and rail haulage routes both internal and external to the project site
- human health risk associated with emissions from the facility of all hazardous or toxic pollutants should be assessed
- impacts on terrestrial flora and fauna.

Potential air quality impacts from emissions, must be discussed with reference to the National Environmental Protection Measures (NEPM) for ambient air quality (1998) and the *Environmental Protection (Air) Policy 2008*. If an emission is not addressed in these legislative instruments, the emission should be discussed with reference to its risks to human health, including appropriate health-based guidelines/standards.

To ensure that appropriate coal rail-transport related dust mitigation measures are implemented at the Kevin's Corner project, the proponent should consult with QR Limited's QR Network Division to determine the likely requirements for new or upgraded coal-loading facilities, load controls and spray-on coal dust suppressant systems as a result of the implementation of the Transitional Environmental Program and *QR Coal Dust Management Plan* across all coal railways in Queensland.

3.6 Greenhouse gas emissions

3.6.1 Description of environmental situation

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

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

The Department of Climate Change *National Greenhouse Accounts 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 *National Greenhouse Accounts Factors*, estimates should include the loss of carbon sink capacity of vegetation due to clearing and impoundment.

3.6.2 Potential impacts and mitigation measures

This section should 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.

3.7 Noise and vibration

3.7.1 Description of environmental values

This section should describe the existing noise and vibration environment that may be affected by the project in the context of environmental values as defined by the *Environmental Protection (Noise) Policy 2008.* The DERM's Noise Measurement Manual should be considered and references should be made to the *EPA Guideline: Noise and Vibration from Blasting*.

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

Where a railway is also proposed to be constructed and operated, an assessment of the acoustic impacts of the rail should be carried out in the context of the *QR Code of Practice for Railway Noise Management.*

3.7.2 Potential impacts and mitigation measures

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

- the levels of noise and vibration generated, including noise contours, assessed against current typical background levels, using modelling where appropriate
- impact of noise, including low frequency noise (noise with components below 200 hertz) and vibration at all potentially sensitive receivers compared with the performance indicators and standards nominated above
- impact on terrestrial and aquatic fauna
- proposals to minimise or eliminate these effects, including details of any screening, lining, enclosing or bunding of facilities, or timing schedules for construction and operations that would minimise environmental harm and environmental nuisance from noise and vibration.

3.8 Waste

3.8.1 Waste generation

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

- waste generated by delivery of material to site(s)
- all chemical and mechanical processes conducted on the construction sites that produce waste
- the amount and characteristics of solid and liquid waste produced on-site by the project
- hazardous materials to be stored and/or used on-site, including environmental toxicity data and biodegradability.

3.8.2 Waste management

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

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

The EIS should provide details of waste management strategies (including reduction, reuse, recycling, storage, transport and disposal of waste) which demonstrate that waste minimisation and cleaner production techniques and designs have been implemented through the selection of processes, equipment and facilities to prevent or minimise environmental impacts.

Information should also be provided on the variability, composition and generation rates of all waste produced at the site and processing plant.

Cleaner production waste management planning should be detailed especially as to how these concepts have been applied to preventing or minimising environmental impacts at each stage of the proposal. Measures to improve natural resource use efficiency (e.g. energy and water), integrated processing design, any co-generation of power and by-product reuse as shown in a material/energy flow analysis should be presented.

This information is required to enable the resource management agencies and other stakeholders to assess the efficiency of resource use, and allocation issues.

- **air emissions:** this section should provide information on air emissions, including particulates, fumes and odours, during the construction and operation stages of the project. Particulate emissions include those that would be produced by any industrial process, or disturbed by wind action on stockpiles and conveyors, or by transportation equipment (e.g. trucks, either by entrainment from the load or by passage on unsealed roads). The methods to be employed in the mitigation of impacts from air emissions should be described in the section 3.5.
- **waste rock:** this section should identify and describe waste rock characteristics including but not limited to: net acid producing potential; salinity; the following contaminants: iron (Fe), aluminium (Al), copper (Cu), magnesium (Mg), manganese (Mn), calcium (Ca), sodium (Na) and sulphate (SO4) and the physical properties of the waste rock.
- **excavated waste:** this section should describe the proposed management methods including the location, design and methods for constructing dumps for waste rock and subsoil. The location of the dumps should be shown on a map relative to topography and other natural features of the area.
- **tailings:** this section should describe the tailings waste produced by preparation and/or processing plants and the proposed methods for its disposal. Describe alternative options for tailings disposal including the proposed location, site suitability and volume of any tailings storage and/or disposal site(s), including the method of construction.
  - describe the approximate quantity of tailings to be produced by the project and its processing plant annually for the life of the mine. Tailings characterisation information should also be presented in this section.
  - the construction of the tailings storage facility should be described with regards to construction material and design. The EIS should address how the tailings storage facility complies with relevant codes for the construction of such containment systems
  - describe the strategies to monitor and manage seepage into ground and surface waters. The location of the storage and/or disposal site with regard to adjacent creeks and rivers should be described.
- **solid waste disposal:** describe the quantity and quality of solid wastes (other than waste rock, subsoil and tailings addressed in other sections) and the proposed methods of their disposal. The proposed location, site suitability, dimensions and volume of any landfill, including its method of construction, should be shown.
- **liquid waste:** a description should be presented of the origin, quality and quantity of wastewater and any immiscible liquid waste originating from the project other than that addressed in other sections. Particular attention should be given to the capacity of wastes

to generate acid, and saline or sodic wastewater. A water balance for the proposal and processing plant is required to account for the estimated usage of water.

The EIS may need to consider the following effects:

- groundwater from excavations
- rainfall directly onto disturbed surface areas
- run-off from roads, plant and industrial areas, chemical storage areas
- drainage (i.e. run-off plus any seepage or leakage)
- seepage from other waste storages
- water usage for (1) process use (2) dust suppression, and (3) domestic purposes
- evaporation
- domestic sewage treatment—disposal of liquid effluent and sludge
- water supply treatment plant—disposal of wastes.

3.9 Transport

3.9.1 Existing infrastructure

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

3.9.2 Transport tasks and routes

This section should describe for all phases of the project:

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

3.9.3 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 in general accordance with DTMR *Guidelines for Assessment of Road Impacts of Development 2006*
- description of input data and assumptions
- a summary of consultation undertaken with transport authorities regarding scope of impact assessment and methodology.

The EIS should assess project impacts on:

- capacity, safety, efficiency and condition of transport operations, services and assets (from either transport or project operations)
- any other proposed rail projects in the vicinity of the subject proposal
- possible interruptions to transport operations
- the natural environment within the jurisdiction of an affected transport authority (e.g. road and rail corridors)
- the nature and likelihood of product-spill during transport if relevant
- driver fatigue for workers travelling to and from regional centres and key destinations
- any existing or proposed strategies for public passenger transport and active transport and address, where relevant, requirements of Part 2A of the *Transport Planning and Coordination Act 1994*
- accessibility to transport for people with a disability.

3.9.4 Infrastructure alterations

The EIS should detail:

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

3.9.5 Transport management strategies

The proponent is to discuss and recommend how identified impacts will be mitigated so as to maintain safety, efficiency and condition of each mode. These mitigation strategies are to be prepared by the proponent in close consultation with relevant transport authorities and include consideration of those authority's works program and forward planning.

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

3.10 Indigenous cultural heritage

3.10.1 Description of existing Indigenous cultural heritage values

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

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

3.10.2 Potential impacts and mitigation measures

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

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

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

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

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

If an NT Agreement is not finalised or a CHMP has not been approved, 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 protection and management of Indigenous cultural heritage
- processes for mitigation, management and protection of identified cultural heritage sites and objects in the project areas, including associated infrastructure developments, during both the construction and operational phases of the project
- provisions for the management of the accidental discovery of cultural material, including burials
- a clear recording process to be developed to assist initial management and recording of accidental discoveries
- a cultural heritage induction for project staff
- the development of a cultural heritage awareness program to be incorporated into the contractor/employee manual as well as induction manual. This is to be in the form of a plain language, short document which is easy for contractors and staff ‘on the ground’ to understand
- a conflict resolution process.

3.11 Non-Indigenous cultural heritage

3.11.1 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
- 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.

3.11.2 Potential impacts and mitigation measures

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

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

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

4 Social values and management of impacts

4.1 Description of existing social values

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

4.1.1 Social and cultural area

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

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

4.1.2 Community engagement

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

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

4.1.3 Social baseline study

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

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

- major population trends/changes that may be occurring irrespective of the project

- total population (the total enumerated population for the social and cultural area and the full time equivalent (FTE) transient population), 18 years and older
- estimates of population growth and population forecasts resulting from the proposal
- family structures
- age and gender distributions
- education, including schooling levels
- health and wellbeing measures
- cultural and ethnic characteristics
- the Indigenous population including age and gender
- income including personal and household
- labour force by occupation and industry
- housing costs (monthly housing repayments (percent of dwellings in each category)), and weekly rent (percent dwellings in each category), housing tenure type and landlord type, household and family type
- housing availability and affordability: the rental market (size, vacancy rate, seasonal variations, weekly rent by percentage dwellings in each category); the availability and typical costs of housing for purchase, monthly housing repayments by percentage dwellings in each category; and the availability of social housing
- disability prevalence
- the social and economic index for areas, index of disadvantage—score and relative ranking
- crime, including domestic violence
- any other indicators determined through the community engagement process as relevant.

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

- the social infrastructure including community and civic facilities, services and networks (for definition see *South East Queensland Plan 2005-2026* Implementation Guideline No. 5: www.dip.qld.gov.au/resources/guideline/Implementationguideline5.pdf). Maps illustrating the identified social infrastructure in the area effected by the project should be included
- settlement patterns including the names, locations, size, history and cultural aspects of settlement in the social and cultural area
- the identity, values, lifestyles, vitality, characteristics and aspirations of communities in the social and cultural area, including Indigenous communities.
- land use and land ownership patterns including:
  - rural properties, farms, croplands and grazing areas including on-farm activities near the proposed activities
  - the number of properties directly affected by the project
  - the number of families directly and indirectly affected by the project including Indigenous traditional owners and their families, property owners, and families of workers either living on the property or workers where the property is their primary employment.
- use of the social and cultural area for forestry, fishing, recreation, business and industry, tourism, aquaculture, and Indigenous cultural use of flora and fauna.

4.1.4 Workforce profile

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

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

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

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

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

4.2 Potential impacts

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

- describe and summarise outcomes of community engagement processes including the likely response of the affected communities, including Indigenous people
- include sufficient data to enable affected local and state authorities to make informed decisions about the projects effect on their business and plan for the provision of social infrastructure in the project's social and cultural area. If the project is likely to result in a significant increase in the population of the area, then the proponent should consult the relevant management units of the state authorities and summarise the results of the consultations
- address direct, indirect and secondary impacts from any existing projects and the proposed project including an assessment of the size, significance, and likelihood of these impacts at the local and regional level. Considering the following:
  - key population/demographic shifts; disruptions to existing lifestyles, the health and social wellbeing of families and communities; social dysfunction including alcohol and drugs, crime, violence, and social or cultural disruption due to population influx
  - the needs of vulnerable groups including women, children and young people, the aged and people with a disability
  - Indigenous peoples including cultural property issues

local, regional and state labour markets, with regard to the source of the workforce. This information is to be presented according to occupational groupings of the workforce. Information is required as to whether the proponent, and/or contractors, is likely to employ locally or through other means and whether there are initiatives for local employment business opportunities

- proposed new skills and training related to the project including the occupational skill groups required and potential skill shortages anticipated
- comment on how much service revenue and work from the project would be likely to flow to the project's social and cultural area
- impacts of construction and operational workforces, their families, and associated contractors on housing and accommodation availability and affordability, land use and land availability. The capability of the existing housing and rental accommodation, to meet any additional demands created by the project is to be discussed including direct impacts on Indigenous people. The social impacts on fly-in / fly-out workforce arrangements should also be assessed.

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

4.2.1 Mitigation measures and management strategies

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

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

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

A draft social impact management plan should be presented that promotes an active and ongoing role for impacted communities and local authorities through the project life cycle. The draft plan should cover:

- assignment of accountability and resources

- updates on activities and commitments
- mechanisms to respond to public enquiries and complaints
- mechanisms to resolve disputes with stakeholders
- periodic evaluation of the effectiveness of community engagement processes
- practical mechanisms to monitor and adjust mitigation strategies and action plans
- action plans to implement mitigation strategies and measures.

5 Economies and management of impacts

5.1 Economy

5.1.1 Description of affected local and regional economies

This section should describe the existing economy in which the project is located and the economies materially impacted by the project. It should include:

- a map illustrating the local and regional economies (local government areas) that could be potentially affected by the project
- gross regional product or other appropriate measure of annual economic production
- 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.

5.1.2 Potential Impacts and mitigation measures

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

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

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

5.1.2.1 Strategies for local participation

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

- strategies for assessing the cost effectiveness of sourcing local inputs from the regional economy during the construction, operation and rehabilitation of the project
- employment strategies for local residents including members of Indigenous communities and people with a disability, including a skills assessment and recruitment and training programs to be offered
- strategies responding to relevant government policy, relating to:
  - the level of training provided for construction contracts on Queensland Government building and construction contracts, with regard to the *Queensland Government Building and Construction Contracts Structured Training Policy* (the 10 per cent policy)
  - Indigenous employment opportunities, with regard to the *Indigenous Employment Policy for Queensland Government Building and Civil Construction Projects* (the 20 per cent policy)
  - the use of locally sourced goods and services, with regard to the *Local Industry Policy* (Department of State Development, 1999).

5.1.2.2 Impact upon property management

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

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

5.2 Sustainable development

The EIS should provide a comparative analysis of how the project conforms to the objectives for 'sustainable development'–see the *National Strategy for Ecologically Sustainable Development (1992*), available from the Australian Government Publishing Service.

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

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

6 Hazard and risk

6.1 Hazard and risk assessment

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

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

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

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

In regard to fires, in consultation with emergency services agencies, the EIS should outline strategies to manage the provision of:

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

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

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

A risk management plan should be presented.

6.2 Health and Safety

6.2.1 Description of public health and safety community values

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

6.2.2 Potential Impact and mitigation measures

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

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

6.3 Emergency management plan

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

An outline of the proposed integrated emergency management planning procedures is to be provided (including evacuation plans, if required) for the range of situations identified in the risk assessment developed throughout section 6 , including strategies to deal with natural disasters during operation and construction.

7 Cumulative impacts

This section is to provide a summary of the project's cumulative impacts and a description of these cumulative impacts both in isolation and in combination with those of existing or proposed project(s) publicly known or advised by DIP to be in the region, to the greatest extent practicable. Cumulative impacts should be assessed with respect to both geographic location and environmental values. The methodology used to determine the cumulative impacts of the project should be presented, detailing the range of variables considered, including where applicable, relevant baseline or other criteria upon which the incremental aspects of the project have been assessed.

8 Environmental management plan

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

The EMP included within the EIS should comply with section 203 of the *Environmental Protection Act 1994*.

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

9 Matters of national environmental significance

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

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

- sections 18 and 18A (Listed threatened species and communities)
- sections 20 and 20A (Listed migratory species).

The project should initially be assessed in its own right followed by an assessment of the cumulative impacts related to all known proposed major industrial developments in the project component study areas with respect to each controlling provision, and relevant identified consequential actions.

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.

If environmental offsets are required, in accordance with the EPBC *Draft Environmental Offsets Policy Statement* (August 2007), then an offset strategy should be proposed.

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. Obligations under and implications of any species recovery plans must be specifically addressed.

9.1 Impact on a listed threatened species and ecological communities

This section should include a description of the listed threatened species and ecological communities identified below (including EPBC Act status, distribution, life history, habitats etc.).

The EIS should consider and assess the impacts to the listed threatened species and ecological communities and any others that are found to be or may potentially be present in areas that may be impacted by the project. The EIS should identify which component of the project is of relevance to each species or community or if the threat of impact relates to consequential actions, resulting from:

- decrease in the size of a population or a long term adverse affect on an ecological community
- reduction in the area of occupancy of the species or extent of occurrence of the ecological community
- fragmentation of an existing population or ecological community
- disturbance or destruction of habitat critical to the survival of the species or ecological community
- disruption of the breeding cycle of a population

- modification, destruction, removal, isolate or reduction of the availability or quality of habitat to the extent that the species is likely to decline
- modification or destruction of abiotic (non-living) factors (such as water, nutrients or soil) necessary for the ecological community's survival
- the introduction of invasive species that are harmful to the species or ecological community becoming established
- interference with the recovery of the species or ecological community
- action which may be inconsistent with a recovery plan.

Any positive impacts should also be identified and evaluated.

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 should be discussed within the EIS.

9.2 Impact on a listed migratory species

A description of the listed migratory species identified below (including EPBC Act status, distribution, life history, habitats etc.).

The EIS should consider and assess the impacts to the listed migratory species identified below and any others that are found to be or may potentially be present in areas that may be impacted by the project. The EIS should identify which component of the project is of relevance to each species or if the threat of impact relates to consequential actions, resulting from:

- the destruction, isolation or modification of habitat important to a migratory species
- the introduction of invasive species in an important habitat that would be harmful to a migratory species
- the disruption of the lifecycle (breeding, feeding, migration, or resting behaviour) of an ecologically important proportion of the population of a migratory species
- interference with the recovery of the species or ecological community
- action which may be inconsistent with a recovery plan.

Any positive impacts should also be identified and evaluated.

A description of any mitigation measures proposed to reduce the impact on migratory species and the anticipated benefit of proposed mitigation measures should be discussed within the EIS.

9.3 Format of matters of national environmental significance section

This section of the EIS report should be a stand-alone section and should exclusively and fully address the issues relevant to the EPBC Act controlling provisions. It should outline:

- introduction, including title of EPBC referral and numbers, and brief description of the project
- description of proposed action (as it would impact on MNES)

- description of the affected environment and values relevant to the controlling provisions (i.e. describe the features of the environment that are MNES protected under the EPBC Act)
- assessment of impacts on MNES and mitigation measures (in accordance with available guidelines and species recovery plans)
- an outline of environmental management plan that sets out the framework for continuing management, mitigation and monitoring for the relevant impacts of the action and the name of the agency responsible for endorsing or approving each mitigation measure or monitoring programme
- other approvals and conditions (e.g. permits for vegetation clearing, local, state planning schemes or plan or policy and a description of any approval that has been obtained from a state or Commonwealth agency or authority)
- environmental record of HPPL–details of any proceedings under a Commonwealth, state or territory law for the protection of the environment or the conservation and sustainable use of natural resources against the proponent and for an action for which the proponent has applied for a permit
- conclusions and recommendations
- references and linkages to relevant sections of the EIS.

10 10 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.

11 References

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

12 Appendices

12.1 Final EIS TOR

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

12.2 TOR cross-reference table

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

12.3 Project approvals

Required project approvals should be listed.

12.4 Consultation report

This report should include:

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

12.5 Study team

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

12.6 Glossary of terms

A glossary of technical terms should be provided.

12.7 Specialist studies

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

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

12.8 Corporate environmental policy

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

12.9 List of proponent commitments

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

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