



**Queensland Government**  

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**State Development**

# **CLERMONT COAL PROJECT**

**TERMS OF REFERENCE**

**FOR AN**

**ENVIRONMENTAL IMPACT STATEMENT**

**UNDER PART (4) OF THE QUEENSLAND *STATE DEVELOPMENT  
AND PUBLIC WORKS ORGANISATION ACT 1971***

December 2003

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## **PROJECT BACKGROUND**

### **Project Proponent**

The Proponent for the Clermont Coal Project (the 'Project') is the Clermont Joint Venture, which comprises Queensland Coal Pty Limited (50.1%), Mitsubishi Development Pty Limited (34.9%) and EPDC Australia Pty Limited (15%). The Project manager is Pacific Coal Pty Limited. Queensland Coal Pty Limited and Pacific Coal Pty Limited are both wholly owned subsidiaries of Rio Tinto Limited.

Pacific Coal has been in operation since 1983 and is responsible for managing the Queensland coal interests of Rio Tinto and its joint venturers. Pacific Coal currently manages four mines in Queensland (Blair Athol, Kestrel, Tarong and Hail Creek mines), and is Queensland's second largest, and Australia's third largest, black coal producer. Production reached almost 22 million tonnes per annum (Mtpa) in 2002, which is approximately 8% of Australia's current total annual black coal production. The estimated net benefit to State Product from Pacific Coal's operations is over \$1 billion per year, and it provides direct employment for approximately 1000 full-time equivalent people.

Mitsubishi Development Pty Limited is engaged in the production and sale of coal through joint ventures in New South Wales and Queensland (including the Gregory and Central Queensland Coal Associates Joint Ventures). Mitsubishi Development Pty Limited is wholly owned by the Mitsubishi Corporation.

EPDC Australia Pty Limited is a subsidiary of EPDC, which is a major Japanese electricity generator.

Pacific Coal proposes to conduct the environmental impact assessment process for the Clermont Coal Project in-house, while utilising consultants for a range of specialist studies.

### **Project Summary**

The Project involves the development and operation of an open cut coal mine producing 10-15Mtpa of thermal coal for the export market. It is planned to transport this coal from the mine via an overland conveyor belt to the existing Blair Athol mine approximately 12km away, where it will be stored and railed via the existing Blair Athol mine spur line to ship loading facilities at Dalrymple Bay south of Mackay. The Project is located 10km north of the township of Clermont in Central Queensland. The estimated capital cost of the Project is \$440 million; with an expected mine life of approximately 20 years, depending on production rate.

The Project centres on a high quality coal resource of 215Mt, with proven open cut reserves in excess of 190Mt. The coal resource is contained within the Wolfgang Basin, a remnant Permian sedimentary basin located on the western margin of the Bowen Basin. Five coal seams have been identified in the mine sequence – the Gowrie, Prospect, Upper Wolfgang, Wolfgang and Wolfgang Lower seams. The seams range from between 80 and 250 metres beneath ground surface. The major component of the coal resource occurs within the Wolfgang Seam, which is approximately 40 metres thick and contains some 168Mt of coal. The Wolfgang Seam is generally low ash, low sulphur, high moisture and medium energy and will produce a single 10% ash (air dried) product.

The Clermont coal deposit is covered by mining lease (ML) 1884 and ML 1904, which were granted in 1983. The junction of the Peak Downs Highway and the Gregory Developmental Road occurs within these leases. It is therefore proposed to relocate the sections of these State-controlled roads to be outside the proposed area of mine development. A range of alignment options will be considered as part of the EIS. The land tenure underlying the existing

mining leases is either freehold land, or special lease, owned by the Clermont Joint Venture, apart from a small area of the coal resource covered by a Stock Trucking Reserve. The land tenure underlying the overland conveyor route is grazing homestead lease.

A conventional open cut truck/shovel operation is proposed for the Project. The proposed mining plan commences operations with a box-cut in the north of the Clermont resource and mining will progress from north to south. The overall strip ratio for the deposit is 3.7:1 bank cubic metres (bcm) waste per tonne of run of mine (ROM) coal. It is proposed that the majority of the waste rock will be disposed of in-pit. The proposed post-mining land form consists of waste rock dumps and a final void. Mine infrastructure will be located mid way along the deposit on the western side, which leaves the eastern side of the deposit clear for drainage.

Most of the coal does not require washing and will be crushed to minus 50mm on site. However, between 10% and 20% of the total coal production requires washing in a coal preparation plant. All coal will be combined and loaded directly onto an overland conveyor belt for the 12.6km trip to the Blair Athol coal handling facilities. Product would be railed via the existing Blair Athol mine spur line to ship loading facilities at Dalrymple Bay.

Current planning for Blair Athol mine has mining ceasing in 2009, at which time the existing product stockpiles, stacker reclaimers and train load-out facilities will become redundant. Production on the Project site is scheduled to start in 2008. Subject to the agreement of the owners of the Blair Athol mine, the otherwise redundant coal handling infrastructure noted above could be used to handle coal from the Project.

To summarise, the Clermont Coal Project consists of the following key components:

- Mining and coal processing activities within the Clermont Coal Project mining leases;
- Transportation of coal from the Clermont Mine via an overland conveyor to storage and load-out facilities at the Blair Athol Mine;
- Transportation of coal via the existing railway line to Dalrymple Bay coal terminal for export;
- Potential use of voids from previous gold mining activities at Cement Hill, 4km north of the Clermont Coal Mine, as a bulk water storage facility; and
- Re-alignment of the Peak Downs Highway and Gregory Developmental Road.

Further details of the Project are available in the Initial Advice Statement (IAS), a copy of which can be downloaded from the Department of State Development (DSD) website:

<http://www.sd.qld.gov.au/eis>

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## **ADMINISTRATIVE DETAILS FOR THESE TERMS OF REFERENCE**

### **The Legislative Framework**

The Clermont Coal Project was declared a 'significant project', for which an Environmental Impact Statement (EIS) is required, by the Queensland Coordinator-General (CoG) on 20 August 2003, pursuant to Section 26 of the Queensland *State Development and Public Works Organisation Act 1971 (SDPWOA)*. Matters considered by the CoG in making this declaration included the level of investment necessary for the Project, employment opportunities provided by the Project, potential impact on the environment, potential effect on relevant infrastructure and significance of the Project to the region and State. These Terms of Reference (ToR) for an EIS have been developed pursuant to the *SDPWOA*.

The conditions of ML 1904 only allow for dumping of waste rock and certain mine infrastructure (excluding coal washing and coal rejects disposal). To enable maximum development of the resource, the Proponent proposes to conditionally surrender part of ML 1904 and apply for a new ML under the *Mineral Resources Act 1989 (MRA)* from the Minister for Mines and an Environmental Authority from the Minister for Environment under the *Environmental Protection Act 1994 (EP Act)*. Similarly, an amendment to the Blair Athol ML 1881 will be required to allow for the handling of coal from the Clermont Mine on the Blair Athol tenement. The Queensland Department of Natural Resources and Mines (DNRM) administers the *MRA*, and the Queensland Environmental Protection Agency (EPA) administers the *EP Act*.

Some elements of the Project may invoke the *Integrated Planning Act 1997 (IPA)*. Where this is the case, the Belyando Shire Council will be the likely *IPA* assessment manager.

Pacific Coal referred the Project to the Commonwealth Minister for Environment and Heritage as a 'controlled action', under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*, because of its potential impact on a matter of 'national environmental significance'. The Commonwealth subsequently determined that the proposed Project is a 'controlled action'; the controlling provisions being s.18A, listed threatened species and ecological communities, as follows:

- King Bluegrass (*Dichanthium queenslandicum*), listed as 'vulnerable';
- Dunmall's Snake (*Furina dunmalli*), listed as 'vulnerable';
- Bluegrass (*Dichanthium spp*) communities of the Brigalow Belt, listed as 'endangered'; and
- Brigalow (*Acacia harpophylla*) dominant and co-dominant ecological communities, listed as 'endangered'.

As a consequence of this decision, the Project has triggered the impact assessment provisions of *EPBC Act*. The Commonwealth has accredited the EIS process under the Queensland *SDPWOA* (and the *State Development and Public Works Organisation Regulation 1999*), pursuant to Section 87(1)(a) of the *EPBC Act*. This will enable the EIS to meet the impact assessment requirements under both the Commonwealth and State legislation.

Consequently, the abbreviation 'EIS' used in these ToR should be interpreted as satisfying the impact assessment requirements of all relevant State and Commonwealth statutes for this Project (that include, but are not limited to, the *SDPWOA*, *EP Act*, *MRA*, *IPA*, *Transport Infrastructure Act 1994* and *EPBC Act*).

The Queensland Department of State Development (DSD) is the agency responsible for coordinating the impact assessment process for this Project.

Commonwealth, State and Local Government representatives and appropriate authorities have been invited to participate as Advisory Agencies for the EIS process and have been requested to examine the IAS and to comment on a draft ToR. When Pacific Coal has prepared the EIS, it will be made available for public and Advisory Agency review and comment. DSD will coordinate the consultation process between Pacific Coal, the Advisory Agencies and the public. DSD will collate and review all comments received on the EIS.

Pacific Coal may be required to prepare a Supplementary EIS to address comments submitted by the Advisory Agencies and the public. At the conclusion of which, the CoG will prepare a report evaluating the EIS. The CoG's report will be provided to the Proponent, the Commonwealth Minister for Environment and Heritage (under the *EPBC Act*) and be publicly notified by placing it on DSD's internet site.

Under s.45 of *SDPWOA*, the CoG's report may state conditions for the proposed mining lease. If CoG's conditions are included in the report –

- the report must state reasons for their inclusion; and
- the CoG must give the *MRA* Minister a copy of the report; and
- the conditions of the proposed mining lease are, subject to any inconsistency with native title issues conditions that have paramountcy under s.47 of *SDPWOA*, taken to include the CoG's conditions.

Similarly, the CoG's report may, under s.49 of *SDPWOA*, state conditions for any draft environmental authority under the *EP Act* for the proposed environmental authority (mining lease). If conditions are included in the report -

- the report must state reasons for their inclusion; and
- the CoG must give the *EPA* Minister a copy of the report.

Finally, if the Project involves development requiring an application for a development approval under *IPA*, the CoG's report may, under s.39 of *SDPWOA*, state for the assessment manager one or more of the following –

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

Alternatively the report must state for the assessment manager –

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

Further, the report must:

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

## **Main EIS Guidelines**

The objective of the EIS process is to ensure that all impacts, direct and indirect, particularly environmental, social and economic impacts are fully examined and addressed. Consistent with this objective, the EIS should be a self-contained and comprehensive document that provides:

- for interested bodies and persons, a basis for understanding the Project, alternatives and preferred solutions, the existing environment that it would affect, both on and off the site, and the impacts that may occur and the measures to be taken to mitigate all adverse impacts;
- for the CoG and the Advisory Agencies, a framework for assessing the impacts of the Project, in view of legislative and policy provisions; and

- for the Proponent, a definitive statement of measures or actions to be undertaken to mitigate any adverse impacts during and following the implementation of the Project. The *EP Act* will require that these objectives are achieved by inclusion in the EIS of a draft Environmental Management Overview Strategy (EMOS) that describes acceptable impacts and environmental management strategies designed to meet agreed performance criteria.

The key principle is that there should be sufficient detail presented in the EIS to enable readers to judge the impact of the Project on the environment and how those impacts might be managed. It should be acknowledged that readers are likely to include representatives of Commonwealth, State and Local Governments, special interest groups and the general public.

The EIS should relate to the entire life of the Project including construction, operation, maintenance, and decommissioning. The EIS should enable reasonable economic and technically achievable conditions to be developed to ensure that the impact of the Project is reduced to acceptable levels. The level of analysis and detail in the EIS should reflect the level of significance of particular impacts.

The EIS should state the following about information given in the EIS:

- the source of the information;
- how recent the information is;
- how the reliability of the information was tested; and
- any uncertainties in the information.

Where possible, information provided in the EIS should be clear, logical, objective and concise, so that non-technical persons may easily understand it. Where appropriate, text should be supported by maps and diagrams. Factual information contained in the document should be referenced wherever possible. Where applicable, aerial photography and/or digital information (eg. of Project sites, road and conveyor corridors etc) should be presented.

The terms “describe”, “detail” and “discuss” should be taken to include both quantitative and qualitative matters as practicable and meaningful. Similarly, adverse and beneficial effects should be presented in quantitative and/or qualitative terms as appropriate.

Within these ToR, the term “Project” includes all activities undertaken on lands covered by the granted and proposed mining leases, materials transport corridor and supporting project infrastructure (eg. any new or expanded coal loading facilities, electricity transmission easements etc.). Where existing facilities are to be used to support the Project (e.g. existing coal loading, rail and port facilities), the potential for a significant increase in environmental impact arising from Project activities is to be discussed. Where there is a likelihood of a significant increase in environmental impact, the impact should be described and detailed.

After the Proponent has prepared an EIS to the satisfaction of the CoG, the Proponent must release the EIS for public comment, pursuant to s.33 of *SDPWOA*.

While every attempt has been made to ensure that these ToR address all of the major issues associated with the Project, they are not necessarily exhaustive and should not be interpreted as excluding from consideration matters deemed to be significant but not incorporated in them or matters (currently unforeseen) that emerge as important or significant from environmental studies, or otherwise, during the course of preparation of the EIS.

## Results of Consultation on these Terms of Reference

Advertisements were placed in the *Central Queensland Times* newspaper on Friday 26 September 2003 and the *Courier Mail* and the *Weekend Australian* newspapers on Saturday 27 September 2003, inviting public comment on the draft ToR for the Clermont Coal Project. A similar notice was placed on the DSD internet site. Hard copies of the draft ToR were also available for viewing from DSD offices in Brisbane and Mackay, Belyando Shire Council offices in Clermont and Moranbah, and the Queensland State Library in Brisbane.

The period for receipt of submissions closed on 27 October 2003, however late submissions were accepted from government agencies until 3 November 2003. A total of 28 written submissions were received, including nineteen (19) from government agencies and nine (9) from private individuals. Copies of these have been forwarded to the Proponent's project manager, Pacific Coal Pty Limited. The Commonwealth Department of the Environment and Heritage (formerly Environment Australia) and Belyando Shire Council made informal submissions prior to and during this comment period.

The content of all submissions has been reviewed and considered by DSD in finalising the ToR for the EIS for the Clermont Coal Project. **Amendments to the draft ToR, which have arisen from recommendations made in submissions, are referenced in this document as footnotes.**

The following is a list of responses and submissions received:

No.	Agency/Individual	Date	Abbrev
1	Education Queensland*	15/10/03	EQ
2	Margaret Perrin , "Araluen", Clermont	16/10/03	PerrinM
3	Sidney Perrin, "Araluen", Clermont	16/10/03	PerrinS
4	Queensland Rail	17/10/03	QR
5	Department of Employment and Training	18/10/03	DET
6	Robert Smith, Clermont	20/10/03	Smith
7	Department of the Premier and Cabinet*	22/10/03	DPC
8	Geoff & Phillipa Hurrey, "Crillee", Clermont	22/10/03	Hurrey
9	Department of Natural Resources and Mines	23/10/03	DNRM
10	Office of Energy*	23/10/03	Energy
11	Department of Primary Industries	23/10/03	DPI
12	Queensland Treasury	23/10/03	Treasury
13	Helen Perrin, "Araluen Cottage", Clermont	23/10/03	PerrinH
14	Department of Aboriginal Torres Strait and Islander Policy	24/10/03	DATSIP
15	Department of Industrial Relations*	27/10/03	DIR
16	Department of Local Government and Planning	27/10/03	DLGP
17	Queensland Police Services	27/10/03	QPS
18	Joanne Dennis, "Kurrajong", Clermont	27/10/03	Dennis
19	Queensland Transport	27/10/03	QT

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20	Stacey Mills, "East Kurrajong", Clermont	27/10/03	Mills
21	Rod Otto, "Homelea Downs", Clermont	27/10/03	Otto
22	Environmental Protection Agency	28/10/03	EPA
23	Department of Families*	28/10/03	DoF
24	Department of Main Roads	28/10/03	DMR
25	Department of Housing	29/10/03	DoH
26	Department of Health	3/11/03	QH
27	Department of Emergency Services	3/11/03	DES
28	Robyn Cross & William Fraser, "Fleurs", Clermont	3/11/03	Cross

\* Note: these government agencies indicated that they did not wish to participate as an Advisory Agency for the EIS for the Clermont Coal Project.

## **GLOSSARY**

The following abbreviations have been used in this document:

**CHMP** – Cultural Heritage Management Plan

**CoG** – the Coordinator-General of the State of Queensland

**DATSIP** – the Queensland Department of Aboriginal and Torres Strait Islander Policy

**DES** – the Queensland Department of Emergency Services

**DET** – the Queensland Department of Employment and Training

**DHLGP** – the former Queensland Department of Housing, Local Government & Planning

**DoH** – the Queensland Department of Housing

**DIR** – the Queensland Department of Industrial Relations

**DLGP** – the Queensland Department of Local Government and Planning

**DME** – the former Queensland Department Mines and Energy

**DMR** – the Queensland Department of Main Roads

**DNR** – the former Queensland Department of Natural Resources

**DNRM** – the Queensland Department of Natural Resources and Mines

**DPI** – the Queensland Department of Primary Industries

**DSD** – the Queensland Department of State Development

**EIS** – Environmental Impact Statement

**EMOS** – Environmental Management Overview Strategy

***EP Act*** – *Environmental Protection Act 1994*

**EPA** – the Queensland Environmental Protection Agency

***EPBC Act*** - *Environment Protection & Biodiversity Conservation Act 1999* (Cwth)

**IAS** – Initial Advice Statement as defined by part 4 of the *State Development & Public Works Organisation Act 1971*

***IPA*** – *Integrated Planning Act 1997*

**JORC** – the Australasian Joint Ore Reserves Committee

**ML** – Mining Lease issued pursuant to the *Mineral Resources Act 1989*

***MRA*** - *Mineral Resources Act 1989*

**Mtpa** – million tonnes per annum

**QH** – the Queensland Department of Health

**QT** – the Queensland Department of Transport

**QR** – Queensland Rail

**SDPWOA** – *State Development & Public Works Organisation Act 1971*

**TMP** – Traffic Management Plan

**ToR** – Terms of Reference as defined by Part 4 of the *State Development & Public Works Organisation Act 1971*

## Table of Contents

<b>EXECUTIVE SUMMARY</b>	<b>1</b>
<b>1. INTRODUCTION</b>	<b>1</b>
<b>1.1 Project Proponent</b>	<b>1</b>
<b>1.2 Project Description</b>	<b>1</b>
<b>1.3 Project Objectives and Scope</b>	<b>1</b>
<b>1.4 The Environmental Impact Assessment Process</b>	<b>1</b>
1.4.1 Objectives of the EIS	1
1.4.2 Submissions	2
<b>1.5 Public Consultation Process</b>	<b>2</b>
<b>1.6 Project Approvals and Legislative Framework</b>	<b>2</b>
<b>1.7 Project Need and Alternatives</b>	<b>3</b>
<b>2. DESCRIPTION OF THE PROJECT</b>	<b>4</b>
<b>2.1 Location and General Description</b>	<b>4</b>
2.1.1 Resource	4
2.1.2 Mine Operations	4
2.1.3 Transport Corridor	4
<b>2.2 Construction</b>	<b>5</b>
<b>2.3 Exploration, Mineral Development and Mining</b>	<b>5</b>
<b>2.4 Coal Handling</b>	<b>5</b>
<b>2.5 Water Supply/Storage</b>	<b>5</b>
<b>2.6 Infrastructure Requirements</b>	<b>6</b>
2.6.1 Transport – Road, Conveyor and Rail	6
2.6.2 Accommodation and Other Infrastructure	7
<b>2.7 Rehabilitation and Decommissioning</b>	<b>7</b>
<b>3. EXISTING ENVIRONMENT, POTENTIAL IMPACTS AND MANAGEMENT STRATEGIES</b>	<b>9</b>
<b>3.1 Land – Existing Environment</b>	<b>10</b>
3.1.1 Land Use	10
3.1.2 Sensitive Environmental Areas	10
3.1.3 Topography	10
3.1.4 Geology	10
3.1.5 Soils	11
3.1.6 Contaminated Land	11
3.1.7 Climate	12
3.1.8 Scenic Values	12
<b>3.2 Land – Management of Impacts</b>	<b>12</b>
3.2.1 Land Use	12
3.2.2 Land Disturbance	13

3.2.3	Resource Utilisation	13
3.2.4	Land Contamination	14
3.2.5	Scenic Values	14
3.2.6	Rehabilitation and Decommissioning	14
<b>3.3</b>	<b>Water Resources – Existing Environment</b>	<b>15</b>
3.3.1	Surface Waterways	15
3.3.2	Groundwater	16
<b>3.4</b>	<b>Water Resources – Management of Impacts</b>	<b>17</b>
3.4.1	General	17
3.4.2	Surface Water and Water Courses	17
3.4.3	Groundwater	18
<b>3.5</b>	<b>Nature Conservation – Existing Environment</b>	<b>19</b>
3.5.1	General	19
3.5.2	Terrestrial Flora	20
3.5.3	Terrestrial Fauna	22
3.5.4	Aquatic Biology	22
<b>3.6</b>	<b>Nature Conservation – Management of Impacts</b>	<b>22</b>
<b>3.7</b>	<b>Air – Existing Environment</b>	<b>24</b>
<b>3.8</b>	<b>Air – Management of Impacts</b>	<b>24</b>
<b>3.9</b>	<b>Noise and Vibration – Existing Environment</b>	<b>25</b>
<b>3.10</b>	<b>Noise &amp; Vibration – Management of Impacts</b>	<b>25</b>
<b>3.11</b>	<b>Cultural Heritage – Existing Environment</b>	<b>26</b>
<b>3.12</b>	<b>Cultural Heritage – Management of Impacts</b>	<b>27</b>
<b>3.13</b>	<b>Waste – Management of Impacts</b>	<b>27</b>
3.13.1	Wastewater	28
<b>3.14</b>	<b>Built Environment – Existing</b>	<b>29</b>
<b>3.15</b>	<b>Built Environment – Management of Impacts</b>	<b>29</b>
3.15.1	Infrastructure	29
3.15.2	Traffic	30
<b>3.16</b>	<b>Social Environment – Existing Environment</b>	<b>30</b>
<b>3.17</b>	<b>Social Environment– Management of Impacts</b>	<b>31</b>
<b>3.18</b>	<b>Economic Environment – Existing Environment</b>	<b>32</b>
<b>3.19</b>	<b>Economic Environment – Management of Impacts</b>	<b>32</b>
<b>3.20</b>	<b>Health and Safety – Management of Impacts</b>	<b>34</b>
<b>4.</b>	<b>DRAFT ENVIRONMENTAL MANAGEMENT OVERVIEW STRATEGY</b>	<b>36</b>
<b>5.</b>	<b>REFERENCES</b>	<b>36</b>
<b>6.</b>	<b>RECOMMENDED APPENDICES</b>	<b>36</b>
6.1	Development Approvals	36

<b>6.2</b>	<b>Final ToR for this EIS</b>	<b>36</b>
<b>6.3</b>	<b>Research</b>	<b>36</b>
<b>6.4</b>	<b>Consultation Report</b>	<b>36</b>
<b>6.5</b>	<b>Study Team</b>	<b>37</b>
<b>6.6</b>	<b>Glossary of Terms</b>	<b>37</b>
<b>6.7</b>	<b>Specialist Studies</b>	<b>37</b>
<b>6.8</b>	<b>Corporate Environmental Policy</b>	<b>37</b>
<b>6.9</b>	<b>List of Proponent Commitments</b>	<b>38</b>

## **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. The structure of the executive summary should follow that of the EIS, although focused strongly on the key issues.

### **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 also define the audience to whom it is directed, and contain an overview of the structure of the document.

#### **1.1 Project Proponent**

This section should provide details regarding Pacific Coal and the other joint venture partners, including postal address and key contact details for the Pacific Coal Project staff and any Project consultants.

#### **1.2 Project Description**

This section should provide a brief description of the key elements of the Project including associated infrastructure requirements. The location of the Project and its infrastructure requirements should be described and mapped. This section should include the relationship of the Project with the existing Blair Athol mine, specifically in relation to the proposed infrastructure sharing arrangements and likely issues for coal transportation via rail.

#### **1.3 Project Objectives and Scope**

This section should provide a broad statement of the objectives that have led to the development of the Project and a brief outline of the events leading up to the Project's formulation, including alternatives, envisaged time scale for implementation and Project life, anticipated establishment costs and actions already undertaken within the Project area.

This section should also describe how the Project relates to any other actions, of which Pacific Coal should reasonably be aware, that have been, or are being, taken or that have been approved in the area affected by the Project.

#### **1.4 The Environmental Impact Assessment Process**

This section should make clear the objectives of the EIS process under the *SDPWOA*, the Environmental Authority approval process under the *EP Act* and ML approval under the *MRA*. This section should include a description of the impact assessment process steps, timing and decisions to be made for relevant stages of the Project. In particular, this section should outline mechanisms in the process for public input and the public release of an EIS which will specify all responses to stakeholder submissions.

##### **1.4.1 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 and likely effects of the Project;

- set out acceptable standards and levels of impacts (both beneficial and adverse) on environmental values; and
- demonstrate how environmental impacts can be managed through the protection and enhancement of the environmental values.

Discussion of options and alternatives is a key aspect of the EIS.

#### **1.4.2 Submissions**

Interested and affected persons should be made aware of how submissions on the EIS will be addressed and taken into account in the decision-making process. The EIS should inform the reader as to:

- how to make submissions, provide contact details and what form the submissions should take; and
- when submissions must be made to gain standing for any appeal process.

### **1.5 Public Consultation Process**

The public consultation process should identify broad issues of concern to local community and interest groups and should continue from Project planning through commissioning, operations and final rehabilitation. This section should outline the methodology that will be adopted to identify and mitigate social and socio-economic impacts that may arise from the Project. Any documented response to, or result of, the consultation process should also be provided.

The public consultation program should be incorporated into the EIS and should provide ongoing opportunities for community involvement and education. Such examples of community involvement include the proposed relocation of state-controlled roads and stock routes, water allocation applications and any development applications requiring public consultation under the *Integrated Planning Act 1997 (IPA)*.<sup>1</sup>

### **1.6 Project Approvals and Legislative Framework**

The aim of this section is to provide the reader with an explanation of the legislation and policies controlling the approvals process for the Project. Reference should be made to the *SDPWOA*, *EP Act*, *MRA*, *IPA*, *Transport Infrastructure Act 1994*, *Land Act 1994*, *Water Act 2000*, *Vegetation Management Act 1999* and other relevant Queensland laws. All requirements of the *EPBC Act*, *Native Title Act 1993* and *Australian Heritage Commission Act 1975* should also be included.

The EIS should describe the approval process resulting from the gazettal of this Project as a significant project pursuant to the *SDPWOA* and outline the linkage to other relevant State and Commonwealth legislation. This outline should describe the public notification processes and appeal rights that will be available in the anticipated approval processes. The EIS should indicate the level of approvals anticipated by Pacific Coal for each Project element in order that approval agencies are able to determine the completeness of the information presented and the scope to generate the anticipated approvals.

The EIS should consider the draft Whitsunday Hinterland and Mackay (WHAM) 2015 Regional Plan, particularly any relevant regional goals and strategies.<sup>2</sup>

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<sup>1</sup> DMR (1)

<sup>2</sup> DLGP (1)

In addition, local government planning controls, local laws and policies applying to the development should be described, and a list of the approvals required for the Project should be provided.

## **1.7 Project Need and Alternatives**

In this section, justification for the Project should be described, with particular reference made to the environmental, economic and social costs and benefits. The status of the Project and potential alternatives should be discussed in a regional, State and national context.

This section should also describe feasible alternatives within the proposed Project. Alternatives should be discussed in sufficient detail to enable an understanding of the reasons for preferring certain options and courses of action and rejecting others. Reasons for selecting the preferred options should be delineated in terms of relevant technical, commercial, social and natural environment aspects. In particular, the discussion of reasonably practicable alternatives to the Project should include:

- the alternative of taking no action;
- a comparative description of the impacts of each alternative for the Project on matters of National Environmental Significance; and
- sufficient detail to clarify why any alternative is preferred to another.

## 2. DESCRIPTION OF THE PROJECT

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

### 2.1 Location and General Description

#### 2.1.1 Resource

This section summarises results of studies and surveys undertaken to identify and delineate the coal resource. The location, tonnage and quality of the coal resource within the mining leases should be described. The geological reserves/resources should be defined using formal terminology as recommended by the Australasian Joint Ore Reserves Committee (JORC Code, see <http://www.jorc.org/main.php>).

In addition, maps should be provided showing the general location of the Project area, and in particular:

- the location of the resource to be explored, developed or mined;
- the location and boundaries of mining tenures, granted or proposed, to which the Project area is, or will be subject;
- the location of the proposed mine excavation(s);
- the location and boundaries of any plant sites;
- the 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.

#### 2.1.2 Mine Operations

The location of the proposed Project should be illustrated on maps and described, including probable pit boundaries, mine path, proposed stream diversions, water storages proposed for construction and all watercourses on the Project site, road diversions and mine development sequence or timeframes and any final void to be left at the cessation of mining. Current water bodies within the Cement Hill mining leases should also be shown on maps.<sup>3</sup> The rationale for the preferred operational program should be explained. The identification of all site access points to, from and within the project should also be identified on maps, to assist in the assessment of emergency planning.<sup>4</sup>

#### 2.1.3 Transport Corridor

The location of all proposed Project transport and coal loading infrastructure should be illustrated on maps and described for both new works and upgrades of existing infrastructure. This section should present the various coal transport options considered, and explain the rationale for the preferred transport option for the Project. This discussion should cover both:

- the inter-mine coal transport via conveyor (or other means); and
- the subsequent transport by rail from the Blair Athol mine site along the existing rail corridor to Dalrymple Bay, south of Mackay.

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<sup>3</sup> DNRM (1)

<sup>4</sup> DES (2)

## 2.2 Construction

The extent and nature of the Project's construction phase should be described. The description should include the type and methods of construction to be employed, the construction equipment to be used and the major items of plant to be transported onto the construction site.

The volume and source of proposed construction materials for both the mine and the transport infrastructure should be clearly identified along with suitable haul routes. A description of how the soil, water and other matter would be disposed of, or reused during the construction phase should also be identified.<sup>5</sup>

The estimated number and skills requirements of persons to be employed on the Project construction phase should also be given.

## 2.3 Exploration, Mineral Development and Mining

The extent and nature of the Project's exploration, coal development or mining operations must be described, including:

- the type and methods to be used, including the major equipment to be used in the various components of the operation;
- the use of different techniques in areas of different topographic or geo-technical character;
- the approximate quantity of coal to be mined;
- the extent of excavations, location of overburden stockpiles and extent of coal reject to be handled during the Project's operation or left after mining ceases;
- the proposed progressive backfilling of excavations;
- the area disturbed at each major stage of the Project; and
- the operational workforce employed in the Project.

## 2.4 Coal Handling

The proposed methods and facilities to be used for coal storage and for transferring coal from the mining lease to Dalrymple Bay should be shown on plans at an appropriate scale. Any environmental design features of coal stockpiling and blending and any off-site facilities should also be shown.

This section should also discuss the capacity of Dalrymple Bay to handle the proposed coal volumes generated by the Project over all phases of development. This discussion should also make reference to the cumulative longer-term demands on coal handling capacity at the Dalrymple Bay from all regional coal export proposals, even though the capacity to manage these impacts may fall beyond the scope of this Project EIS.

## 2.5 Water Supply/Storage

The EIS should provide information on water usage by the Project, including the quality and quantity of all water supplied to the mine. In particular, the proposed and optional sources of water supply should be described (eg. bores, mine water, any surface storages such as dams and weirs, municipal water supply pipelines, etc).

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<sup>5</sup> DPI (2)

Determination of potable water demand should be made for the Project, including the temporary demands during the construction period. Details should be provided of any existing town water supply to meet such requirements. If water storage and treatment is proposed on site, for use by the site workforce, then this should be described. This description should include the type of treatment, storage conditions, how water will be reticulated after treatment and how the quality of the water will be monitored (e.g. a water monitoring plan).<sup>6</sup> A determination should also be made that there is adequate water supply for fire fighting requirements during the construction and operational phases.<sup>7</sup>

Water for human use, including drinking, cooking, hygiene and sanitation, should comply with the “Australian Drinking Water Guidelines” as published by the National Health and Medical Research Council and the Agriculture and Resource Management Council of Australia and New Zealand.

Consideration should be given to the “Water Allocation and Management Plan (Fitzroy Basin), 1999” and the “Draft Fitzroy Basin Resource Operations Plan, 2002” in relation to any proposals to utilise sources of surface water and the disposal of excess groundwater into watercourses.<sup>8</sup>

## 2.6 Infrastructure Requirements

The EIS should provide conceptual layout plans highlighting proposed buildings, structures, plant, equipment, other infrastructure associated with the Project and other infrastructure existing in the vicinity of the Project area.

### 2.6.1 Transport – Road, Conveyor and Rail

The EIS should describe all transport requirements for the Project during the construction, operational and decommissioning phases. This information should include:

- the volume composition (types and quantities), origin and destination of goods to be moved, including construction materials, plant, raw materials, wastes and hazardous materials;
- the net effect on coal rail freight demand from Blair Athol and Clermont Mines, now and after Blair Athol closes and Clermont begins;<sup>9</sup>
- the volume of traffic generated by workforce personnel and service vehicles;
- method of movement (including vehicle types and number of vehicles likely to be used);
- anticipated times at which movements may occur;
- the conveyor alignment;
- design details for conveyor system, including proposed roadway crossings and railway crossings,<sup>10</sup> distance of pylons from the road reserve<sup>11</sup> and any features related to the movement of over-dimension vehicles;
- method of rail delivery (diesel or electric);
- construction timing;
- details of vehicle traffic and transport of heavy and oversize indivisible loads; and

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<sup>6</sup> QH (1)

<sup>7</sup> DES (3)

<sup>8</sup> DNRM (2)

<sup>9</sup> QT (1)

<sup>10</sup> QT (3)

<sup>11</sup> DMR (3)

- the proposed transport routes, including haul roads and access roads, and resultant property fragmentation information.

Details should be included on any new roads, road realignments or proposed road closures required as a result of the Project. It is expected that the findings from the EIS would form the basis for negotiating an Infrastructure Agreement with the Department of Main Roads for the proposed re-location of State-controlled roads.

### **2.6.2 Accommodation and Other Infrastructure**

The EIS should provide a description of any other developments directly related to the Project not previously described, including the following:

- camps or residential developments;
- fuel storage areas;
- water storage areas;
- sewerage treatment and disposal facilities;<sup>12</sup>
- pipelines;
- the location and capacity of necessary power lines and easements;
- equipment maintenance areas; and
- site offices.

Special reference should be made to the location of these facilities in relation to the township of Clermont and the need for any new facilities.

## **2.7 Rehabilitation and Decommissioning**

Strategies and methods presented for progressive and final rehabilitation of disturbed areas should demonstrate compliance with the objectives of the “Environmental Management Policy for Mining in Queensland, 1991”, specifically:

- mining and rehabilitation should aim to create a landform with land use suitability similar to that prior to disturbance unless other beneficial land uses are pre-determined and agreed;
- mine wastes and disturbed land should be rehabilitated to a condition which is self-sustaining, or to a condition where the maintenance requirements are consistent with an agreed post-mining land use; and
- surface and ground waters that leave the lease should not be degraded to a significant extent. Current and future water quality should be maintained at levels that are acceptable for users downstream of the site.<sup>13</sup>

The EIS should present the options,<sup>14</sup> strategies and methods for progressive and final rehabilitation of the environment disturbed by mining activities to achieve a stable, revegetated landform. A timetable of these works should be presented. The final predicted<sup>15</sup> topography of excavations and overburden dumps should be shown. The post-mining land use suitability of the various land disturbance types should be described, as recommended in the “Technical

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<sup>12</sup> DNRM (3)

<sup>13</sup> DNRM (4)

<sup>14</sup> EPA (1)

<sup>15</sup> EPA (2)

Guidelines for the Environmental Management of Exploration and Mining in Queensland, 1995".<sup>16</sup>

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<sup>16</sup> DNRM (5)

### 3. EXISTING ENVIRONMENT, POTENTIAL IMPACTS AND MANAGEMENT STRATEGIES

A description of the existing environment from past or new studies is required to provide the necessary baseline data for evaluation of the physical, social and economic impacts and for the formulation of environmental protection measures and monitoring programs.

This section of the EIS should also define and describe the objectives and management strategies for protecting or enhancing environmental, social and economic values in or surrounding the Project area. This section should provide measures to minimise environmental harm and maximise socio-economic benefits of the Project.

Where relevant, this section should discuss legislative requirements, construction requirements and planning frameworks which apply to the Project including planning instruments under *IPA* such as State Planning Policies, Regional Plans (WHAM),<sup>17</sup> Local Authority Town Planning Schemes and Strategic Plans, and Environment Protection Policies under the *EP Act* and subsequent amendments. How the planning instrument provides for preventing, minimising and managing the Project's relevant impacts on the environment, including on<sup>18</sup> Bluegrass communities should be discussed.

If there are no suitable mitigation measures available for some impacts, this should be noted. Also, comments should be provided on the likely success of the mitigation measures proposed or alternatives that should be considered. If proposed mitigation measures are to be the subject of research, 'fall back' or alternative measures with a record of proven success should be described.<sup>19</sup>

A program for monitoring of the impacts (in particular, any difference between the predicted and actual impacts) of the Project throughout construction, operation and decommissioning<sup>20</sup> and a program for monitoring and evaluating the success of proposed management strategies should be detailed. This should include:

- information on the subjects for, and level of, monitoring (location of sites,<sup>21</sup> number of sites, samples; frequency etc);
- evaluation / performance criteria;
- responsibility and reporting arrangements (including expertise);
- the name and entity responsible for endorsing or approving each mitigation measure or monitoring program; and
- corrective action in the event that the strategy is not working.

A commitment to revise management strategies should be demonstrated, in the event that the strategy is shown, from monitoring, to be unsuccessful. The monitoring program for the Project is likely to comprise long-term and short-term components and details of the commitment (financial, personnel etc) to long-term monitoring should be given.

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<sup>17</sup> DLGP (1)

<sup>18</sup> DPI (6)

<sup>19</sup> DNRM (6)

<sup>20</sup> DNRM (7)

<sup>21</sup> DNRM (8)

## 3.1 Land – Existing Environment

### 3.1.1 Land Use

The EIS should provide a description of current land tenures, current land uses and identify the areas covered by Native Title claims in all Project areas, with particular mention of land with special purposes.

A map at a suitable scale showing existing land uses and tenures, and the proposed mine and coal handling locations (including conveyor)<sup>22</sup>, should be provided for the entire Project area and surrounding land that could be affected by the development. This map should identify areas of conservation value in this zone. The location of existing dwellings and the zoning of all affected lands according to any existing local government planning scheme should be included. Secondary and minor stock routes within the project area should be shown on maps.<sup>23</sup>

### 3.1.2 Sensitive Environmental Areas

The EIS should identify whether areas that are environmentally sensitive could be affected, directly or indirectly, by the Project. Environmentally sensitive areas should also include areas classified as having State, regional or local biodiversity significance, or flagged as important for their integrated biodiversity values in accordance with the “Biodiversity Assessment and Mapping Methodology (EPA, 2002)”. Also, areas sensitive to environmental harm caused by the proposal can be determined through site specific environmental impact assessment processes.<sup>24</sup>

In particular, the EIS should indicate if the land affected by the Project is, or is likely to become, part of a national park or other conservation area. Consideration should also be given to other national parks, conservation parks, wilderness areas, heritage/historic areas or items, national estates, areas of cultural significance and scientific reserves within the vicinity of the Project.

In addition, the *EPBC Act* should be addressed and whether there are matters of National Environmental Significance that should be described.

The proximity of the Project elements to any of these areas should be identified.

### 3.1.3 Topography

The contour information for the Project sites should be detailed at suitable increments, with levels shown with respect to Australian Height Datum. The environmental values of the cultural landscapes of the affected area in terms of the physical and cultural integrity of the area should be described.

### 3.1.4 Geology

The EIS should provide a description, map and a series of cross-sections of the geology of the mine site, with particular reference to the physical and chemical properties of surface and sub-surface materials and geological structures within the proposed areas of disturbance. The general suitability of the mine site overburden material for road building should be discussed briefly.

The geological properties of all Project sites which may influence stability, occupational health and safety, rehabilitation programs, or the quality and expected amount of waste water leaving any area disturbed by the Project should be described.

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<sup>22</sup> DMR (8)

<sup>23</sup> DNRM (9)

<sup>24</sup> DNRM (11)

Investigations into the physical, geotechnical and chemical properties of waste rock in both fresh and weathered forms needs to be determined for slope stability, rehabilitation and possible acid generation for waste rock dump design.

This section should also consider the geology underlying the proposed infrastructure corridors for the overland conveyor, roads, electricity easements, pipeline easements and other off-mine infrastructure. Of particular interest is any other possible coal, petroleum, gas or other mineral resources that may be impacted or sterilised by the infrastructure.

### 3.1.5 Soils

Soil surveys of the Project sites should be conducted with particular reference to the physical and chemical properties of the materials which will influence erosion potential, storm water run-off quality, rehabilitation and agricultural productivity of the land (e.g. for dry-land cropping, irrigated cropping or grazing uses). Information should also be provided on soil stability and suitability for construction of all Project facilities.

Soil profiles should be mapped and described according to the "Australian Soil and Land Survey Field Handbook (McDonald et al, 1990)" and "Australian Soil Classification (Isbell, 1996)". An appraisal of the depth and quality of useable soil should be undertaken. Information should be presented according to the standards required in the Planning Guidelines: "The Identification of Good Quality Agricultural Land (DPI & DHLGP, 1993)" and "The State Planning Policy 1/92: Development and the Conservation of Agricultural Land and Land Suitability Assessment Techniques (DME, 1995)".

The requirement for soils mapping in terms of area and mapping scale should follow the "QDME Technical Guidelines for Environmental Management of Exploration and Mining in Queensland, 1995", specifically Section 6.1 which is headed "Land Suitability Assessment Techniques". These guidelines recommend that disturbed areas be mapped more intensively than non-disturbed areas and provide guidance on acceptable mapping scale and site intensity.<sup>25</sup>

A land suitability assessment for rain-fed cropping and grazing covering all disturbed and undisturbed areas within the proposed mining lease areas should be provided. This assessment should set out soil and landform limitation subclasses assigned to soil mapping units in order to derive land suitability classes. The limitations and land suitability classification system referred to here can be found in Attachment 2 of "Land Suitability Assessment Techniques of the QDME Technical Guidelines for Environmental Management of Exploration and Mining in Queensland, 1995."<sup>26</sup>

### 3.1.6 Contaminated Land

Potential for land contamination from existing and past uses, based on land use history and the nature and quantity of any contaminants, should be discussed. The EIS should include a preliminary site investigation, including a search of EPA's "Contaminated Land Register" and "Environmental Management Register".

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<sup>25</sup> DNRM (13)

<sup>26</sup> DNRM (10)

### 3.1.7 Climate

The EIS should describe the air temperatures, humidity, wind (direction and speed), rainfall patterns (including magnitude and seasonal variability) within the environs of the Project. Extremes of climate (droughts, floods, cyclones etc) should be discussed.

### 3.1.8 Scenic Values

The EIS should describe scenic values of the various Project sites as viewed from places of residence, from road, from the air and other known vantage points day and night. Sketches, computer imaging and photos are to be used where possible to portray the near views and far views of the mining and infrastructure areas, and their surroundings, from visually sensitive locations.

Special consideration is to be given to public roads, public thoroughfares, and places of residence or work that are within the line-of-sight of the Project.

## 3.2 Land – Management of Impacts

### 3.2.1 Land Use<sup>27</sup>

The EIS should 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. The likelihood of a transport corridor traversing other resource deposits should be discussed and contingency plans established for the exploitation of those resources.

Relevant State Planning Policies applying to land that may be impacted by the Project should be considered (e.g. “SPP 1/02 – Development in the Vicinity of Certain Airports and Aviation Facilities”).<sup>28</sup>

Potential impacts of the project on public Reserves, in terms of any affects on the gazetted purpose of each Reserve and secondary tenure arrangements should be discussed, together with proposed alternative arrangements for persons or bodies affected. Alternative strategies for travelling stock should be described to ensure that the integrity of the stock route and facilities associated with it would be maintained.<sup>29</sup>

Post-mine land use options should be detailed in accordance with the objectives of the “Environmental Management Policy for Mining in Queensland, 1999 (as outlined above) and based on a post-mine land suitability assessment. The land suitability assessment should follow “QDME Technical Guidelines for Environmental Management of Exploration and Mining in Queensland, 1995”.<sup>30</sup>

Alternative strategies to the proposal to leave voids after mining in terms of their suitability for long term agricultural use, and reasons for choosing the preferred alternative should be discussed. Also, a comparison of pre-mine and post-mine land suitability in terms of:

- areas considered from the pre-mining assessment to be Good Quality Agricultural Land and how, if possible, such land can be returned to agricultural use; and

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<sup>27</sup> DNRM (14)

<sup>28</sup> DLGP (2)

<sup>29</sup> DNRM (16)

<sup>30</sup> DNRM (15)

- the economic impact of the Project in terms of loss of agricultural production from land within and adjacent to the proposed mining leases.<sup>31</sup>

### 3.2.2 Land Disturbance

The EIS should contain strategies aimed at minimising the amount of land disturbed at any one time. The strategic approach to progressive rehabilitation and final decommissioning should be described. The consistency of the approach with relevant guidelines and the results of recent research should be described. Relevant documents to be considered include:

- “Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland, DME (1995)”;
- “Draft Interim Arrangements Stream Diversions – Central Queensland Mining Industry, DNR (1999)”;
- “Final Report Post Mining Landscape Parameters for Erosion and Water Quality Control. C4011, ACARP (1998)”.

Management of all dams, roads, rail, electricity and other infrastructure during construction operation and decommissioning phases should be described in detail.

The methods to be used for the Project, including backfilling, covering, re-contouring, topsoil handling and revegetation, should be described. Consideration should be given to the use of threatened plant species during any landscaping and revegetation.

Proposals to divert creeks during construction or operations and, if applicable, for the reinstatement of the creeks, should be provided. A contour map of the mine area should be provided, along with final drainage and seepage control systems and any long term monitoring plans. Relevant documents to be considered in relation to stream diversions are:

- “Final Report - Maintenance of Geomorphic Processes in Bowen Basin River Diversions C8030, ACARP (May 2000)”;
- “Final Report - Monitoring Geomorphic Processes in Bowen Basin River Diversions C9068 ACARP (January 2001)”.<sup>32</sup>

Proposed decommissioning of Project operations should be described in detail, including consolidation, revegetation, fencing, and monitoring. Discussion of any decommissioning works should address rehabilitation of concrete footings and foundations, hard stand areas and storage tanks (including any potential for reuse of these facilities).

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.<sup>33</sup> The minimisation of 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.<sup>34</sup>

### 3.2.3 Resource Utilisation

In this section it should be demonstrated that the mining proposal will best develop the Clermont Coal resource and minimise resource wastage and sterilisation. The impact of the Project on other coal, gas and mineral resources in the region should also be discussed.

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<sup>31</sup> DNRM (17), Otto (5)

<sup>32</sup> DNRM (18)

<sup>33</sup> DNRM (19)

<sup>34</sup> DNRM (20)

### 3.2.4 Land Contamination

The EIS should describe the possible contamination of land from aspects of the Project including waste, reject coal, overburden, coal washing plant and spills at chemical and fuel storage and handling<sup>35</sup> areas.

The EIS 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<sup>36</sup> or saline impacts from the mining activities and the management of chemicals and fuels to prevent spills or leaks.<sup>37</sup>

### 3.2.5 Scenic Values

This section should discuss the visual impact of the construction and operation of the Project as it relates to the surrounding landscape. The assessment should address the local and broader visual impacts of the Project structures, including overland conveyor. Appropriate simulation to portray the near views and far views of the completed structures and their surroundings from visually sensitive locations should be utilised. The significance of any clearing of vegetation, from a local amenity, landscape and visual perspective should be discussed.

Information should be supplied on the techniques proposed to minimise visual impacts. Special consideration should be given to public roads or thoroughfares or places of residence, recreation, worship or work which are within the line-of-sight of the Project sites.

Details of the design and colour of any major structures, buildings or fixed plant and all proposed screenings either vegetative or material should be described and discussed where relevant to the minimisation of the visual impacts of the Project.

The obstruction of sunlight due to the construction of buildings or alteration of landforms should be considered, as well as major illumination or reflection impacts on adjacent properties or roads.

Details of management of lighting for all stages of the project should be provided, with particular reference to the objectives and proposed management regime to mitigate or avoid:

- night operations and maintenance activities;
- the effects of lighting on fauna and residents; and
- changed habitat conditions for nocturnal fauna and associated impacts.<sup>38</sup>

### 3.2.6 Rehabilitation and Decommissioning

The EIS should provide options,<sup>39</sup> strategies and methods for progressive and final rehabilitation of the environment disturbed by the Project activities described in the context of the expected final landforms for nominated final land uses. The rehabilitation success criteria to be used during the monitoring program should be outlined, including criteria for the management of any land contamination.<sup>40</sup>

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<sup>35</sup> EPA (3)

<sup>36</sup> DNRM (21)

<sup>37</sup> EPA (4)

<sup>38</sup> DSD

<sup>39</sup> EPA (5)

<sup>40</sup> EPA (6)

The final topography of any excavations, overburden dumps and voids should be described and shown conceptually in plan form.<sup>41</sup> Details of a post-mine land suitability assessment carried out in accordance with “QDME Technical Guidelines for Environmental Management of Exploration and Mining in Queensland, 1995” should be described.<sup>42</sup>

The means of decommissioning the Project, in terms of removal of plant, equipment, structures and buildings should be described. The methods proposed for the stabilisation of the affected areas and management of any land contamination<sup>43</sup> should be given. Final rehabilitation of all disturbed areas should be discussed in terms of ongoing sustainable land use and management of any residual contaminated land.

The rehabilitation methods to be used for the Project, including but not limited to<sup>44</sup> backfilling, covering, re-contouring, topsoil handling and revegetation, should be described. Consideration should be given to the use of threatened plant species during revegetation. The techniques to be employed to dispose of overburden, especially any potentially acid-forming spoil or waste and the methods employed to rehabilitate those areas should be described.

Proposals to divert creeks, either temporarily or permanently, during mining and for the reinstatement of the creeks after mining has ceased should be provided. Where dams are to be constructed, proposals for the management or decommissioning<sup>45</sup> of these structures after the completion of the Project should be given. A contour map of the lease area after the proposed mining operation is completed should be provided. The final drainage and seepage control systems and long term monitoring plans should also be described.

Options for the minimisation, and if possible elimination, of final voids through backfilling must be discussed.<sup>46</sup> Rehabilitation options for any voids remaining after mining should be described in detail including land use, void water quality, groundwater recharge, downstream surface hydrology, suitability for use by stock, safety of access, and stability of void walls.

### **3.3 Water Resources – Existing Environment**

#### **3.3.1 Surface Waterways**

The EIS should describe the surface water resources<sup>47</sup> and their quality and quantity in the areas affected by the Project with an outline of the significance of these waters to the river catchment system in which they occur. Details provided should include a description of existing surface drainage patterns, flows in major streams and wetlands. The likelihood of flooding, history of flooding including extent, levels, and frequency, and a description of present and potential water uses downstream of the areas affected by the Project should also be provided. Flood studies should include a range of annual exceedance probabilities for affected waterways, where data permits.

An assessment is required of existing water quality in surface waters likely to be affected by the Project, including existing water bodies within the Cement Hill mining leases.<sup>48</sup> The basis for this assessment should be the results of a monitoring program, with sampling stations located

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<sup>41</sup> EPA (7)

<sup>42</sup> DNRM (22)

<sup>43</sup> EPA (8)

<sup>44</sup> EPA (9)

<sup>45</sup> EPA (10)

<sup>46</sup> EPA (11)

<sup>47</sup> DNRM (27)

<sup>48</sup> DNRM (28)

upstream and downstream of the mining proposal. Complementary stream-flow data should also be obtained from historical records (if available) to aid in interpretation.

An evaluation of the pre-mine geomorphic condition of watercourses likely to be affected by disturbance, such as stream diversions should be carried out. The results of this evaluation would form the basis for future monitoring of stream geomorphic conditions and the physical integrity of affected watercourses within the Project site.<sup>49</sup>

### 3.3.2 Groundwater

The EIS should review the quality, quantity and significance of groundwater at the mine site, together with groundwater use in neighbouring areas.

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

- location;
- pumping parameters;
- draw down and recharge at normal pumping rates;
- potential to provide mine water supply from groundwater sources;
- water quality;
- existing groundwater entitlements through licenses under the *Water Act 2000*;<sup>50</sup>
- seasonal variations (if records exist) of groundwater levels, including any relationship with drought conditions;<sup>51</sup> and
- recorded effects from existing groundwater extraction for use at the Blair Athol mine.<sup>52</sup>

The proposed network of observation bores which would satisfactorily monitor groundwater resources at the mine site and in neighbouring areas, both before and after commencement of operations, should be described.<sup>53</sup>

This section should include reference to:

- nature of the aquifer/s:
  - geology/stratigraphy;
  - aquifer type - such as confined, unconfined; and
  - depth to, and thickness of, the aquifers; and
- hydrology of the aquifer/s
  - depth to water level and seasonal changes in levels;
  - groundwater flow directions (defined from water level contours);
  - interaction with surface water; and
  - possible sources of recharge.

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<sup>49</sup> DNRM (29)

<sup>50</sup> DNRM (30)

<sup>51</sup> PerrinS (1)

<sup>52</sup> PerrinM (6)

<sup>53</sup> DNRM (31)

## 3.4 Water Resources – Management of Impacts

### 3.4.1 General

The water management systems for all Project elements should be described, addressing surface and groundwater quality, quantity, drainage patterns and sediment movements. The beneficial (environmental, production and recreational) use of nearby surface and groundwater should be discussed, along with the proposal for the diversion of affected creeks during mining, and the stabilisation of those works.

Analysis of potential impacts of the diversion of affected creeks on existing and proposed relocated roads should also be carried out.<sup>54</sup> This analysis should identify any likely inundation and duration, as this may affect emergency vehicle access.<sup>55</sup>

Monitoring programs should be described which will assess the effectiveness of management strategies for protecting water quality during the construction, operation and decommissioning of the Project. Monitoring programs should also be designed to evaluate changes in the physical integrity and geomorphic processes associated with stream diversions.<sup>56</sup>

Key water management strategy objectives include:

- protection of important local aquifers and protection of their waters;
- maintenance of sufficient quantity and quality of surface waters to protect existing beneficial downstream uses of those waters (including maintenance of in-stream biota); and
- maintenance or replication of the existing geomorphic condition of local watercourses.<sup>57</sup>

### 3.4.2 Surface Water and Water Courses

Potential impacts to the flow and the quality of surface waters from all phases of Project activities should be discussed, with particular reference to implications for current and potential downstream uses, including the requirements of any affected riparian area and in-stream biological uses in accordance with the “Environmental Protection (Water) Policy, 1997” and the *Water Act 2000*. The impacts of surface water flow on any existing water infrastructure should also be considered.<sup>58</sup>

The EIS should describe the proposed mine stormwater drainage system and the proposed disposal arrangements, including any off-site services and downstream impacts. Options for storage and/or disposal of surplus groundwater should be discussed, including the beneficial and adverse impacts of each option.<sup>59</sup> Licensing requirements for each option should be identified.

Where dams, weirs, voids or ponds are proposed (including any proposed water storages at Cement Hill),<sup>60</sup> the EIS should investigate the effects of predictable climatic extremes (droughts, floods) upon the structural integrity of the containing walls, and the quality of water contained, and flows and quality of water discharged. The planning and design of the surface water areas on the mining lease could follow the Queensland Health document “Guidelines to

<sup>54</sup> DMR (4)

<sup>55</sup> DES (4)

<sup>56</sup> DNRM (32)

<sup>57</sup> DNRM (33)

<sup>58</sup> DNRM (34)

<sup>59</sup> PerrinM (5), PerrinS (2), Dennis (2), Hurrey (5), Cross (1,2)

<sup>60</sup> DNRM (36)

Minimise Mosquito and Biting Midge Problems in New Development Areas” to reduce mosquito breeding.<sup>61</sup>

A dam failure impact assessment should be carried out for any proposed dams (including any potential water storage dams at Cement Hill) that, due to their size, trigger the need for such an assessment under the *Water Act 2000*. Any dams that are likely to be referable under the *Water Act 2000* should be noted and emergency response procedures incorporated into the Project's Environmental Management Overview Strategy (EMOS).

The need, or otherwise, for licensing of any dams (including referable dams) or creek diversions, under the *Water Act 2000*, should be discussed. Where any temporary diversion or bunding of existing water courses is required, the need, or otherwise, for approval under the *Fisheries Act 1994* to undertake waterway barrier works should be specifically identified.<sup>62</sup> The process for water allocation and water discharge should be established in consultation with the EPA and DNRM. Consideration should also be given to the “Water Allocation and Management Plan (Fitzroy Basin), 1999” and the draft “Fitzroy Basin Resource Options Plan, 2002”.<sup>63</sup>

Consideration should be given to the potential impacts of the Project on floodplain hydrology (including changes to flooding characteristics), existing land use and infrastructure and the integrity of any watercourses. Minimising risk to life and property and the protection of water (flood harvesting)<sup>64</sup> entitlements are also issues that should be addressed. Potential impacts to the natural environment from stream diversions should also be discussed.<sup>65</sup>

The environmental values of the surface waters potentially affected by the Project should be identified in accordance with the “Environmental Protection (Water) Policy, 1997”. Surface water (and groundwater) quality objectives should be determined after consideration of the “Australian and New Zealand Guidelines for Fresh and Marine Water Quality (NWQMS 4, 2000)”.

Risks to farmland from potentially contaminated surface water flow, particularly during flood events and/or failure of levee banks, should be assessed.<sup>66</sup>

Options for flood<sup>67</sup> mitigation and the effectiveness of mitigation measures should be discussed with particular reference to sediment, salinity and other emissions of a hazardous or toxic nature to human health, flora or fauna. Proposals for maintenance of flood levees post-mining should be discussed.<sup>68</sup>

### 3.4.3 Groundwater

The EIS should include an assessment of the potential impact caused by the Project to local groundwater resources (including groundwater water quality)<sup>69</sup> and effects on adjacent users and vegetation cover.<sup>70</sup>

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<sup>61</sup> QH (2)

<sup>62</sup> DPI (10)

<sup>63</sup> DNRM (38)

<sup>64</sup> DNRM (39)

<sup>65</sup> Mills (7)

<sup>66</sup> Dennis (4), Mills (8), Otto (4)

<sup>67</sup> DPI (8)

<sup>68</sup> Mills (9)

<sup>69</sup> QH (6)

<sup>70</sup> DPI (9)

The impact assessment should define the extent of the areas within which groundwater resources are likely to be affected by the proposed operations and the significance of the Project with regard to groundwater depletion and recharge.

This section should also propose management options available to monitor and mitigate these effects in particular, proposed methods and the feasibility of those methods to 'make good' any adverse affects on the groundwater resources utilised by adjacent landholders.<sup>71</sup> The expected response of the groundwater resource to the progression and finally cessation of the Project should be described, particularly in relation to the recharge potential of aquifers affected by mining.<sup>72</sup>

The EIS should include mapping and a description of potential impacts for those areas where groundwater drawdown could deplete water in the root zone of vegetation with conservation value, particularly in the State Forest and in localities with endangered regional ecosystems or threatened species. The sensitivity of the modelling should be of sufficient precision to fully assess the extent of groundwater depletion in the root zone of vegetation with conservation value. That is, mapping of changes to piezometric surfaces should be shown with contours at suitable intervals, and the contour intervals should not be so coarse as to mask potentially damaging impacts. The groundwater modelling should also indicate the potential impacts of groundwater drawdown on perennial or ephemeral watercourses, billabongs, water holes, springs (such as on toe slopes) and wetlands even when their wet periods are infrequent.<sup>73</sup>

The EIS should provide an assessment of the options for the beneficial use of surplus water from dewatering of the mine pit over the life of the Project, including the potential for irrigation or recharge to mitigate the impacts on the root zone in areas containing vegetation with conservation value.<sup>74</sup> The evaluation of options for managing the surplus water should include assessment of their potential impacts and benefits, and a rationale for the recommendation of a preferred option.<sup>75</sup> If disposal of surplus groundwater into Gowrie Creek is an option, the EIS should include an assessment of the potential for such water to impact on fluvial processes and stream integrity. Strategies to mitigate any negative impacts should also be described.<sup>76</sup>

An assessment should be undertaken of the impact of the Project on the local ground water regime caused by any land disturbance. An assessment of the potential to contaminate groundwater resources and associated potential impacts to humans and livestock<sup>77</sup> and measures to prevent, mitigate and remediate such contamination should be discussed.

## **3.5 Nature Conservation – Existing Environment**

### **3.5.1 General**

The EIS should describe the existing environmental values for nature conservation that may be affected by the Project in accordance with the "Biodiversity Assessment and Mapping Methodology (EPA 2002)". This should include:

- integrity of ecological processes, including habitats of rare and threatened species;
- conservation of resources;

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<sup>71</sup> DNRM (40), PerrinM (3), PerrinS (4), Dennis (2), Mills (3), Hurrey (4), Otto (1), Cross (1)

<sup>72</sup> DNRM (40)

<sup>73</sup> EPA (12)

<sup>74</sup> EPA (13)

<sup>75</sup> EPA (15)

<sup>76</sup> DNRM (41)

<sup>77</sup> Mills (5)

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

The flora and fauna communities should be described, in particular those that are rare or threatened, in environmentally sensitive localities, including waterways and wetlands,<sup>78</sup> riparian zones, and wilderness and habitat corridors. The description should include a plant species list, a vegetation map at appropriate scale and an assessment of the significance of native vegetation (including regrowth and restored areas in addition to remnant vegetation), from a local, regional, State and national perspective. Vegetation units should be related to regional ecosystems.

The EIS should include a discussion of the following particular ecological communities listed as 'threatened (endangered)' under the *EPBC Act*:

- Bluegrass (*Dichanthium* spp) communities of the Brigalow Belt; and
- Brigalow (*Acacia harpophylla*) dominant and co-dominant ecological communities.

The EIS should identify issues relevant to sensitive areas, or areas which may have low resilience to environmental change. The proximity of any Project infrastructure to any biologically sensitive areas should be described.

Reference should be made to both State and Commonwealth endangered species legislation. The *Vegetation Management Act 1999* and the findings of any Regional Vegetation Management Plan should also be referenced.

### 3.5.2 Terrestrial Flora

For terrestrial vegetation, a map at a suitable scale should be provided for the entire Project area, including the proposed conveyor route and proposed relocation of State-controlled roads.<sup>79</sup> Map unit descriptions should also discuss their relationship to regional ecosystems. Sensitive or important vegetation types should be highlighted and their value as habitat for fauna and conservation of specific rare floral and faunal assemblages or community types discussed. The existence of rare or threatened species should be specifically addressed. The surveys should include vegetation structure, assemblage, diversity and abundance.

In particular, the EIS should contain results from surveys for *Dichanthium queenslandicum* (King Bluegrass), listed as 'threatened (vulnerable)' under the Commonwealth *EPBC Act* and *Trioncinia retroflexa* (Belyando cobbler's pegs), listed as 'endangered' under the *Nature Conservation (Wildlife) Regulation 1994*, conducted during and following the flower set and seeding period.

Dawson Gum (*Eucalyptus cambageana*), Brigalow (*Acacia harpophylla*), and *E. coolabah* woodlands and remnants also need to be described in terms of floral composition, extent, significance and sizes.

The occurrence of pest plants (weeds), particularly declared plants under the *Land Protection (Pest and Stock Route Management) Act 2002* should be shown on a map at an appropriate scale. Any survey to identify the presence of such plants will need to occur after significant summer rainfall events to allow germination.

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<sup>78</sup> DPI (11)

<sup>79</sup> DMR (8)

The location of any horticultural crops in the vicinity of the Project facilities should be shown.

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

- location, extent, biodiversity status and conservation status of vegetation types using the EPA's regional ecosystem type descriptions in accordance with "Queensland Herbarium (2003), Regional Ecosystem Description Database, Version 4.0", which can be found at [http://www.epa.qld.gov.au/environment/science/herbarium/regional\\_ecosystems/](http://www.epa.qld.gov.au/environment/science/herbarium/regional_ecosystems/), and "The Conservation Status of Queensland's Bioregional Ecosystems, Sattler P.S. & Williams R.D. (Eds) 1999";<sup>80</sup>
- location of species listed as Protected Plants under the *Nature Conservation (Wildlife) Regulation 1994* and subsequent amendments; and
- any plant communities of cultural, commercial or recreational significance should be identified.

Undertake vegetation surveys for each significant natural vegetation community likely to be impacted by the Project at a sufficient number of sites, preferably in both summer and winter, as follows:

- all data requirements of the Queensland Herbarium CORVEG database should be collected;
- the minimum site size should be 50 by 10 metres;
- a complete list of species present at each site should be recorded;
- the relative abundance of plant species present should be recorded;
- any plant species of conservation, cultural, commercial or recreational significance should be identified; and
- specimens of species listed as Protected Plants under the *Nature Conservation (Wildlife) Regulation 1994*, other than common species, are to be submitted to the Queensland Herbarium for identification and entry into the HERBRECS database.

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

Details of any riparian vegetation and native grasslands, and their value for fauna habitat and conservation of specific rare floral and faunal assemblages or community types, from both a local and regional perspective, should be provided. Any special landscape values of any natural vegetation communities should be described.

A description of the habitat requirements and the sensitivity of aquatic flora species to changes in flow regime, water levels and water quality in the Project areas should be described.

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<sup>80</sup> EPA (16)

### 3.5.3 Terrestrial Fauna

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

- species diversity (i.e. a species list) and abundance of animals, including birds, reptiles, mammals and bats;
- any species which are poorly known but suspected of being rare or threatened;
- habitat requirements and sensitivity to changes, including movement corridors, buffer zones<sup>81</sup> and barriers to movement. (It should be noted that the Queensland Fisheries Service policy recommends a separation distance of 50m from developments to freshwater waterways and wetlands);<sup>82</sup>
- the existence of feral or exotic animals; and
- existence of any rare, threatened or otherwise noteworthy species/communities in the study area, including Dunmall's Snake (*Furina dunmalli*), which is listed as 'threatened (vulnerable)' under the *EPBC Act*. The description should include a discussion of range, habitat, breeding, recruitment, feeding and movement requirements, and current level of protection (e.g. any requirements of Protected Area Management Plans).

The EIS should indicate how well any affected communities are represented and protected elsewhere in the sub-region where Project sites occur.

### 3.5.4 Aquatic Biology

The aquatic flora and fauna occurring in the areas affected by the Project should be described if present, noting the patterns and distribution in the waterways or wetlands.

The description of the fauna and flora present or likely to be present at any time during the year in the area should include:

- fish species, mammals, reptiles, amphibians, and aquatic invertebrates occurring in the waterways or wetlands<sup>83</sup> within the Project area;
- aquatic (waterway) plants; and
- aquatic substrate and stream type.

## 3.6 Nature Conservation – Management of Impacts

The EIS should discuss all likely direct and indirect environmental harm on flora and fauna in both terrestrial and aquatic environments within the Project area including transport corridors.<sup>84</sup>

The potential environmental harm to the ecological values of the area affected 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 vegetation not cleared should be discussed. Short term and long term durations should be considered and include discussion on whether the effects are reversible or irreversible.

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<sup>81</sup> DPI (12)

<sup>82</sup> DPI (13)

<sup>83</sup> DPI (14)

<sup>84</sup> DNRM (43)

The EIS should describe the potential impacts on fauna due to the disruption of their movement corridors by the removal of sections of habitat, such as the stock route, and by the fragmentation of habitat due to the re-routing of roads. Mitigation measures for impacts on fauna movement should be proposed and discussed.<sup>85</sup> These impacts should be assessed in the context of how well the ecological values are represented and protected elsewhere, as identified by the “Biodiversity Assessment and Mapping Methodology (EPA 2002)”.

The potential environmental harm on flora and fauna of any alterations to the local surface and ground water environment should be discussed with specific reference to potential environmental harm on vegetation with conservation value, particularly in the State Forest, riparian areas, corridors, such as the stock routes, and in localities with endangered regional ecosystems or threatened species.<sup>86</sup> Measures to mitigate the environmental harm to habitat or the inhibition of normal movement, propagation or feeding patterns, and change to food chains should be described.

Where removal of native vegetation is proposed, alternative management strategies such as compensatory plantings or protection of nearby regrowth should be described. Consideration should be given to proposals to link revegetated areas with undisturbed regional ecosystems in the context of proposed road diversions.<sup>87</sup>

Weed control strategies aimed at containing existing weed species (e.g. Parthenium and other declared plants) and ensuring that no new declared plants are introduced to the area should be outlined with the view to developing and implementing a Pest Management Plan for the area. Pest animal management strategies should also be addressed. The EIS should propose strategies to ensure that the Project does not contribute to increased encroachment by any feral animal species. Reference should be made to the local government authority’s Pest Management Plan when determining control strategies.<sup>88</sup>

The control of any domestic animals introduced to the area should be addressed.

Areas which would be regarded as sensitive with regard to flora and fauna have one or more of the following features (and which should be identified, mapped, avoided or effects minimised):

- important habitats of species listed under the *Nature Conservation Act 1992* and/or *EPBC Act* as presumed extinct, endangered, vulnerable or rare;
- regional ecosystems recognised by the EPA as 'endangered' or 'of concern' or 'not of concern' and/or ecological communities listed as 'critically endangered', 'endangered' or 'vulnerable' under the *EPBC Act*;
- ecosystems which provide important ecological functions such as riparian vegetation, important buffer to a protected area, or important habitat corridor between areas;
- protected areas which have been proclaimed under the *Nature Conservation Act 1992* 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*; and

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<sup>85</sup> EPA (17)

<sup>86</sup> EPA (18)

<sup>87</sup> DNRM (44)

<sup>88</sup> DNRM (45)

- areas of State, regional or local significance for their integrated biodiversity values, or areas with values that have been flagged as significant, in the EPA's "Brigalow Belt Biodiversity Planning Assessment", where available.

### 3.7 Air – Existing Environment

The EIS should describe the existing air environment which may be affected by the Project. The following should also be described:

- existing air shed environment;
- background dust deposition levels and sources of suspended particulates; and
- greenhouse gases.

Sufficient data on local meteorology should be gathered to provide a baseline for later studies if required. Parameters should include air temperature, wind speed and direction, and other parameters necessary for input to atmospheric dispersion models.

### 3.8 Air – Management of Impacts

The EIS should state the objectives for air emissions in respect of relevant standards (ambient and ground level concentrations), emission guidelines, and any relevant legislation. The EIS should describe the quantity and quality of all air emissions, including dust from the Project during construction and operation.

The assessment of the Project's impact on air quality should consider:

- features of the Project designed to suppress or minimise emissions, including dust;
- emissions of dust during normal and a range of upset conditions, and the potential impacts of dust emissions on surrounding land uses, including cotton production and rainwater quality for human use<sup>89</sup> and temporary land uses (e.g. construction camp);<sup>90</sup>
- the impacts of dust created by the proposed overland conveyor;
- the differences (if any) of the Clermont resource coal being loaded and transported on the existing railway, as opposed to the existing coal transported from the Blair Athol mine;
- estimates of ambient levels of pollutants, including PM<sub>10</sub> fraction of dust;
- potential impacts of air-borne sulphides on property and equipment due to rusting;<sup>91</sup>
- the relevant goals in the "National Environmental Protection Council (Ambient Air Quality) Measure" and the "Environmental Protection (Air) Policy 1998"; and
- airshed management and the contribution of the Project to airshed capacity in view of existing and future users of the airshed for assimilation and dispersion of emissions.

#### Greenhouse Gas Abatement

A full assessment of greenhouse gas emissions from the Project should be provided including:

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<sup>89</sup> Otto (6,8)

<sup>90</sup> QH (3)

<sup>91</sup> Otto (7)

- an inventory of proposed future annual emissions for each Greenhouse Gas and total emissions expressed in 'CO<sub>2</sub> equivalent' terms for each component of the Project and for the combined total Project;
- the intended measures to avoid and minimise greenhouse emissions; and
- opportunities for offsetting greenhouse gas emissions, such as through forestry plantations, investing in renewable energy projects, and purchase of renewable energy or support for relevant research.

The above assessment should be undertaken with due consideration of relevant protocols, agreements and strategies including: "The National Greenhouse Strategy", "National Greenhouse Gas Inventory", "The Framework Convention on Climate Change" and voluntary programs under the Australian Greenhouse Office.

### **3.9 Noise and Vibration – Existing Environment**

The EIS should describe the existing environment values that may be affected by noise and vibration from Project activities.

The results of any baseline monitoring of noise and vibration in the proposed vicinity of key Project areas should be described. Baseline monitoring should include a selection of sensitive areas affected by the Project.

Sufficient data should be gathered to provide a baseline for later studies. The daily variation of background noise levels at nearby residences should be monitored and reported in the EIS. Monitoring methods should adhere to relevant EPA Guidelines or Australian Standards, and any relevant requirements of the "Environmental Protection (Noise) Policy, 1997". It is recommended that the proposed noise and vibration monitoring and modelling programs are discussed with the EPA. Specific guidelines and standards should be referenced, viz;

- AS1055.1 and AS1055.2, 1997. "Description and Measurement of Environment Noise, Recognised Sleep Disturbance Criteria", British Standards BS7385, part 2, 1993;
- "Evaluation and Measurement for Vibration in Buildings, Guide to Damage Levels from Ground-borne Vibration", BS6472, 1992 - Evaluation of Human Exposure to Vibration in Buildings (1Hz to 80 Hz);
- Australian/New Zealand Standard AS/NZS 2107-2000, Acoustics – "Recommended Design Sound Levels and Reverberation Times for Building Interiors"; and
- World Health Organisation Guidelines for Community Noise, 1999.

Comment should be provided on any current activities near the key Project areas which may cause a background level of ground vibration.

### **3.10 Noise & Vibration – Management of Impacts**

The EIS should describe the modelled impacts of noise and vibration generated by the Project. The potential environmental harm of noise and vibration at all potentially sensitive places, in particular, any places of work, residence, recreation, or worship should be quantified in terms of objectives, standards to be achieved and measurable indicators. This should also include environmental harm on terrestrial animals. Potential impacts from blasting vibration on the structural integrity of neighbouring homesteads and farm buildings should be discussed.<sup>92</sup>

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<sup>92</sup> Otto (9), Cross (6)

Proposals to minimise or eliminate these effects, including details of any screening, lining, enclosing or bunding should be provided. Timing schedules for operations should be discussed, with respect to minimising environmental harm, including environmental nuisance from noise. This description should also include temporary sensitive places, including the proposed construction camp.<sup>93</sup>

Information should be supplied on blasting which might cause ground vibration or fly rock on or adjacent to the site, with particular attention given to places of work or residence, and general amenity. The magnitude, duration and frequency of any vibration should be discussed. Measures to prevent or minimise environmental harm, including nuisance, should be discussed.

Off-site transport noise and vibration factors, including from road and overland conveyor transport, should be described, particularly in terms of the relocation of State-controlled roads on nearby residences.<sup>94</sup>

Any potential for ground vibration effects on underground pipelines and telecommunication lines should be examined.

### 3.11 Cultural Heritage – Existing Environment

The EIS should describe the existing environmental values for cultural heritage that may be affected by the Project activities. Note that native title rights and interests in relation to the area covered by the Project are protected under the Commonwealth *Native Title Act 1993*. This Act ensures that native title parties are provided with the relevant procedural rights for any acts that wholly or partially affect the ability of the native title holders to exercise their native title rights and interests. It is the State who is responsible for making the assessments in relation to native title and, where applicable, identifying the relevant procedural rights.

All investigations and consultation in relation to cultural heritage should be undertaken in such a manner and detail as to satisfy statutory responsibilities and duties of care, under the following legislation to protect areas and objects of cultural heritage significance: the *Cultural Record (Landscapes Queensland and Queensland Estate) Act 1987 (CR Act)*, (or the *Aboriginal Cultural Heritage Act 2003 (ACH Act)*, following its commencement), the *Queensland Heritage Act 1992*, and the Commonwealth *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*. **Note:** that the *ACH Act* is expected to be enacted in March/April 2004, at which time the *CR Act* will be repealed. Whilst transitional provisions of the *ACH Act* will enable approved activities under the *CR Act* to continue, the EIS should satisfy the relevant requirements of the *ACH Act* for matters in relation to Aboriginal cultural heritage. Non-indigenous cultural heritage will continue to be administered under the *Queensland Heritage Act 1992*.

The EIS should encompass all of the elements defined as “Aboriginal cultural heritage” under the *ACH Act*.

A cultural heritage study will be required which describes indigenous and non-indigenous cultural heritage sites and places, and their values, and as a minimum follow the requirements for Aboriginal cultural heritage studies, as set down in Part 6 of the *ACH Act*. The study should include:

- consultation with:

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<sup>93</sup> QH (3)

<sup>94</sup> QH (7)

- the Register of the National Estate (maintained by the Australian Heritage Commission),
- the Queensland Heritage Register (maintained by the EPA),
- the Aboriginal and Torres Strait Islander Database (maintained by the EPA),
- any local government heritage register; and
- any existing literature relating to the affected areas;
- liaison, in accordance with the requirements of the *ACH Act*, with the Aboriginal party for the area concerning:
  - places of significance (including archaeological sites, natural sites, story sites etc); and
  - appropriate involvement in field surveys;
- a systematic survey of the proposed development area to locate and record Aboriginal cultural heritage and non-indigenous cultural heritage places;
- a report of work done, which includes background research, relevant environmental data and methodology, as well as results of field surveys, and recommendations (having due regard for any confidentiality requirements specified by community representatives); and
- a permit to conduct the research and survey under the provisions of the *CR Act*. (Note that subsequent survey work approved under the *CR Act* will need to conform to the *ACH Act*, if this latter Act has come into force at the time of the proposed survey).

### 3.12 Cultural Heritage – Management of Impacts

The EIS should describe the potential impacts to Aboriginal cultural heritage and non-indigenous cultural heritage values, if any, in the vicinity of the Project that are to be managed under a Cultural Heritage Management Plan (CHMP) developed specifically for the Project.

As a minimum, the EIS should include a draft CHMP that meets the requirements for developing a CHMP and meeting the standard for approval, as set down in Part 7 of the *ACH Act*. In addition, the management strategies should satisfy statutory responsibilities and duties of care to protect areas and objects of cultural heritage significance under the *Queensland Heritage Act 1992*, the *CR Act* and the *Commonwealth Aboriginal and Torres Strait Islander Heritage Protection Act 1984*.

### 3.13 Waste – Management of Impacts

The EIS should provide an inventory of wastes generated by the Project through construction, and mining phases. In addition to the expected total volumes of each waste produced, an inventory of the waste per unit volume of coal produced should include:

- the tonnage of coal processed;
- the amount of resulting process wastes; and
- the tonnage and volume of overburden removed to extract the coal.

The EIS should provide the physical and chemical characteristics of waste material from the mine. All other wastes, including regulated wastes, generated by the Project (eg tyres) should also be described. The EIS should describe how the Project will address waste avoidance, reuse, recycling, treatment and disposal.

The EIS should provide plans showing proposed location, site suitability, dimensions and volume of overburden dumps, coal rejects dumps and coal tailings dams, including their

method of construction. If required, methods to prevent seepage and contamination should be given. Measures to ensure stability of the dumps and impoundments should be described.

The EIS should assess the potential impact of all wastes to be generated and provide details of each waste in terms of:

- operational handling and fate of all wastes including storage;
- on-site treatment methods proposed for the wastes (including sewerage);
- 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;
- level of impact on environmental values;
- methods proposed to be used to recycle waste oil and waste oil containers;<sup>95</sup>
- market demand for other recyclable waste (where appropriate);
- description of how the facilities required for the collection, storage and disposal of any waste originating from the mining lease will minimise the potential for the attraction of vermin and insects;<sup>96</sup> and
- proposed waste minimisation processes.

The EIS should provide volume estimates of industrial and domestic effluent that will be produced at each Project site and the proposed method of disposal.

### 3.13.1 Wastewater

The EIS should provide a description of the origin, quality and quantity of wastewater originating from the Project. Particular attention should be paid to the capacity of wastes to generate acid, saline or sodic waste water. Also, a water balance for the mining component of the Project is required to account for the estimated usage and discharge of water.

The EIS will need to consider the following effects:

- groundwater from pits and other excavations;
- rainfall directly onto disturbed surface areas;
- run-off from haul roads, plant and industrial areas, chemical storage areas;
- drainage (i.e. run-off plus any seepage or leakage) from dumps and stockpiles;
- seepage from other waste storages;
- water usage for:
  - domestic purposes,
  - process or moisture control use, and
  - dust suppression;
- evaporation; and
- water supply treatment plant - disposal of wastes.

Planning, design and management of any proposed sewerage treatment facility, including the reuse or disposal of treated wastewater, should follow the Interim "Guideline for Reuse or

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<sup>95</sup> EPA (21)

<sup>96</sup> QH (8)

Disposal of Reclaimed Wastewater (DNRM 1996)” and other relevant guidelines to protect the health and well being of people on and off the mine site.<sup>97</sup>

### **3.14 Built Environment – Existing**

This section should describe existing infrastructure facilities within and adjacent to the Project area. The location and owner/custodians of all tenures, reserves, roads and road reserves, railways and rail reserves, stock routes easements (including access arrangements)<sup>98</sup> and the like, covering the affected land should be shown. The locations and descriptions of all existing roads, railways, gas and water pipelines, power lines, telecommunications systems, constructed waterways, and any other infrastructure within the Project area, or likely to be affected by Project activities, should be provided. Any environmental values likely to be affected by this infrastructure should be described.

### **3.15 Built Environment – Management of Impacts**

#### **3.15.1 Infrastructure**

This section should detail the impacts of the Project on existing roads, stock routes and access arrangements,<sup>99</sup> railways, coal handling and port facilities, powerlines, pipelines, telecommunication lines, waterways and stormwater flow-paths from both the construction and operational phases of the Project. This evaluation should include any potential requirements to reschedule existing infrastructure maintenance programs.

In particular, this section should identify impacts to the State-controlled road and rail networks and local government road networks and indicate clearly the corrective measures necessary to address adverse road impacts, including a wet weather management strategy. An estimate of costs involved in corrective measures should also be detailed. Any upgrades to existing transport infrastructure, and associated costs, should be discussed. In addition, the EIS should consider the potential impacts of alternative coal transportation between the Clermont mine and the rail load-out facilities at Blair Athol, in the event that the proposed overland conveyor system is not a viable transport option.

Special reference should be made to any relationship between Project road works and works proposed in the current Road Implementation Program of the Department of Main Roads (DMR). Road infrastructure should be described and assessed according to DMR’s “Guidelines for Assessment of Road Impacts of Development Projects (Nov 2000)”. The EIS should discuss the results of consultation with the relevant district officers of DMR and local government regarding the potential impacts of the Project on the road network.

This section should discuss how transport elements of the Project relate to Queensland Transport’s existing transport strategies for the Central Queensland area and the future infrastructure needs of this area as presented in local and State Government documentation including any Regional Transport Plans.

The Regional Harbour Master (Dalrymple Bay) should be adequately consulted regarding maritime issues relating to the proposal. The EIS should discuss the results of the consultation.

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<sup>97</sup> QH (9)

<sup>98</sup> DPI (16)

<sup>99</sup> DPI (16)

The EIS should also outline arrangements made with the Dalrymple Bay Port Authority for the storage, handling and export of coal from the mine.

### 3.15.2 Traffic

This section should address the impact of traffic generated by the Project on both the Local Government and State-controlled road network in terms of adverse road impacts, including pavement degradation, intersection and road network performance, road safety, access requirements,<sup>100</sup> noise impact and air quality.

Strategies for managing the impacts of the Project on road safety, especially with regard to the proposed road diversions, should be presented.

The impacts of any increased traffic (due to construction activities and/or on-going operations) on existing school bus routes and services should be discussed. Necessary measures to eliminate or minimise the impact on the operation of these services and any infrastructure proposed (such as bus pull-off areas) to maintain current safety standards should be presented.

A comparison of the traffic situation and road conditions with and without the Project should be shown.

The EIS should include a draft Traffic Management Plan that deals with the impacts of both the construction and operational phases of the Project on the local road network, including during works to re-align sections of the State-controlled roads.

## 3.16 Social Environment – Existing Environment

This section aims to describe the existing social values that may be affected by the Project in the context of environmental values as defined by the *EP Act* and “Environmental Protection Policies”.

The amenity and use of the Project and adjacent areas for rural, agricultural, forestry, fishing, recreational, industrial, educational or residential purposes should be described. Consideration should be given to:

- community infrastructure and services;
- population and demographics of the affected community;
- local community values and lifestyles;
- recreational, cultural, leisure and sporting facilities and activities in the affected area;
- on-farm activities near the proposed Project activities;
- number of properties directly affected by the Project; and
- number of families directly affected by the Project (including not only property owners but also families of workers living on the property).

Information should also be provided on the existing housing market, with an emphasis on:

- the size of the private rental market in the area;
- the vacancy rate of rental accommodation, including assessment of seasonal fluctuations;

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<sup>100</sup> DMR (5)

- typical rents for the area;
- the availability and typical cost of housing for purchase in the area;
- the level of social housing in the area; and
- constraints and opportunities for new housing construction in the area, including the capacity of the local land development and housing construction industries to provide new housing.<sup>101</sup>

### 3.17 Social Environment– Management of Impacts

This section aims to define and describe the objectives for protecting or enhancing social values, and how the achievement of the objectives will be monitored, audited and managed.

The social impact assessment of the Project should consider the Project's impacts, direct and cumulative, both beneficial and adverse, on the local community through the information gathered in the community consultation program and the analysis of the existing socio-economic environment. The nature and extent of the community consultation program is to be described and a summary of the results incorporated in the EIS.

Social impacts should be considered both at the regional and local level, in the short term and longer term (including mine closure).<sup>102</sup> Attention should be paid to:

- impacts on demographic, social, cultural and economic profiles;
- impacts on local residents and existing lifestyles and enterprises, and
- impacts on human service delivery, including counselling and support services.<sup>103</sup>

In regard to affected indigenous and non-indigenous communities respectively, particular attention should be paid to the effects on:

- the ability of both indigenous and non-indigenous people, to live in accordance with their own values and priorities;
- the use of, and access to, culturally important areas and landscapes;
- the access to existing human and commercial services and housing;
- the ability to participate in regional and local employment and training opportunities; and
- the new Project workforce and their families.

The effects of the Project on local and regional residents, including land acquisition and relocation issues (including impacts resulting from relocation of State-controlled roads and stock routes)<sup>104</sup> and property valuation and marketability, community services and recreational activities should be described for the construction and operations phases of the development.

An assessment of the predicted impacts of the Proponent's activities (including activities by any sub-contractors) on the local and regional housing markets should also be undertaken. The assessment should refer to the projected accommodation needs for the Project in both the construction and operational phases, and estimate:

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<sup>101</sup> DoH (4)

<sup>102</sup> DPI (17)

<sup>103</sup> Cross (9)

<sup>104</sup> DMR (7)

- the capacity of local and regional housing markets to meet the accommodation needs of the Project. This includes the potential displacement of low-income residents from affordable rental accommodation and diminished availability of accommodation;
- any possible cumulative impacts on the local and regional housing market due to the presence of other existing or proposed major projects in the area, and seasonal employment factors; and
- the impact of the construction phase of the proposal on the local and regional residential development and housing construction industry, with particular reference to the demand for local contractors.<sup>105</sup>

Mitigation and enhancement strategies should be provided for any identified impacts to social values. Practical monitoring regimes should also be recommended.

### 3.18 Economic Environment – Existing Environment

This section aims to describe the existing economic environment that may be affected by the Project.

The character and basis of the local and regional economies should be described including:

- economic opportunities (including existing economic base and economic activity, potential economic opportunities, current local and regional economic trends);
- identification of existing labour force and unemployment statistics;<sup>106</sup>
- existing housing market, particularly rental accommodation which may be available for the Project workforce;
- types and numbers of businesses;
- existing property and land values;
- availability and prices of goods and services;
- historical descriptions of large scale resource developments and their effects in the region;
- the availability of suitable land for support industrial uses; and
- defined resource deposits, particularly petroleum, gas and coal reserves underlying the proposed transport corridors.

### 3.19 Economic Environment – Management of Impacts

This section aims to define and describe the objectives for protecting or enhancing economic values, and how the achievement of the objectives will be monitored, audited and managed.

The effect on local labour markets should be discussed with regard to the number and source of the workforce. This information should be presented according to occupational groupings of the workforce and show anticipated peaks in numbers during the construction period. This information should include an estimate of the anticipated numbers of workers who will be accompanied by dependents, as well as those who will be unaccompanied (i.e. single workers).<sup>107</sup> The EIS should assess the impacts of additional accommodation demand for

<sup>105</sup> DoH (5)

<sup>106</sup> DET (1)

<sup>107</sup> DoH (2)

both the Proponent and associated sub-contractors on the local housing market, particularly on the private rental market.<sup>108</sup>

In relation to the source of the workforce, clarification is required as to whether the Proponent or its contractors are likely to employ locally or through other means and whether there are initiatives for local employment opportunities. This should include a discussion of the interrelationship between the workforce wind-down at Blair Athol and the workforce ramp-up at the proposed Clermont Coal Project.

The impacts of both construction and operational workforces and associated contractors on housing demand should be addressed. An accommodation strategy for the construction workforce should be included, which addresses the estimated housing needs of both single and accompanied construction workers. This should include details of the size, location and management of any temporary worker accommodation that will be required either on-site or off-site. Maps should be included as necessary to illustrate the site, and should include the location of any proposed construction workers' accommodation on-site or in the vicinity of the project.<sup>109</sup> The capability of the existing housing stock, particularly rental accommodation, to meet any additional demands created by the Project should be discussed. This discussion should include consideration of the capacity of water supply and sewerage systems to service any new residential development and any Project proposals to supplement this infrastructure.

Any new skills and training to be introduced in relation to the Project should be identified, particularly opportunities for private investment in training. Adequate provision should be made for apprenticeship and worker training schemes, including consideration of a skills development and training strategy to assist disadvantaged groups as well as local residents. If possible, the occupational skill groups required and potential skill shortages anticipated should be indicated.<sup>110</sup>

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

- the relative significance of this Project in the local and regional economic context;
- the long and short-term beneficial (eg. job creation) and adverse (eg. competition with local small business) impacts that are likely to result from implementation of the proposed development;
- implications for future development in the locality (including constraints on surrounding land uses and existing industry);
- the value of lost opportunities or gained opportunities for other economic activities anticipated in the future; and
- impacts on local property values.<sup>111</sup>

Attention should be directed to the long and short-term effects of the Project (including mine closure)<sup>112</sup> on the regional income and employment and the State economy.

For identified impacts to economic values, mitigatory and enhancement strategies should be suggested and initial negotiations towards acceptance of these strategies should be facilitated. Practical monitoring regimes to assess the project impacts and the success of proposed strategies should also be recommended.

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<sup>108</sup> DoH (6)

<sup>109</sup> DoH (3)

<sup>110</sup> DET (2)

<sup>111</sup> PerrinH (4), Mills (11), Hurrey (7), Otto (10)

<sup>112</sup> DPI (18)

### 3.20 Health and Safety – Management of Impacts

The function of this section is to define and describe the objectives for protecting or enhancing health and safety community values. It should detail any impacts of the Project on the health and safety of the community, workforce, suppliers and other stakeholders, in terms of health, safety, quality of life from factors such as air emissions, odour, dust, pests, noise, waste and water. It should include details of:

- compliance with relevant Health & Safety legislation (e.g. for the mine site – *Explosives Act 1999, Coal Mining Safety and Health Act 1999*);
- security arrangements;<sup>113</sup>
- compliance with food hygiene legislation should food be supplied on-site (i.e. at construction camp);<sup>114</sup>
- emergency plans and safety management strategies, as well as corroboration of the effectiveness of such systems;
- details of on-site emergency response capabilities (e.g. on-site paramedic or first-aid officer), for both the construction and operational phases of the Project, which should include personnel trained for fire suppression and containment, rescue and first aid;<sup>115</sup> and
- the risk assessment conclusions reached and the level of off-site risk from the proposed developments.

Measures to prevent combustion of in situ and stockpiled raw materials, products or process elements should be described. The need for any permit under the *Building Act 1975*, or any permit to store flammable and combustible liquids should be addressed. This section should provide a complete inventory for each class of substances listed in the “Australian Dangerous Goods Codes” to be held on-site. This information should be presented by classes and should contain:

- chemical name;
- concentration in raw material chemicals;
- concentration in operation storage tank;
- U.N. number;
- packaging group;
- correct shipping name; and
- maximum inventory of each substance.

Details should be provided of safeguards proposed on the storage, use, handling and on-site movement of the materials to be stored on-site. The capacity and standard of bunds to be provided around the storage tanks for classified dangerous goods and other goods likely to adversely impact upon the environment in the event of an accident should be described. The procedures to prevent spillages, and the emergency plans to manage hazardous situations should be described.

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<sup>113</sup> QH (4)

<sup>114</sup> QH (4)

<sup>115</sup> DES (6)

Any use of mining equipment, such as industrial gauges or soil/moisture density gauges, that are used or proposed to be used on the mine site and contain sealed radionuclide must be held under a licence issued under the *Radiation Safety Act 1999*.<sup>116</sup>

In addition to on-site risks, the external risks of the Project should also be considered. Specifically, external risks to any bridge structures should be considered. External risks from natural hazards should be determined on the basis of “AS/NZA Risk Management Standard 4360:1999”.

This section should present a hazard analysis for all aspects of the construction and operation of the Project where appropriate, including the industrial and transport components. The transport of any dangerous goods should be specifically addressed. Risk assessment should include consideration of maximum accidental spillage or emission of toxic or environmentally harmful material, potential impacts on human health and natural ecosystems, and appropriate management and mitigation strategies.

A preliminary hazard analysis should be conducted in accordance with the appropriate “Guidelines for Hazard Analysis”. The assessment should outline the implications for, and the impact on, the surrounding land uses, with reference to any Belyando Shire Disaster Plans, especially any Blair Athol Mine Disaster Plan. The preliminary hazard analysis should incorporate:

- all relevant hazards (minor and major);
- the possible frequency of potential hazards, accidents, spillages and abnormal events occurring;
- indication of cumulative risk levels to surrounding land uses;
- life of any identified hazards;
- a list of all hazardous substances to be used, stored, processed or produced;
- the rate of usage; and
- description of processes, type of the machinery and equipment used.

Practical monitoring regimes should also be recommended in this section.

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<sup>116</sup> QH (5)

## **4. DRAFT ENVIRONMENTAL MANAGEMENT OVERVIEW STRATEGY**

This Section should be used to develop a draft Environmental Management Overview Strategy (EMOS) for the proposed mining project, according to EPA's "Guidelines for Environmental Management Planning for Non-Standard Exploration and Mining Projects". It can be developed from the preceding information in the EIS. Its purpose is to set out the Proponent's commitments to environmental management, i.e. how environmental values will be protected and enhanced. Protection of environmental values will be achieved by preventing or minimising environmental harm in accordance with the commitments made in the text of the EIS. The EMOS is based on these commitments. The general content of the EMOS comprises:

- the Proponent's commitments to acceptable levels of environmental performance, including environmental objectives, i.e. levels of expected environmental harm, performance standards and associated measurable indicators, including progressive and final rehabilitation, performance monitoring and reporting; and
- control strategies to implement the commitments.

The EMOS should contain enough information to adequately address the standard criteria defined in Section 203 of the *EP Act*, which includes matters such as the principles of ecologically sustainable development and the resilience of the receiving environment.

## **5. REFERENCES**

The EIS should provide all references consulted.

## **6. RECOMMENDED APPENDICES**

### **6.1 Development Approvals**

A list of the development approvals required by the Project should be presented.

### **6.2 Final ToR for this EIS**

A copy of the final ToR should be included in the EIS. A summary, cross-referencing specific items of the Terms of Reference to the relevant section of the EIS, should also be provided.

### **6.3 Research**

Proposals for researching alternative environmental management strategies or for obtaining any further necessary information should be outlined in an appendix.

### **6.4 Consultation Report**

A list of advisory agencies should be provided in a summary Consultation Report, which should also list the Commonwealth, State and Local government agencies consulted, and the individuals and groups of stakeholders consulted. A summary of the issues raised by these

groups, and the means by which the issues have been addressed, should be provided in the text of the EIS.

The EIS should summarise the results of the community consultation program, providing a summary of the groups and individuals consulted, the issues raised, and the means by which the issues were addressed. The discussion should include the methodology used in the community consultation program including criteria for identifying stakeholders and the communication methods used.

Information about identifying affected parties (as defined by the *EPBC Act*) and interested and/or affected persons (as defined by the *EP Act*) should be included.

## **6.5 Study Team**

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

## **6.6 Glossary of Terms**

A glossary of technical terms and acronyms should be provided.

## **6.7 Specialist Studies**

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

- flora and fauna studies, including the subregional analysis of representativeness and adequacy of protection for the terrestrial/riparian vegetation communities and their component flora and fauna taxa within the affected areas;
- an integrated assessment of relative biodiversity/conservation values, based on the methodology outlined in “Biodiversity Assessment and Mapping Methodology (EPA 2002)”;
- air pollution, noise and vibration;
- waterway hydrology and groundwater;
- geology;
- transport and traffic studies;
- economic studies and/or cost-benefit analyses;
- hazard and risk studies;
- soil survey and land suitability studies;<sup>117</sup> and
- land use and land capability studies.

## **6.8 Corporate Environmental Policy**

Pacific Coal should attach a copy of its corporate environmental policy and planning framework document.

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<sup>117</sup> DNRM (46)

## **6.9 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 EIS.