Terms of Reference for an Environmental Impact Assessment

Terms of Reference for the Integrated Isaac Plains Project

Environmental Protection Agency
www.epa.qld.gov.au **ABN 87 221 158 786**

Queensland Government
Environmental Protection Agency
Queensland Parks and Wildlife Service

GLOSSARY

The following abbreviations have been used in this document:

ACH Act *Aboriginal Cultural Heritage Act 2003*

affected person/party

- "a person on the operational land or any land adjoining it;
- a registered native title body corporate;
- a registered native title claimant;
- a representative Aboriginal/ Torres Strait Islander body; or
- a relevant local government for the operational land".

AHD Australian Height Datum

ANZECC Australian and New Zealand Environment and Conservation Council

BPA Biodiversity Planning Assessment

CAMBA China and Australia Migratory Bird Agreement

CHMP Cultural Heritage Management Plan

CHPP Coal Handling and Preparation Plant

DEW Commonwealth Department of the Environment and Water Resources

DME Queensland Department of Mines and Energy

DMR Department of Main Roads

DNRW Queensland Department of Natural Resources and Water

EA Environmental Authority

EIS Environmental Impact Statement

EMOS Environmental Management Overview Strategy

EM Plan Environmental Management Plan

EP Act *Environmental Protection Act 1994*

EPA Environmental Protection Agency

EPBC Act Commonwealth *Environment Protection & Biodiversity Conservation Act 1999*

EPC Exploration for Coal Permit

EPP Air *Environmental Protection (Air) Policy 1997*

EPP Noise *Environmental Protection (Noise) Policy 1997*

EPP Water *Environmental Protection (Water) Policy 1997*

EPP Waste *Environmental Protection (Waste Management) Policy 2000*

EPR *Environmental Protection Regulation 1998*

EPWMR *Environmental Protection (Waste Management) Regulation 2000*

ESD Ecologically Sustainable Development

GQAL Good Quality Agricultural Land

IAS Initial Advice Statement

IDAS Integrated Development Assessment System as defined by the *Integrated Planning Act 1997*

IIPP Integrated Isaac Plains Project

interested person/party

"a person proposed under Section 41(3)(b) of the EP Act; i.e. an unincorporated community or environmental body with a financial or non-financial interest in the local government area that the operational land is in"

IPA *Integrated Planning Act 1997*

IPCM Isaac Plains Coal Management Pty Ltd

JAMBA Japan and Australia Migratory Bird Agreement

KDA Kumba Designated Area

Mining Project

A mining project means all mining activities carried out, or proposed to be carried out, under one or more mining tenements, in any combination, as a single integrated operation.

Mining Activities

1 A mining activity means an activity mentioned in Subsection (2 below), that, under the *Mineral Resources Act 1989*, is authorised to take place on –

   a land to which a mining tenement relates; or

   b land authorised under that Act for access to land mentioned in paragraph (a).

2 For subsection (1) the activities are as follows:

   a prospecting, exploring or mining under the *Mineral Resources Act 1989* or another Act related to mining;

   b processing a mineral won or extracted by an activity under paragraph (a);

   c an activity that –

3 is directly associated with, or facilitates or supports, an activity mentioned in paragraph (a) or (b); and

4 may cause environmental harm;

   a rehabilitating or remediating environmental harm because of a mining activity under paragraphs (a) to (c);

   b action taken to prevent environmental harm because of an activity mentioned in paragraphs (a) to (d);

   c any other activity prescribed for this subsection under a regulation.

MDL Mineral Development Licence issued pursuant to the *Mineral Resources Act 1989*

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

MNES Matters of National Environmental Significance

MRA *Mineral Resources Act 1989*

Mtpa Million Tonnes per Annum

NCA *Nature Conservation Act 1992*

NCR *Nature Conservation Regulation 1994*

NEPM	National Environmental Protection Matters
NES	National Environmental Significance as defined by the *Environment Protection & Biodiversity Conservation Act (C'wlth) 1999*
NHMRC	National Health and Medical Research Council
PHA	Preliminary Hazard Analysis
PL	Petroleum Lease
Proponent	The IIPP is operated as an unincorporated joint venture with Isaac Plains Coal Management Pty Ltd (IPCM) (Manager) being the management company responsible for all operations undertaken as part of the IIPP on behalf of the joint venture participants, i.e. IP Coal Pty Ltd and AMCI (IP) Pty Ltd. For the sake of simplicity, the term IPCM is used throughout this document to refer to the joint venture participants and the Manager.
PSI	Preliminary Site Investigation
QH	Queensland Herbarium
QR	Queensland Rail
RE	Regional Ecosystem
ROM	Run-of-Mine
TIA	*Transport Infrastructure Act 1994*
TOs	Traditional Owners
ToR	Terms of Reference
VMA	*Vegetation Management Act 1999*
W Act	*Water Act 2000*

PART A PREAMBLE

PROJECT PROPONENT

The Integrated Isaac Plains Project (IIPP) is operated as an unincorporated joint venture with Isaac Plains Coal Management Pty Ltd (IPCM) (Manager) being the management company responsible for all operations undertaken as part of the IIPP on behalf of the joint venture participants, i.e. IP Coal Pty Ltd and AMCI (IP) Pty Ltd. For the sake of simplicity, the term IPCM is used throughout this document to refer to the joint venture participants and the Manager.

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PROJECT SUMMARY

Project Description

The existing approved Isaac Plains Coal Mine is located in the northern end of EPC755 over which ML70342 and Environmental Authority (EA) (Permit # MIN100329505, dated 07/07/06) have been granted. The Isaac Plains Coal Mine currently has approval to mine at a rate of 2 million tonnes per annum (Mtpa). Isaac Plains Coal Management Pty Ltd (IPCM) have commenced development of the Isaac Plains Coal Mine.

IPCM, through the Joint Venture Partners, is planning to secure mining leases (MLs) under the *Mineral Resources Act 1989* (MRA) for an extension to the existing Isaac Plains Coal Mine onto the southern part of Exploration Permit for Coal 755 (EPC755) and an adjoining area to the west known as the Kumba Designated Area (KDA). These areas are collectively referred to as the "Expansion Area". The proposed project, referred to throughout this document as "the Integrated Isaac Plains Project (IIPP)", will comprise some changes to the existing mine, and activities within the Expansion Area.

The major components of the existing Isaac Plains Coal Mine include:

- 5 contiguous open cut pits;
- out-of-pit spoil dumps;
- access and haul roads;
- a Run-of-Mine (ROM) coal stockpile;
- a coal handling and preparation plant (CHPP) area including crushing facility, coal stockpile pad, temporary reject stockpiles, rail loop and rail loading facilities;
- mine infrastructure areas including office buildings, workshops, controlled access gate and a sewage treatment system; and
- water management structures.

The major components of the IIPP located either wholly or partially within the Expansion Area, in addition to those identified above, will include:

- open cut pit(s);
- out-of-pit spoil dumps;
- access and haul roads;
- ROM coal stockpile;
- a small mine infrastructure area including office buildings, controlled access gate and sewage treatment plant;
- a low level crossing of the Isaac River;
- an underpass of the Peak Downs Highway;
- water management structures; and

- installation of flood levees (progressively installed with the staged development of the open cut pit(s) in the Expansion Area).

The IIPP also includes the diversion of three waterways, namely Smoky Creek and Billy's Gully within the existing Isaac Plains Coal Mine site, and Conrock Gully within the Expansion Area. Billy's Gully and Conrock Gully are the names adopted for the formerly unnamed watercourses which traverse ML70342 and the Expansion Area respectively, and are consistent with those used by the landholders. The diversions within ML70342 are not currently approved activities.

Based on the current resource estimates and mine planning, ROM coal production from the IIPP will increase from the currently approved rate of 2 Mtpa to approximately 4 Mtpa for a period of approximately 15 years. IPCM commenced development of the Isaac Plains Coal Mine in late 2005 and coal production commenced in the third quarter of 2006. Mined coal from the Expansion Area will be hauled north across the Isaac River via a new low level crossing, and through an underpass of the Peak Downs Highway to the CHPP on ML70342. Processed and washed coal from the IIPP will be railed to Dalrymple Bay Coal Terminal and exported. The existing Isaac Plains Coal Mine CHPP has the capacity to accommodate the planned ROM coal production of 4 Mtpa, with the increased throughput from the IIPP being achieved through increased operational hours, i.e. the CHPP will not require an upgrade to process the increased volume of coal.

Once the MLs are secured for the Expansion Area, IPCM will integrate the activities in all of its MLs into a single Project Authority through an application to amend the existing approved EA for Isaac Plains Coal Mine, under the *Environmental Protection Act 1994* (EP Act).

The existing Isaac Plains Coal Mine, as originally planned, was referred under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 5 April 2005 and was decided by the delegate of the Federal Minister for Environment and Heritage from the Commonwealth Department of the Environment and Heritage (DEH) not to be a controlled action.

In the period since that referral, IPCM have identified coal reserves in the Expansion Area of sufficient quantity that now deem it feasible to proceed with the development of the Expansion Area. Furthermore, as the coal reserves under Smoky Creek and Billy's Gully have now been deemed economic to exploit from both an engineering and economic perspective, it is proposed to divert Smoky Creek and Billy's Gully to mine the underlying coal. An EPBC Act referral for the IIPP has also been assessed by the DEH and on the 10 October 2006 was decided by the delegate of the Federal Minister for Environment and Heritage from DEH not to be a controlled action.

Project Site Description

The Expansion Area is located at the southern end of EPC755 on the Winchester Downs property, south of the Peak Downs Highway in the Moranbah region of the central western Queensland coalfields. A significant portion of the proposed Expansion Area is located in the KDA. The existing Isaac Plains Coal Mine is located on ML70342 in the northern end of EPC755.

Arrow Energy NL Pty Ltd (Arrow) holds a Petroleum Lease (PL) 222 over the KDA and PL191 over a section of the proposed access/haul road intersection with the Peak Downs Highway. An authority to prospect, EPP364 (held by BHP Coal Pty Ltd) covers the Expansion Area.

The Expansion Area is located within the Nebo Shire Council local government area, while the existing Isaac Plains Coal Mine on ML70342 is located within the Belyando Shire Council local government area.

Within the Expansion Area, the local topography generally grades from the west to the east towards the Isaac River, with the topography characterised by a small ridge/plateau in the centre, running almost north-south. The ridge rises from 200-206 m on the western boundary to 224 m, dropping down to 200-210 m on the eastern boundary.

The Expansion Area is bisected by the Isaac River, with the area south of the Isaac River currently accessed via Winchester Road. No mining within the Expansion Area is currently proposed to the north of the Isaac River: the mine pits within the Expansion Area will be located south of the Isaac River. However, a crossing of the Isaac River will be required to provide access from the Peak Downs Highway and to transport coal to the Isaac Plains Coal Mine CHPP. The access/haul road will also require the construction of an underpass of the Peak Downs Highway.

The southern boundary of the Expansion Area is bordered by Cherwell Creek, a tributary of the Isaac River. Neither Cherwell Creek nor the Isaac River will require diversion. Conrock Gully, also a tributary of the Isaac River, passes through the middle of the Expansion Area in a general west-east direction, and may require diversion, however there is potential to construct an earth dam on Conrock Gully, thereby negating the need for a diversion and providing a valuable resource for both the IIPP and the landholder.

The Winchester Downs homestead is located south of Cherwell Creek, less than 1 km south of the proposed Expansion Area boundary and approximately 1 km from the planned southern extent of the open cut development. The Wotonga homestead is located approximately 1-1.5 km north-east of the proposed access/haul road underpass of the Peak Downs Highway. The derelict Poitrel homestead is located approximately 3 km east of the Expansion Area, on the Poitrel ML. The Moranbah homestead is located about 4-5 km to the north-west of the Expansion Area. The township of Moranbah is located approximately 10-12 km to the north-west.

The Expansion Area covers an area of approximately 3,425 ha. Based on current mine plans, an area in the order of approximately 1,000 ha will be subject to disturbance associated with open cut operations, roads, water management structures and mine infrastructure.

There are no areas designated as National Parks or State Forests on the Expansion Area, or within the adjacent area.

Tenure

The existing Isaac Plains Coal Mine is located on Lot 3 GV252, Lot 2 RP904445 and Lot 4 CP903281 and an unnamed road. Lots 2 and 3 are freehold while Lot 4 is State leasehold land.

The Expansion Area includes Lot 5 GV132, Lot 6 SP174999, Lot 9 GV33 and Lot 8 GV196. Lots 5 and 6 are freehold land; Lot 9 GV33 is reserve land for camping, water and roads located to the east of the Expansion Area (managed by the State Department of Natural Resources and Water (DNRW), and Lot 8 GV196 is reserve land for a quarry located in the northern end of the Expansion Area (Department of Main Roads (DMR) are trustees for this land). The area of disturbance from the mining project will predominantly directly impact freehold land.

Native Title

With the exception of Lot 9 GV33 native title is extinguished.

ADMINISTRATIVE DETAILS FOR THESE TERMS OF REFERENCE

The Legislative Framework

Mining of the Expansion Area in the manner proposed, and the development of a haul/access road from the Expansion Area to the existing Isaac Plains Coal Mine, will require new MLs under the MRA to secure tenure.

IPCM are currently constructing the approved Isaac Plains Coal Mine component of the mining project to the immediate north of the Expansion Area which will be operated by the same proponent, IPCM. Mining activities within the Expansion Area and in ML70342 will be undertaken concurrently. Increasing the throughput of the CHPP on ML70342 and the diversion of Smoky Creek and Billy's Gully, will result in a material change of use to the existing EA for the Isaac Plains Coal Mine. Given the interdependence of the activities within the Expansion Area and the Isaac Plains Coal Mine, IPCM will integrate the activities in all of its MLs into a single Project Authority through an application for an amendment to the approved EA for Isaac Plains Coal Mine under the EP Act.

The Expansion Area component of the mining project is located within the Nebo Shire Council local government area. Approval under the Nebo Shire Council Planning Scheme is not required based on exemptions for mining activities under the *Integrated Planning Act 1997* (IPA).

The mining project was assessed as likely to trigger the requirement for an Environmental Impact Statement (EIS) as a consequence of:

- the clearing of an area of Brigalow regional ecosystem (RE) (the integrity of which is questionable); and
- mining of more than 2 Mtpa of coal, i.e. the combined production from ML70342 and the Expansion Area will approximate 4 Mtpa of coal, thereby exceeding the 2 Mtpa threshold.

The diversion of Conrock Gully within the Expansion Area and the diversion of watercourses within the approved Isaac Plains Coal Mine, i.e. Smoky Creek and Billy's Gully, are informal triggers. Considering these formal and informal triggers, IPCM lodged a voluntary application for an EIS under the EP Act with the Environmental Protection Agency (EPA). The EPA granted approval for a voluntary EIS for the project on the 21 June 2006.

PUBLIC CONSULTATION ON THESE DRAFT TERMS OF REFERENCE

Stakeholder consultation is an integral part of the planning and approvals process for the mining project. The consultation process requires early identification and engagement of stakeholders.

The draft Terms of Reference (ToR) for the mining project was published on 4 November 2006 with the comment period open from the 6 November to the 15 December 2006, as agreed with the EPA, in order to invite public comment. The following is a list of stakeholders that were notified.

Affected persons/parties

Property Owners

Beryl Neilson
"Winchester Downs"

Ross Flohr
"Wotonga"

Traditional Owners

Barada Barna, Kabalbara and Yetimarla People (BBKY)

Wiri People

State Controlled Land - Peak Downs Highway

Department of Main Roads
- Rockhampton
- Mackay
- Brisbane

Others

Kumba Australia Pty Ltd - EPC458

Arrow Energy NL Pty Ltd

BHP Mitsui Coal Pty Ltd

Interested Persons/Parties

Department of Natural Resources and Water
- Mackay
- Brisbane

Department of Mines and Energy - Rockhampton

Department of Local Government, Planning, Sport and Recreation
- Mackay
- Brisbane

Department of Communities - Mackay

Queensland Health - Mackay

Queensland Transport - Townsville

Agforce – Brisbane

SunWater – Biloela

Nebo-Broadsound Landcare Group – Mackay

Capricorn Conservation Council – Rockhampton

Nebo Shire Council – Nebo

Belyando Shire Council – Moranbah

Department of Housing – Brisbane

The Coordinator-General – Brisbane

Environmental Protection Agency – Emerald

Department of Emergency Services - Brisbane

Queensland Health

Department of Primary Industries and Fisheries – Rockhampton

Queensland Police Service, Central Police Region – Rockhampton

CHRRUP – Emerald

Fitzroy Basin Association – Rockhampton

Sunfish (Queensland) – Mackay Regional Branch

Clermont Fish Stocking Group Inc.

Emerald Fish Stocking Group Inc.

MacKenzie River Fish Stocking Association Inc.

The content of all submissions were reviewed by IPCM and a response provided to the EPA containing recommendations for modifying the draft ToR, where necessary.

Following the notification period, the EPA has:

- considered the submissions on the draft ToR;
- considered IPCM's response to the submissions;
- finalised the ToR;
- provided the final ToR to IPCM; and
- published the final ToR.

PART B CONTENT OF THE EIS

GENERAL INFORMATION

1 The objective of the EIS process is to ensure that all matters relevant to the mining project, particularly environmental, social and economic impacts, are fully identified and addressed. There may be issues other than those specified within this draft ToR that will be considered in the EIS.

2 Consistent with this objective, the EIS will provide:

- 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 advisory agencies, a framework for assessing the impacts of the Project, in view of legislative and policy provisions; and
- 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 of a draft Environmental Management Plan (EM Plan) in the EIS which describes

acceptable impacts and environmental management strategies designed to meet agreed performance criteria.

3 It is the responsibility of the consultant (Matrix+ Consulting) preparing the EIS, in consultation with IPCM, to determine those parties that should be consulted during the EIS preparation stage in addition to those specified by this ToR.

4 The EIS will be a stand-alone document, i.e. it will contain sufficient information from previous studies to avoid the need to search out previous or supplementary reports.

5 Where possible, information provided in the EIS will be clear, logical, objective and concise, so that non-technical persons may easily understand it. Where appropriate, text will be supported by maps and diagrams. Factual information contained in the document will be referenced wherever possible. Where applicable, aerial photography and/or digital information will be presented. The purpose of the documents is to enable members of the public, the assessing agencies and the determining authority to properly understand the environmental consequences of the proposed development.

6 The body of the EIS will be written in a clear and concise style that is easily understood by the general reader and avoid the use of technical jargon wherever possible. It should be acknowledged that readers are likely to include representatives of Commonwealth, State and Local Governments, special interest groups and the general public.

7 The EIS will refer (by suitable appendices) to all relevant studies/investigations that may have been carried out.

8 Should IPCM require any information in the EIS to remain confidential, this will be clearly indicated, and separate information will be prepared on these matters.

9 A concise reference list and bibliography will be included. Any Internet 'web' pages used as data sources will also be included.

10 A checklist will be provided to indicate compliance of the EIS with the final ToR.

11 The EIS will state the criteria adopted in assessing the mining project and its impacts, such as compliance with relevant legislation, policies and standards; community acceptance; maximisation of environmental benefits (if any); and minimisation of risks and harm.

12 The level of analysis and details in the EIS will reflect the level of significance of the impacts. Unknown variables or assumptions made in the assessment will be clearly stated and discussed. The extent to which the limitations, if any, of available information may influence the conclusions of the environmental assessment will also be discussed.

13 The emphasis will be on quality not quantity. Repetition will be avoided wherever possible.

14 The EM Plan will relate to the mining project including construction, operation, maintenance, and decommissioning. The EM Plan will enable reasonable economic and technically achievable conditions to be developed to ensure that the impact of the mining project is reduced to acceptable levels.

15 The terms 'describe', 'detail' and 'discuss' used in this ToR will be taken to include both quantitative and qualitative matters, as practicable and meaningful. Similarly, adverse and beneficial effects described in the EIS will be presented in quantitative and/or qualitative terms as appropriate.

16 Within this ToR, the term 'mining activities' includes activities undertaken on lands covered by the proposed 'mining project' area and supporting mining project infrastructure (e.g. haul/access roads) as defined in the glossary.

17 A listing of all members of the advisory agencies for the EIS process will be provided, along with contact details. A 'preliminary' EIS (number of copies to be advised) will be lodged with the relevant Government authorities for review prior to its release for public comment. Further advice on arrangements for public review will be sought closer to the EIS completion date.

18 Copies (number to be advised) of the prepared EIS will be lodged with the relevant Government authorities for distribution to advisory agencies for comment and review during the public review period. In addition,

the EIS will be placed on the Matrix+ Consulting website. Documents will be made available in CD ROM format with a quantity of hard copies also produced.

While every attempt has been made to ensure that this ToR address all of the major issues associated with the mining 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 unforseen) that emerge as important or significant from environmental studies or otherwise during the course of preparation of the EIS.

EXECUTIVE SUMMARY

The function of the executive summary is to convey the most important aspects and options relating to the mining project to the reader in a concise and readable form. The structure of the executive summary will follow that of the EIS, focussing on the key issues.

GLOSSARY

A glossary of technical terms, acronyms and abbreviations for the EIS will be provided.

1 INTRODUCTION

The introduction will clearly explain the function of the EIS, why it has been prepared and what it sets out to achieve, in particular, the level of information detail required to meet the level of approval being sought.

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

1.1 PROJECT TITLE

The title of the mining project is the 'Integrated Isaac Plains Project'.

1.2 PROJECT PROPONENT

This section will provide details regarding the proponent for the mining project including details of the Joint Venture partners.

1.3 PROJECT DESCRIPTION

A brief description of the key elements of the mining project will be provided. Any major infrastructure requirements associated with the mining project will also be summarised with detailed descriptions of the mining project presented in **Section 3**. The location of the mining project and its infrastructure requirements will be described and mapped showing the location of the mining project in relation to the adjacent rail and road infrastructure and existing and proposed crossing points.

A brief description of the studies or surveys which have been undertaken for the purpose of developing the mining project and preparing the EIS, including reference to relevant baseline studies or investigations previously undertaken, will be provided.

1.4 PROJECT OBJECTIVES AND SCOPE

This section will provide:

- a statement of the objectives which have led to the development of the mining project and a brief outline of the events leading up to the mining project's formulation, including alternatives, the time scale envisaged for implementation and project life, anticipated establishment costs and actions already undertaken within the mining project area;
- the current status of the mining project and outline of the relationship of the mining project to other developments or actions which may relate, whether or not they have been approved; and
- the consequences of not proceeding.

1.5 THE ENVIRONMENTAL IMPACT STATEMENT PROCESS

The important aspect of this section is to make clear the objectives of each step of the environmental impact assessment process under the EP Act. This section will note that the EIS is voluntary and include a description of the impact assessment process, timing and decisions to be made at relevant stages of the mining project. In particular, this section will outline mechanisms in the process for public input and the public release of an EIS. All responses to stakeholder submissions will be identified.

This section will highlight the necessity for IPCM to undertake community consultation as part of the impact assessment process.

The information required in this section will ensure:

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

1.5.1 Objectives of the EIS

Having described the objectives of the EIS process, a succinct statement will be made of the objectives of the EIS. The structure of the EIS will then be outlined as an explanation of how the EIS will meet its objectives. In brief, the purposes of the EIS are to provide public information on the need for and likely effects of the mining project; to 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 will be a key aspect of the EIS.

If it transpires during the preparation of the EIS that previously unforeseen matters not addressed in the ToR are found to be relevant to the assessment of impacts of the proposal, those matters must be included in the EIS.

The role and purpose of the EIS will be outlined and the audience will be able to distinguish the EIS as the key environmental document providing advice to decision-makers considering approvals for the mining project. The main text will be written in plain English, avoiding jargon as much as possible. Additional technical detail, where required, will be provided in appendices. The main text will not assume that a reader has a prior knowledge of the mining project site. The role of the EM Plan, formerly referred to as an Environmental Overview Strategy (EMOS), in the regulation of the mining activities will also be discussed. The EM Plan's role will provide management measures which can be carried over into conditions that would attach to any approval(s), environmental authorities and permits for the mining project.

1.5.2 Submissions

Readers will be informed as to:

- how to make submissions;
- what form the submissions should take and required contact details;
- when submissions must be made to gain standing for any legal appeal process; and
- how submissions on the draft EIS will be addressed and taken into account in the decision-making process.

1.5.3 Matters of national environmental significance

The Proponent referred the project to the Commonwealth Department of the Environment and Water Resources (DEW) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). DEW determined that the project is not a controlled action and does not require approval under the EPBC Act. Consequently, there is no need for the EIS for the project to address matters of national environmental significance and the EIS process is not accredited under the Bilateral Agreement.

1.6 PUBLIC CONSULTATION PROCESS

An appropriate public consultation program, developed to the satisfaction of the EPA, is essential to the full

conduct of the impact assessment. This section will outline the methodology to be adopted to identify and mitigate socio-economic impacts which may arise from the mining project. Information about the consultation which has taken place up to the date of the draft EIS release and the results of such consultation will be provided.

Section 41 of the EP Act requires the submission of separate lists of affected and interested persons as well as information on consultation.

The public consultation program will attempt to provide ongoing opportunities for community involvement and education, and may include public meetings, interest group meetings, production of regular summary information and updates, and other consultation mechanisms designed to encourage and facilitate active public participation.

The public consultation process will attempt to identify broad issues of concern to local community and interest groups and will continue throughout the planning phase, through operations and final rehabilitation.

1.7 PROJECT APPROVALS

1.7.1 Legislation and Policy Requirements

This section will explain the legislation and policies controlling the approvals process including the roles of government agencies. Reference will be made to the EP Act, *Integrated Planning Act 1997* (IPA) and other relevant Queensland Laws. While not necessarily exhaustive, Appendix 1 provides a list of legislation that has been identified at the TOR stage as being relevant to the project .

Local Government planning controls, local laws and policies applying to the development will also be described together with a list of the approvals required for the mining project and the expected timetable for approval of the various applications.

This information is required to assess how the legislation applies to the mining project, which agencies have jurisdiction, and whether the proposed impact assessment process is appropriate.

1.7.2 Planning Processes and Standards

This section will discuss the consistency of the mining project with existing land uses or the long term policy framework for the area (e.g. as reflected in local and regional plans), and the legislation, standards, codes or guidelines available to monitor and control operations on site. It will also refer to all relevant State and Regional Planning Policies. In particular, this section will highlight the requirements of the EP Act, such as 'ecologically sustainable development' (ESD), 'best practice environmental management', 'general environmental duty', relevant Environmental Protection Policies (EPPs), i.e. Air, Noise, Water and Waste Management, the *Environmental Protection Regulation 1998* (EPR) and *Environmental Protection (Waste Management) Regulation 2000* (EPWMR). While not necessarily exhaustive, Appendix 1 provides a list of policies, plans, standards, guidelines and regulations that have been identified at the TOR stage as being relevant to the project..

This information is required to clarify how the mining project conforms to State, regional and local plans for the area.

2 PROJECT NEED AND ALTERNATIVES

2.1 PROJECT JUSTIFICATION

The justification for the mining project will be described, with particular reference made to the economic and social benefits such as employment and spin-off business development which the mining project may provide. The status of the mining project will be discussed in a regional, State and National context.

2.2 ALTERNATIVES TO THE PROJECT

This section will describe feasible alternatives, including conceptual, technological and locality alternatives to the proposed mining project and include a discussion on the consequences of not proceeding. Alternatives will 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 will be delineated in terms of

technical, commercial, social and natural environment aspects. The comparative environmental impacts of each alternative will be summarised.

The interdependence of the various components of the mining project will be described, explaining how the infrastructure requirements relate to the viability of the mining project. A rationale for water supply and/or storage infrastructure will be described. The relationship of options chosen for waste management and any emissions produced will also be detailed.

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

3 DESCRIPTION OF THE PROJECT

This section will describe the mining project through its lifetime with emphasis on those aspects that will change as a consequence of the increased coal production rate and/or additional areas to be mined. Where appropriate, each section will also address the various stages of the mining project, i.e. planning, construction, operation and decommissioning. It also allows further assessment of which approvals may be required.

3.1 LOCATION

3.1.1 Regional Context

The regional context of the mining project will be described and illustrated on maps at suitable scales, including rail and road infrastructure and other major features of the region. This may include:

- road names;
- location of construction activities;
- road access locations from the project to any State Controlled Road; and
- existing and proposed locations of construction compounds and accommodation camps.

3.1.2 Local Context

The local context of the mining project will be described and illustrated on maps at suitable scales. Real property descriptions of the mining project site will be provided, including rail and road infrastructure and other major features of the local area.

3.2 CONSTRUCTION

The extent and nature of the construction phase of the mining project will be described. This description will include:

- type and methods of construction;
- construction equipment to be used;
- items of plant to be transported onto the construction site; and
- details of any impacts on the State Controlled Road Reserve during construction.

The estimated number of persons to be employed during each phase of the mining project will be provided. It should be noted, however, that the construction activity will be undertaken concurrently with the existing approved mining activities at the Isaac Plains Coal Mine.

3.3 OPERATION

The location of the proposed mining project will be illustrated on maps and described, including probable mining pit boundaries, the mine path and mine development sequence or timeframes, the final void to be left at the cessation of mining and the processing of coal. The rationale for the preferred operational program will be explained.

The extent and nature of the mining activities will be described, including:

- the approximate quantity of coal to be mined;
- the location and extent of existing and proposed excavations, overburden stockpiles, voids, wastes to be handled during operations; and
- the operational workforce.

3.3.1 Location and tenure

The location, volume, tonnage and quality of natural resources required should be described (e.g. land, water, forests, energy, etc.). Maps at suitable scales should be provided showing the precise location of the project area, and in particular:

- the location and boundaries of land tenures (including mining, gas and petroleum tenures), in place or proposed, to which the project area is or will be located;
- the location and boundaries of the project footprint showing all key aspects including excavations, stockpiles, areas of fill, watercourses, plant locations, water storages, buildings, bridges, culverts, hardstands, car parks, etc; and
- the location of any proposed buffers surrounding the working areas.

Consideration will be given to providing a rectified air photo enlargement to illustrate components of the project in relation to the land and mining tenures and natural and built features of the area.

3.3.2 Mine Life and Coal Resource Base

Specific details will be provided of the following:

- the proposed mine life and an outline of the coal/mineral resource base (further detail will be provided in section 4.2.1.2, Geology); and
- the quantity of coal/mineral to be mined annually including any proposed ramping of production or staging of development.

3.3.3 Mining Methods and Equipment

The EIS will clarify the preferred mining method for the IIPP and investigate any alternative mining methods.

Specific details will be provided on the following:

- the mining 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;
- chemicals to be used; and
- details of any impacts on the State Controlled Road Reserve during operations.

The description should refer to, and be complemented by figures showing the locations of key aspects of the project. Additional figures will be provided as required.

3.3.4 Mine Sequencing

Specific details should be provided of the following:

- the proposed sequence and timing of mining within the mining lease;
- the physical extent of excavations, voids, location of stockpiles of overburden and/or coal/mineral reject to be handled during the Project's operation or left after mining ceases. The description should include the rate of throughput of stockpiles of product, reject and overburden;

- the proposed progressive backfilling of excavations; and
- the area disturbed at each major stage of the project.

Information will also be provided on the workforce numbers to be employed in the facility's operations during its various phases (construction, commissioning, operation and decommissioning) and stages with a brief description of where those people may be accommodated and/or how they will be transported to the site. Comment should be made on the anticipated basis of employment (permanent, contract, etc).

3.3.5 Ongoing Evaluation and Exploration Activities

This section will describe the extent and nature of any proposed ongoing exploration or geological/geotechnical evaluation within the project area that may be required over the life of the project.

3.3.6 Processing

The location and nature of both the existing and approved coal processing activities will be described including:

- a description of the plant and equipment and its capacity; and
- chemicals to be used.

Layout plans will be provided identifying existing and proposed buildings, structures, plant and equipment associated with the processing operation for the mining project. The nature, sources, location and quantities of all materials to be handled, including the storage and stockpiling of raw materials, will be described. Where relevant, flow-sheets will be provided showing material balances for the mine and processing plant, and the anticipated rates of inputs, along with similar data on products, wastes and recycling streams. A description of the quantities and characteristics of the products produced will be provided.

Information will be provided on the workforce numbers employed in processing operations.

3.3.7 Product Handling

This section will describe and show on plans (at an appropriate scale), the existing and proposed methods and facilities to be used for ROM coal storage and for transferring product coal from the processing plant to the storage facilities and from the storage facilities to the train loading facilities. Environmental design features for both the existing and proposed facilities will also be described, where warranted.

3.3.8 Waste Management

This section will provide an inventory of all wastes generated by the existing approved and proposed activities through construction, mining and production. In addition to the expected total volumes of each waste produced, this section will include an inventory of the tonnage of coal processed; the amount of resulting process wastes; the tonnage and volume of waste rock removed to extract the coal; and the volume and tonnage of any by-products left from the processing of the coal per unit volume of product coal.

The physical and chemical characteristics of waste material from the mine and processing plant (including existing and proposed operations) will be provided. All other wastes, including regulated wastes, generated by the mining project, e.g. tyres, packaging materials, etc, will be described.

The EIS will describe waste management strategies having regard to the *Environmental Protection (Waste Management) Policy 2000* (EPP Waste) including the concepts for waste avoidance, reuse, recycling, treatment and disposal.

Information will also be provided on the production rates of all major wastes generated from the mining project and processing plant.

Schematic diagrams will be provided for each distinct stage of the project (e.g. construction/site preparation, commissioning, operation and decommissioning) indicating the processes to be used and highlighting their associated waste streams (i.e. all waste outputs: solid, liquid and gaseous), including recycling efforts, such as stockpiling and reusing topsoil. The physical and chemical characteristics of the waste materials from the processing plant will be provided.

Where relevant, cleaner production waste management planning will be detailed, especially as to how these

concepts have been applied in order to prevent or minimise environmental impacts at each stage of the mining project.

If applicable, details on natural resource use efficiency (e.g. energy and water) will be presented. This information will be provided to enable the resource management agencies and other stakeholders to assess the efficiency of resource use.

3.3.8.1 Solid Waste

A study into the geochemical characteristics of the overburden and coal rejects will be undertaken, including an assessment of the potential for acid mine drainage generation. The study will describe the geochemical nature of the waste materials to be generated from the proposed mining activities and their potential to leach contaminated water, impact on the quality of mine rehabilitation and impact on existing environmental values.

The proposed location, site suitability, dimensions and volume of disposal areas, e.g. waste rock, including their method of construction, will be provided. Subject to the outcomes of the geotechnical investigations, if required, methods to prevent acid formation, seepage and contamination will be provided. Measures to ensure stability of the disposal areas will be described.

3.3.8.2 Wastewater

A description will be presented of the origin, quality and quantity of waste water originating from the mining project. Particular attention will be paid to the capacity of wastes produced to generate acid, saline or sodic wastewater. A water balance for the mining project and processing plant will be provided.

Where relevant the EIS will consider the management of:

- groundwater inflows or surface water accumulating within mine pits and other excavations;
- rainfall on disturbed areas;
- run-off from infrastructure areas (both existing and proposed operations);
- 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 use
    - dust suppression
- evaporation;
- liquid effluent and sludge from any domestic sewage treatment plant; and
- management of wastes from any water supply treatment plant.

3.4 INFRASTRUCTURE REQUIREMENTS

Layout plans will be provided identifying existing, approved and proposed buildings, structures, plant, equipment and other infrastructure associated with the mining project as well as notable infrastructure in the vicinity.

3.4.1 Transport - Road/Rail/Ship

This section will describe and illustrate any new rail, roads, road realignments or proposed road closures required as a result of the mining project in relation to the existing infrastructure such as rail and road infrastructure, the existing and proposed road and river crossing points, and site access arrangements. Arrangements for the transport of additional plant, equipment, coal, products, wastes and personnel during the construction phase and operational phases of the mining project will be described including the proposed use of rail for transport of materials, products or wastes to or from the mining project.

Information will also be provided on the implications of the mine expansion on transportation requirements on public roads, including:

- the volume, composition (types and quantities), origin and destination of additional goods to be moved including construction materials, plant, raw materials, wastes, hazardous materials, finished products;
- the volume of additional traffic generated by workforce personnel, visitors and service vehicles;
- method of movement (including vehicle types and number of vehicles likely to be used);
- anticipated times at which movements may occur;
- details of additional vehicle traffic and transport of heavy and oversize indivisible loads (including types and composition);
- the proposed transport routes; and
- need for increased road maintenance and upgrading.

3.4.2 Energy

Any electricity and natural gas supply requirements for the construction and operation of the mining project will be provided and the locations shown on the infrastructure plan.

3.4.3 Water Supply/Storage

The EIS will provide information on water usage by the mining project, including the quality and quantity of all water currently supplied to the Isaac Plains Coal Mine processing plant as well as future operational requirements, i.e. demand for potable and process water. Both proposed and optional sources of water supply will be described (e.g. bores, mine water, any surface storages such as dams and weirs and/or water supply pipelines, etc).

Estimated rates of supply from each source (average and maximum rates) will be given and any proposed water conservation and management measures will also be described. Similarly, should water storage and treatment be proposed on site for use by the site workforce, then this will be described.

3.4.4 Stormwater Drainage

A description will be provided of the proposed stormwater drainage system as well as the proposed disposal arrangements, including any off-site services, with emphasis on those aspects which, as a consequence of the expansion, will change from those already approved.

3.4.5 Sewage

The EIS will provide volume estimates of industrial and domestic effluent that will be produced and the proposed method of disposal.

3.4.6 Accommodation and Other Infrastructure

A description will be provided of any other developments directly related to the mining project not previously described, such as:

- camps, townships or residential developments;
- fuel storage areas;
- equipment maintenance areas;
- laboratories;
- site offices; and
- roads (both haul roads and access roads).

3.5 REHABILITATION AND DECOMMISSIONING

This section will describe the options, strategies and methods for progressive and final rehabilitation of the environment disturbed by the mining project. The strategic approach to progressive and final rehabilitation will be described. A preferred rehabilitation strategy will be developed with a view to minimising the amount of land disturbed at any one time.

The strategies and methods presented for progressive and final rehabilitation of disturbed areas will demonstrate compliance with the objectives of the *Environmental management policy for mining in Queensland*, *1991* and *A policy framework to encourage the progressive rehabilitation of large mines* (EPA 2004), or with updated versions of the policies as they become available. Land suitability assessment will follow the *Technical guidelines for the environmental management of exploration and mining in Queensland, 1995*. In particular, the strategies and methods will have the following objectives:

- mining and rehabilitation will aim to create a landform with land use capability and/or suitability similar to that prior to disturbance unless other beneficial land uses are pre-determined and agreed;
- mine wastes and disturbed land will aim to be rehabilitated to a condition that 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.

The means of decommissioning the proposal, in terms of the removal of plant, equipment, structures, e.g. the Peak Downs Highway Underpass and buildings will be described, and the methods proposed for the stabilisation of the affected areas will be given. Information will be provided regarding decommissioning and rehabilitation of the plant site, removal of processing plant, rehabilitation of concrete footings and foundations, hardstand areas and storage tanks (including any potential for reuse of these facilities). Options and methods for the disposal of wastes from the demolition of plant and buildings will be discussed in sufficient detail for their feasibility and suitability to be established.

Proposals to divert creeks during operations, and, if applicable, for the reinstatement of the creeks after operations have ceased, should be provided. Where dams are to be constructed, proposals for the management of these structures after the completion of the project will be given. Also, the final drainage and seepage control systems and long-term monitoring plans will be described.

A description of topsoil management will consider transport, storage and replacement of topsoil to disturbed areas. The minimisation of topsoil storage times (to reduce fertility degradation) will also be addressed.

Details of the impacts of the preferred rehabilitation strategy will be discussed in the appropriate subsections of Section 4 (Environmental values and management of impacts) particularly with regard to such issues as final landform stability, rehabilitation of flora and the long-term quality of water in any final voids. Implications for the long-term use and fate of the site should also be addressed, particularly with regard to the on-site disposal of waste and the site's inclusion on the Environmental Management Register or Contaminated Land Register.

4 DESCRIPTION OF THE EXISTING ENVIRONMENTAL VALUES/POTENTIAL IMPACTS AND MITIGATION MEASURES

The functions of this section will be to describe:

- the existing environmental values of the area which may be affected by the proposed mining activities. Environmental values are defined by the EP Act, EPPs and regulations, and will be described with reference to background information and studies;
- the potential adverse and beneficial impacts of the mining project on the identified environmental values. Any likely harm on the environmental values will also be described;

- any cumulative impacts on environmental values caused by the mining project, either in isolation or by combination with other known existing or planned sources of contamination;
- present environmental protection objectives and the standards and measurable indicators to be achieved;
- viable alternative strategies for managing impacts. These alternatives will be presented and compared in view of the stated objectives and standards to be achieved. Available techniques, including reasonable and practicable measures, to control and manage impacts will be discussed. This section will detail the environmental protection measures incorporated in the planning, construction, operations, decommissioning, rehabilitation and associated works for the proposal. Measures proposed will prevent, or where prevention is not possible, minimise environmental harm and maximise the socio-economic and environmental benefits of the proposal. Preferred measures will be identified and described in more detail than other alternatives;
- environmental protection objectives that may be derived from legislative and planning requirements which apply to the mining project, including Commonwealth strategies, State planning policies, local authority strategic plans, environmental protection policies under the EP Act, and any catchment management plans prepared by local water boards or landcare groups. Special attention will be given to those mitigation strategies designed to protect the values of any sensitive areas and any identified ecosystems of high conservation value within the areas of possible impact; and
- elements of the environment such as land, water, air, waste, noise, nature conservation, cultural heritage, social and community, health and safety, economy, hazards and risk, in a way that is comprehensive and clear. For each issue relevant to the mining project, the following issues will be considered.
    - Relevant environmental values affected - A description of the existing environmental values of the area to be affected, including values and areas that may be affected by any cumulative impacts will be provided. The description will include reference to any background studies, some of which may need to be undertaken over several seasons. It will be explained how the environmental values were derived (e.g. by citing published documents or by following a recognised procedure to derive the values).
    - Impact on relevant environmental values - A quantitative description of the likely impacts of the proposal on the identified environmental values of the area will be provided. In particular, any requirements and recommendations of relevant State planning policies, environmental protection policies, national environmental protection measures and integrated catchment management plans will be addressed.
    - Cumulative impacts on the relevant environmental values of land, air and water and cumulative impacts on public health and the health of terrestrial, aquatic and marine ecosystems will be discussed in the relevant sections. The cumulative impacts of the mining activities will be considered over time or in combination with other impacts in the dimensions of scale, intensity, duration and/or frequency.
    - Environmental protection objectives – A qualitative and quantitative description of the proposed objectives for enhancing or protecting each relevant environmental value will be presented. A description of the proposed indicators to be monitored to demonstrate the extent of achievement of the objective, as well as the numerical standards i.e. auditable standards, that define the achievement of the objective, will be provided. Objectives for progressive and final rehabilitation and management of contaminated land will be included.
    - Control strategies to achieve the objectives - A description of the control principals, proposed actions and technologies to be implemented to achieve the environmental protection objectives will be provided together with the details to show that the expected performance is achievable and realistic.
    - Monitoring programs – Details of the monitoring parameters, monitoring points, frequency, data interpretation and reporting proposals will be provided.

- Auditing programs - A description on how progress towards achievement of the objectives will be measured, reported and whether external auditors will be employed will be presented.
- Management strategies - A description will be provided of the strategies to be used to ensure the environmental protection objectives are achieved and control strategies implemented, e.g. continuous improvement framework including details of corrective action options, reporting (including any public reporting), monitoring, staff training, management responsibility pathway, and any environmental management systems and how they are relevant to each element of the environment.
- Information quality – The information given under each element will state the sources of the information; how recent the information is; how any background studies were undertaken (e.g. intensity of field work sampling); how the reliability of the information was tested, and what uncertainties (if any) are in the information.

As with the contents of **Section 3**, Description of the Project, emphasis will be placed on the environmental aspects which will be affected directly or indirectly as a consequence of the increased rate of coal production and/or the additional areas to be mined. The investigations undertaken will, where appropriate, extend upon the findings of the studies undertaken for the existing approved Isaac Plains Coal Mine.

4.1 CLIMATE

The EIS will provide descriptions of the air temperature, humidity, wind (direction and speed) and any other special features (e.g. temperature inversions) likely to affect air quality, noise etc within the environs of the mining project. Rainfall patterns, including the magnitude and seasonal variability of rainfall, will be considered. Extremes of climate (i.e. droughts, floods, cyclones, etc) will also be discussed with particular reference to water management. The vulnerability of the area to natural or induced hazards such as floods, bushfires and earthquakes will be addressed. The relative frequency, magnitude and risk of these events will also be considered.

4.2 LAND

4.2.1 Environmental Values

This section will describe the existing environment of the land area which may be affected by the mining activities in the context of environmental values as defined by the EP Act, EPPs and regulations. The following topics will be addressed.

4.2.1.1 Topography/Geomorphology

Maps will be provided locating the project in both regional and local contexts. The topography of the mining project site will be detailed with contours at suitable increments, shown with respect to Australian Height Datum (AHD). Significant features of the locality will be included on the maps. Such features would include any locations subsequently referred to in the EIS (e.g. the nearest noise sensitive locations) that are not included on other maps in Section 4.2. Commentary on the maps should be provided highlighting the significant topographical features.

4.2.1.2 Geology

The EIS will provide a description, map and geological cross-sections of the mining project area, with particular reference to the physical and chemical properties of surface and sub-surface materials and geological structures within the areas to be mined. Properties which may influence stability, occupational health and safety, rehabilitation programs, or the quality of water leaving any area disturbed by the mining activities will also be described.

IPCM will consider the possibility that fossil specimens may be located during construction/operations and propose strategies for their recovery, if possible.

4.2.1.3 Mineral Resource

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

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

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

- the location and areal extent of the mineral resources to be 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 project sites;
- the location and boundaries of any other features that will result from the proposed mining including waste/spoil dumps, water storage facilities and other infrastructure;
- 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 or infrastructure.

4.2.1.4 Resource Utilisation

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

4.2.1.5 Soils

A soil survey of the additional areas to be affected by the proposed mining activities will be conducted at a suitable scale, with particular reference to the physical and chemical properties of the materials which will influence erosion potential, storm water run-off quality and rehabilitation.

Soil profiles will be mapped at a suitable scale and described according to the Australian Soil and Land Survey Field Handbook (McDonald *et al*, 1990) and Australian Soil Classification (Isbell, 1996). In the areas of proposed surface disturbance, an appraisal of the depth and quality of useable soil will be undertaken and the information presented according to the standards required in the Planning Guidelines: the Identification of Good Quality Agricultural Land (GQAL) (DPI & DHLGP, 1993) and the State Planning Policy 1/92: Development and the Conservation of Agricultural Land.

4.2.1.6 Land Use

The EIS will provide a description of current land tenures and land uses, including native title, in the entire mining project area, with particular mention of land with special purposes. The location and owner/custodians of native title in the area and details of native title claims will be identified.

A map showing existing land uses and tenures, and the locations of the various mining project elements (approved and proposed) will be provided for the entire mining project area and surrounding land that could be affected by the mining activities. Maps will be included identifying areas of conservation value, the location of existing dwellings, and the zoning of all affected lands according to any existing town or strategic plan.

The land use suitability of the affected area will be described in terms of the physical and economic attributes.

A land suitability map of the proposed and adjacent areas, illustrating land suitability and current land uses, will be provided and land classified as GQAL (as defined by Planning Guideline: Identification of Good Quality Agricultural Land (DPI & DHLGP, 1993 DNR)), identified.

The assessment should set out soil and landform subclasses assigned to soil mapping units in order to derive land suitability classes. The limitations and land suitability classification system to use is that in Attachment 2 of Land Suitability Assessment Techniques in the Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland (1995).

4.2.1.7 Infrastructure

The location and owner/custodians of all tenures, reserves, stock routes and the like covering the affected land will be identified, as will the locations of gas and water pipelines, powerlines and any other easements. Where environmental values are affected by infrastructure, this will be discussed.

4.2.1.8 Sensitive Environmental Areas

The EIS will identify whether areas that are environmentally sensitive could be affected directly and/or indirectly by the mining activities, and the proximity of any elements of the mining project to sensitive environmental areas identified. In particular, the EIS will indicate if the land affected by the mining project is or is likely to contain heritage/historic areas or items, national estates or areas of cultural significance.

4.2.1.9 Landscape Character

The impacts of the mining project on the visual quality and landscape character of the site and the surrounding area will be addressed considering both the broad and local level, with particular reference made to:

- impacts on existing land uses that contribute to the character of the local area; and
- the visual absorption capacity of the site, i.e. the ability to visually absorb the impact of the proposed development.

If appropriate, simulations to portray broad and near views and impacts of the mining project on visually sensitive areas, including the extent of the significance of the skyline as viewed from known vantage points, will be included.

The EIS will detail the scenic or landscape values of the area.

4.2.1.10 Scenic Values

The visual impact of the mining project, as it relates to the surrounding landscape, will be analysed and discussed, where relevant, in terms of the extent and significance of the changed skyline as viewed from places of residence, work, and recreation, from the air and other known vantage points during the day and night. Sketches, diagrams, computer imaging and or photos may be used to portray the near views and far views of the completed structures and their surroundings from visually sensitive locations (where relevant).

Special consideration will be given to public accessible vantage points, e.g. roads, which are within the line of sight of the mining project.

4.2.1.11 Lighting

An assessment of all potential impacts of lighting from the mining project, during all stages, will be provided, with particular reference to:

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

4.2.2 Potential Impacts and Mitigation Measures

This section defines and describes the objectives and practical measures for protecting or enhancing the land-based environmental values identified through the studies outlined in the previous section. It should describe how nominated quantitative standards and indicators may be achieved, and how the achievement of the objectives will be monitored, audited and managed.

4.2.2.1 Land Use Suitability

The potential for the mining project to change existing and potential land uses on the mining project site and adjacent areas will be assessed.

The potential environmental harm caused by the mining activities on the adjacent areas currently used for agriculture (grazing) will also be described, together with the implications of the mining project for future developments in the impacted area including constraints on surrounding land uses.

Should it be determined that the development adjoins or potentially impacts on Good Quality Agricultural Land (GQAL) or residential land, then an assessment of the potential for land use conflict will be undertaken, with the investigations to follow the procedures set out in the Planning Guidelines: Separating Agricultural and Residential Land Uses (DNR & DLGP, 1997).

The following will be identified and measures to avoid unacceptable impacts discussed:

- incompatible land uses, whether existing or potential, adjacent to all aspects of the mining project, including essential and proposed ancillary developments; and
- activities and areas directly or indirectly affected by the construction and operation of these activities.

4.2.2.2 Land Disturbance

A strategy will be developed with a view to minimising the amount of land disturbed at any one time and the approach to progressive and final decommissioning will be described.

The previously-approved methods to rehabilitate areas of surface disturbance will be presented including backfilling, covering, re-contouring, topsoil handling and revegetation.

Proposals to divert creeks during construction/ operation will be provided. Similarly, where dams, levee banks, roads or other additional infrastructure are to be constructed, proposals for the management of these structures after completion of mining activities will be provided. A contour map of the area will be provided (if relevant) and the final drainage and seepage control systems, erosion and sediment controls and any long term monitoring plans will be described.

The description of topsoil management in areas of proposed surface disturbance will consider pre-stripping, transport, storage and replacement, including feasible methods for the minimisation of topsoil storage times (i.e. to reduce fertility degradation).

Proposed decommissioning will be described in detail, including consolidation, revegetation, fencing, and monitoring. Information will be provided regarding decommissioning of any plant site; removal of the processing plant and the rehabilitation of concrete footings and foundations, hardstand areas and storage tanks (including any potential for reuse of these facilities).

4.2.2.3 Floodplain Disturbance

To evaluate the integrity of a flood protection levee in the vicinity of a pit wall, the following information will be provided:

- the geometry of the levee and the properties of the materials to be used in the construction of the levee;
- the depth, thickness and spatial occurrence of the alluvium materials and their properties;
- the depths and properties of the stratigraphic units to be exposed in the pit walls with particular attention given to structural features such as bedding plains, dips, strikes, shear strained surfaces and weathering;
- the geometry of the pit wall; and
- potential failure paths of any proposed levees and pit walls.

4.2.2.4 Land Contamination

Possible contamination of land from aspects of the mining activities, e.g. waste, coal rejects, and spills at chemical and fuel storage areas, will be described and the means of preventing land contamination (within the meaning of the EP Act) will be addressed.

Methods proposed for recording, containing and remediating any contaminated land will be outlined. Intentions will be stated concerning the classification (in terms of the Queensland Contaminated Land Register (CLR)) of contamination on the land and product storage areas after completion of the mining project.

Where appropriate, a preliminary site investigation (PSI) of the mining project site consistent with the EPA's Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland will be undertaken to determine background contamination levels. The results of the PSI will be summarised in the EIS and provided in detail in an appendix.

If the results of the preliminary site investigation indicate potential or actual contamination, a detailed site investigation, managed in accordance with the stages outlined in Appendix 5 of the Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland (EPA, 1998), will be undertaken as appropriate.

In short, the following information will be presented in the EIS:

- mapping of any areas listed on the EMR or CLR under the EP Act; and
- identification of any potentially contaminated sites not on the registers which may require remediation and a description of the nature and extent of contamination at each site.

In addition to the prevention and management of contamination resulting from mining activities, the EIS will address management of any existing or potentially contaminated land.

4.2.2.5 Soil Erosion

For each soil type to be disturbed within the mining project area, erosion potential, possible erosion rates and management techniques will be described. Erosion monitoring, including rehabilitation measures for erosion problems identified during monitoring, will also be outlined. Mitigation strategies will be developed to maintain soil loss rates, levels of sediment in rainfall runoff and wind generated dust concentrations at acceptable levels.

4.2.2.6 Landscape Character

A description of the potential impacts of the mining project on the landscape character of the site and the surrounding area will be provided. Particular mention will be made of any changes to the broad-scale topography and vegetation character of the area, e.g. due to spoil dumps, excavations and broad-scale clearing.

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

4.2.2.7 Visual Amenity

This section will analyse and discuss the visual impact of the mining project on particular panoramas and outlooks. It will be written in terms of the extent and significance of the changed skyline as viewed from, for example, places of residence, work, and recreation; from roads the air and other known vantage points, during

both day and night and during all stages of the mining project, ie as it relates to the surrounding landscape. The assessment will address the visual impacts of the mining project infrastructure using methods such as sketches, diagrams, computer imaging and/or photos to portray the near views and far views of the completed structures and their surroundings from visually sensitive locations. Special consideration will be given to public roads, public thoroughfares, and places of residence or work which are within the line-of-sight of the mining project and its activities.

Details will be provided of management options to be implemented, if required, and how these will mitigate or avoid the identified impacts.

4.2.2.8 Transport

The EIS will provide sufficient information to provide an independent assessment of how State controlled and/or local government road networks will be affected. Sufficient information will also be provided to enable Queensland Rail (QR) to make an independent assessment of how the rail network (including infrastructure) will be affected. Consultation with DMR and QR will occur as part of the EIS process to discuss the level of potential road and rail impacts.

The assessment of impacts will address any new roads, road realignments or proposed road closures required as a result of the mining project.

The EIS will include an analysis of probable impacts of the identified construction and incremental operational traffic generated by the mining project, with particular emphasis on impacts on road infrastructure, road users and road safety. This will be achieved by comparing the traffic situation and road conditions with and without the Expansion Area component of the mining project and be undertaken in consultation with the local district office of the DMR. Measures necessary to address any adverse road impacts, and the costs involved, will be provided. Reference will be made to DMR's Guide to the Assessment of Road Impacts of Development (2006) to identify and assess potential road impacts, as well as potential mitigation measures for inclusion in an EM Plan as detailed in Section 6. The assessment of road impacts should be reported in a road impact assessment (RIA) report for inclusion as an appendix to the EIS. Assessment should identify impacts on the roads' environmental values, i.e. its current safety and efficiency. The RIA report will support the development of appropriate mitigation measures to be incorporated into a road-use management plan (RMP) and inserted as a chapter of the draft EM Plan in Section 6. The RMP will describe specific design details of any necessary road works or improvements designed to the standards outlined in MR's Road Planning and Design Manual.

The EIS will provide details of the impact on any current or proposed rail infrastructure and will provide an estimate of the number of additional train movements per week generated by the project.

The EIS will provide details of the provisions for the safe transport of dangerous goods, product spill contingency plans and the adequacy of equipment and facilities to deal with possible spills at the transport nodes.

4.2.2.9 Rehabilitation and Decommissioning

The strategies and methods for progressive and final rehabilitation of the areas disturbed by the mining activities will be described in the context of the expected final landforms for nominated final land uses. The final topography of excavations, spoil dumps etc, will be illustrated and the post mining land suitability of the various land disturbance types will be described.

The means of decommissioning the mining project will be described in terms of removal of plant, equipment, structures and buildings (including any potential for reuse of these facilities), together with the methods proposed for the stabilisation of the affected areas. Final rehabilitation of the plant site will be discussed in terms of ongoing land use suitability, stability, sustainability, management of any residual contaminated land and other land management issues.

A rehabilitation strategy will be developed with a view to minimising the amount of land disturbed at any one time.

Proposals to divert creeks during mining will be provided. Where dams are to be constructed, proposals for the management of these structures after the completion of mining activities will be given. A contour map of the lease area after the proposed mining activities are completed will be provided. The final drainage and seepage control systems and long term monitoring plans will also be described.

Any potential impacts of the proposed rehabilitation and decommissioning methods and the mitigation measures will be discussed for each relevant section (e.g. flora and fauna, soil, air and water) and appropriately cross-referenced.

4.3 WASTE

This section will describe the existing environmental values which may be affected by the wastes generated from the mining project as defined by the EP Act, EPPs and regulations and the effects on those values from the management of waste.

4.3.1 Environmental Values

This section will define and describe the objectives and practical measures for protecting or enhancing environmental values from impacts by wastes generated; describes how nominated quantitative standards and indicators may be achieved for waste management, and how the achievement of the objectives will be monitored, audited and managed.

4.3.2 Potential Impacts and Mitigation Measures

This section will assess the potential impact of waste generated by the mining project and provide details of each waste in terms of:

- operational handling and fate, including storage;
- proposed on-site treatment methods;
- proposed methods of disposal (including the need to transport wastes off-site for disposal) for any liquid and solid wastes;
- the potential level of impact on environmental values; and
- proposed discharge/disposal criteria for liquid and solid wastes.

Measures to ensure stability of the waste disposal areas will be described and methods to prevent seepage and contamination of groundwater from stockpiles will be given. The EIS will also address waste minimisation techniques and processes proposed; the market demand for recyclable waste (where appropriate) and decommissioning of the site.

The EIS will indicate the results of investigations into the feasibility of using waste minimisation and cleaner technology options during all phases of the mining project having regard to the EPP Waste, EPWMR and the draft guidelines covering aspects for waste management under the EPP Waste and EPWMR.

4.4 WATER RESOURCES

4.4.1 Environmental Values

The function of this section will be to describe the existing environment for water resources which may be affected by the mining project in the context of environmental values as defined by the EP Act, EPPs and regulations. Subject to further evaluation, the following topics may be required to be addressed (note - the topics are not exhaustive).

4.4.2 Surface Waterways

A description will be given of the surface waterways and their quality in the area affected by the mining activities, together with an outline of the significance of these waters to the surrounding catchment and an assessment of the impact of the mining project. Information provided will include a description of existing surface drainage patterns, wetlands and if present, flows in major streams. Details of 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 mining activities will be provided. Flood studies will be conducted if

appropriate and, where data permits, include a range of annual exceedance probabilities for affected waterways. In particular the following will be assessed.

- An analysis of past patterns of meander movements within the meander belt of the Isaac River, and a description of the means proposed to prevent the Isaac River from meandering laterally across the floodplain, away from the present channel location both during mining and post mining. The types of works required and the scale and extent of works proposed will be detailed, where relevant.
- The potential for losses of surface water flows from the Isaac River channel into the mined out pits will be described including the quantity and duration of losses. Similar information will also be provided for infiltration of surface water flows from other creeks and watercourses that traverse the mining project area.
- An estimate of the volume of water that may potentially be retained and/or discharged from interstitial voids between the materials which have been used to backfill the open cut pit.

Details will be provided on the proposed creek and gully diversions, including illustrations of locations and lengths etc.

An assessment will be undertaken of the existing water quality in surface waters and any wetlands likely to be affected by the proposal. The basis for this assessment will be a monitoring program, with sampling stations located upstream and downstream of the proposed mining area. Where available complementary stream-flow data will be obtained from historical records to aid in interpretation.

The water quality description will include seasonal variations or variations with flow, where applicable. If appropriate, a relevant range of physical, chemical and biological parameters will be measured to gauge the potential for environmental harm on any affected creek or wetland system present.

As appropriate, the environmental values of the surface waterways in the affected area will be described in terms of:

- values identified in the *Environmental Protection (Water) Policy 1997* (EPP Water);
- sustainability, incorporating both quality and quantity;
- physical integrity, fluvial processes and morphology of watercourses, including riparian zone vegetation and form; and
- any Water Resource Plans, Land and Water Management Plans relevant to the affected catchment.

In addition, details will be provided on the assessment of proposed permanent waterway diversions including information relating to the effects on surface drainage and flooding, changes in velocities, and potential for downstream erosion.

Where water quality data for the waterways affected by the mine are unavailable, and water flows in the systems are insufficient to allow data collection within the timeframe for the EIS, reference data from similar systems should be presented. This is particularly important in establishing water quality objectives in order to protect “beneficial uses” or environmental values of waterways potentially affected by the mine.

Reference data and sites are defined in Section 3.4.2 and 3.4.3 of the Queensland Water Quality Guidelines (EPA, 2006). Reference sites should be subject to minimal or limited disturbance, and should be as close to and as similar to the waterways in questions as possible. The QWQ Guidelines recommend the use of at least 18 data points over at least one year.

4.4.3 Groundwater

The EIS will review the quality, quantity and significance of groundwater in the mining project area, together with groundwater use in neighbouring areas.

The review will include a survey of existing groundwater supply facilities (bores, wells, or excavations) with the information gathered including:

- location;
- pumping parameters;

- drawdown and recharge at normal pumping rates; and
- seasonal variations (if records exist) of groundwater levels.

A network of observation points will be developed which will satisfactorily monitor groundwater resources both before and after commencement of operations, where necessary.

This section will include reference to the:

Nature of the aquifer/s

- geology/stratigraphy - such as alluvium, volcanic, metamorphic;
- aquifer type - such as confined, unconfined; and
- aquifer location - depth to and thickness.

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 open cut pits;
- interaction with saline water;
- potential groundwater drawdown effects;
- possible sources of recharge; and
- vulnerability to pollution.

The data obtained from the groundwater investigations will be sufficient to enable specification of the major ionic species present, pH, electrical conductivity and total dissolved solids. A description of the environmental values of the aquifers within the mining project area will be provided in terms of:

- values identified in the EPP Water;
- sustainability, including both quality and quantity; and
- physical integrity and morphology of the groundwater resources.

4.4.4 Potential Impacts and Mitigation Measures

This section will define and describe the potential impacts caused by the mining project and practical measures for protecting or enhancing the environmental values of water resources; describe how nominated quantitative standards and indicators may be achieved, and how the achievement of the objectives will be monitored, audited and managed.

Water management controls will be described, addressing surface and groundwater quality, quantity, drainage patterns and sediment movements. The beneficial (environmental, production and recreational) use of the surface and groundwater resources will be described.

Where appropriate, monitoring programs will be described which will assess the effectiveness of the management strategies for protecting water quality, with the key water management strategy objectives including:

- the protection of any important local aquifers and their waters; and
- the maintenance of a sufficient quantity and quality of surface waters to protect existing beneficial downstream uses of those waters.

The EIS will also consider the risks of uncontrolled emissions to water due to system or catastrophic failure and describe the strategies to prevent, minimise and contain impacts.

4.4.4.1 Surface Water and Watercourses

The potential for environmental harm on the flow and the quality of surface waters from mining activities will be discussed, with particular reference to their suitability for the current and potential downstream uses (including the requirements of any affected riparian area, wetland and any in-stream biological uses). The impacts of surface water flows on existing infrastructure will be considered.

The water quality characteristics discussed will be those appropriate to the downstream uses that may be affected. The chemical and physical properties of any waste water (including concentrations of constituents) at the point of entrance to natural surface waters will be discussed, along with the toxicity of effluent constituents to flora and fauna.

Reference will be made to the properties of the land disturbed, the technology for settling suspended sediments from contaminated water (if necessary), and the techniques to be employed to ensure that contaminated water is contained and successfully treated on the site.

In relation to water supply and usage and wastewater disposal, the EIS will discuss anticipated flows of water to and from the mining project area. Where dams, weirs or ponds are proposed, the EIS will investigate the effects of predictable climatic extremes (i.e. storm events, floods and droughts, etc) on the capacity of the dams to retain contaminants; the structural integrity of the containing walls; the quality of water contained; and the quantity and quality of any water discharged.

The need or otherwise for licensing of any dams (including referable dams) under the WAct will be discussed and a dam failure impact assessment undertaken for any proposed dam where required under the WAct. If required, water allocation and water sources will be established in consultation with the DNRW.

Having regard to the requirements of the EPP Water, the EIS will present the methods to avoid stormwater contamination from raw materials, wastes or products and present the means of containing, recycling, reusing, treating and disposing of stormwater. Where no-release water systems are to be used, the fate of salts and particulates derived from intake water will be discussed.

The Australian and New Zealand Environment and Conservation Council's (ANZECC, 2000) 'National Water Quality Management Strategy, Australian Water Quality Guidelines for Fresh and Marine Waters', the Queensland Water Quality Guidelines (2006), and the EPP Water will be used as a reference for evaluating the effects of various levels of contamination.

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

4.4.4.2 Groundwater

The EIS will include an assessment of the potential for environmental harm to local groundwater resources to be caused by the mining project.

The impact assessment will define the extent of the area within which groundwater resources are likely to be affected by the proposed operations; the significance of the mining project to groundwater depletion or recharge and, if appropriate, propose management options available to monitor and mitigate these effects. The response of the groundwater resource to the progression and final cessation of the mining project will be described.

The impact of any groundwater drawdown on local vegetation will be discussed.

4.5 AIR

This section will describe the existing air environment which may be affected by the mining activities in the context of environmental values as defined by the EP Act and EPPs and regulations.

4.5.1 Environmental Values

A description of the existing airshed environment, including values and areas that may be affected by any cumulative impacts, will be provided having regard to particulates, gaseous and odorous compounds. The background levels and sources of suspended particulates, SOx, NOx, and any other major constituent of the air

environment, including greenhouse gases (as per **Section 4.5.2**), which may be affected by the mining project, will be discussed.

Sufficient data on local meteorology and ambient levels of pollutants will be gathered to provide a baseline for later studies or for the modelling of air quality environmental impacts within the airshed. Parameters will include air temperature, wind speed and direction, atmospheric stability and other parameters necessary for input to the models.

A description of the environmental values of the airshed for the affected area will be provided in terms of the *Environmental Protection (Air) Policy 1997* (EPP Air).

4.5.2 Greenhouse Gas Emissions

This section of the EIS will:

- provide an inventory of projected annual emissions for each relevant greenhouse gas, with total emissions expressed in 'CO2 equivalent' terms;
- estimate emissions from upstream activities associated with the proposed project, including fossil fuel based electricity consumed;
- provide an estimate of coal seam methane to be released as well as emissions resulting from such activities as transportation of products and consumable and energy use; and
- briefly describe method(s) by which estimates were made.

4.5.3 Potential Impacts and Mitigation Measures

4.5.3.1 Air Quality Impacts and Mitigation Measures

This section will define and describe the objectives and practical measures for protecting or enhancing environmental values for air, describe how nominated quantitative standards and indicators may be achieved, and how the achievement of the objectives will be monitored, audited and managed.

The proposed levels of emissions will be compared with the National Environmental Protection Measures (NEPMs) for ambient air quality (1998), the National Health and Medical Research Council (NHMRC) National Guidelines (1985) for control of emissions from stationary sources, and the EPP Air.

The EIS will identify residential areas or other developments that could be sensitive to the effects of the predicted emissions and discuss the likely impact of air emissions on nearby vegetation and biodiversity. Ground level predictions will be made at any rural or urban residences or other sensitive receptors that could be impacted by the mining project. These predictions will be made for both normal and expected maximum emission conditions. Worst case meteorological conditions will be identified and modelled. The techniques used to obtain the predictions will be referenced, and key assumptions and data sets explained. The air quality assessment will consider:

- the limitations and accuracy of the applied atmospheric dispersion model(s). The air quality modelling results will be discussed in light of the limitations and accuracy of the applied model(s);
- air quality predictions compared to the relevant goals in the National Environmental Protection Council (Ambient Air Quality) Measure and the EPP Air goals; and
- airshed management and the contribution of the mining project to airshed capacity and its ability to assimilate or disperse emissions, i.e. cumulative impacts on the air environment caused by the mining project, either in isolation or by combination with other known existing and planned users of the airshed. The cumulative impacts of the mining activities will be considered over time or in combination with other impacts in the dimensions of scale, intensity, duration and/or frequency.

Information regarding suppression or minimisation of emissions, including dusts and odours, will be detailed in the EIS and EM Plan.

4.5.3.2 Greenhouse Gas Abatement

This section of the EIS will propose and assess greenhouse gas abatement measures. It will include:

- a description of the proposed measures (alternatives and preferred) to avoid and/or minimise greenhouse gas emissions directly resulting from the activities of the mining project, including such activities as transportation of products and consumables, and energy use by the mining project;
- an assessment of how the preferred measures minimise emissions and achieve energy efficiency;
- an indication of how the preferred measures for emission controls and energy consumption compare with the relevant sector of industry with a view to achieving best practicable environmental management;
- a description of any opportunities for further offsetting greenhouse gas emissions through indirect means; and
- a summary of the analysis and conclusions as to the viability of coal seam methane extraction and use of the by product.
- Direct means of reducing greenhouse gas emissions could include such measures as:
- minimising clearing at the site (which also has imperatives besides reducing greenhouse gas emissions);
- integrating transport for the mining project with other local industries so that greenhouse gas emissions from the construction and running of transport infrastructure are minimised;
- maximising the use of renewable energy sources; and
- co-locating coal seam methane use for energy production with coal extraction, where feasible.

Indirect means of reducing greenhouse gas emissions could include such measures as:

- carbon sequestration at nearby or remote locations, either:
  - above ground by such means as planting trees and other vegetation to achieve greater biomass than that cleared for the mining project; or
  - below ground by geosequestration; and/or
  - carbon trading through recognised markets.

The EM Plan in the EIS will include a specific module to address greenhouse abatement. That module will include:

- commitments to the abatement of greenhouse gas emissions from the mining project, with details of the intended objectives, measures and performance standards to avoid, minimise and control emissions;
- commitments to energy management, including undertaking periodic energy audits with a view to progressively improving energy efficiency;
- regular review of new technologies to identify opportunities to reduce emissions and use energy efficiently, consistent with best practicable environmental management;
- any voluntary initiatives or research into reducing the lifecycle and embodied energy carbon intensity of the mining project's processes or products;
- opportunities for offsetting greenhouse emissions, including, if appropriate, carbon sequestration and renewable energy uses; and
- commitments to monitor, audit and report on greenhouse emissions from all relevant activities and the success of any offset measures implemented.

4.5.4 Climate Change Adaptation

Climate change, through alterations to weather patterns and rising sea level, has the potential to impact in the future on developments designed now. Most developments involve the transfer to, or use by, a proponent of a

community resource in one form or another, such as the granting of a non-renewable resource or the approval to discharge pollutants to air, water or land. It is recognised that the design of the mining project should be adaptive to climate change so that community resources are not depreciated or abandoned or require costly modification before their potential to provide a full return to the community is realised. Consequently, the EIS will provide an assessment of the vulnerability of the mining project to climate change and describe possible adaptive strategies for the activity including:

- a risk assessment of how changing patterns of rainfall and hydrology, temperature, extreme weather may affect the viability and environmental management of the mining project;
- the preferred and alternative adaptation strategies to be implemented; and
- commitments to undertaking, where practicable, a co-operative approach with government, other industry and other sectors to address adaptation to climate change.

4.6 NOISE AND VIBRATION

This section will describe the existing environment values which may be affected by noise and vibration from mining activities in the context of environmental values as defined by the EP Act, EPPs and regulations.

4.6.1 Environmental Values

The results of baseline monitoring of noise, including the daily variation of background noise levels at residences in the vicinity of the mining project, will be described and comments provided on any current activities near the project area that may influence background levels.

Monitoring methods will adhere to relevant EPA Guidelines or Australian Standards, and any relevant requirements of the *Environmental Protection (Noise) Policy 1997* (EPP Noise).

4.6.2 Potential Impacts and Mitigation Measures

This section will define and describe the objectives and practical measures for protecting or enhancing environmental values from impacts of noise and vibration; describe how nominated quantitative standards and indicators may be achieved for noise and vibration management, and how the achievement of the objectives will be monitored, audited and managed. Mapped noise contours from a suitable acoustic model, and other relevant information, will also be presented to describe the noise generated by the mining activities. Predicted noise levels should be discussed with reference to the EPA Guideline, *Planning for Noise Control*.

The potential for environmental harm from noise and vibration at all potentially sensitive places will be quantified in terms of the objectives, standards and indicators to be achieved. This will also include potential environmental harm on terrestrial animals and avifauna, particularly migratory species. Ameliorative measures, such as screening, lining, enclosing or bunding will be considered, if necessary, in order to minimise or eliminate these effects. If appropriate, schedules for the proposed construction activities will be discussed with respect to minimising environmental impacts from noise.

Consideration will be given to the emission of low frequency noise from major items of plant or equipment and, if necessary, measures will be described for reducing the intensity of these components.

Information will be supplied on blasting which might cause ground vibration on or adjacent to the site, with particular attention given to sensitive places, and include details of the magnitude, duration and frequency of any vibration. Predicted vibration levels should be discussed with reference to the EPA Guideline *Noise and Vibration from Blasting*. Measures to prevent or minimise environmental harm, including nuisance, will be discussed.

4.7 NATURE CONSERVATION

This section will describe the existing environmental values for nature conservation that may be affected by the proposed mining activities in the context of environmental values as defined by the EP Act and EPPs and regulations, and the *Nature Conservation Act 1992* (NCA).

4.7.1 Environmental Values

The environmental values of nature conservation for the affected area will be described in terms of:

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

A discussion will be presented on the nature conservation values of the areas likely to be affected directly or indirectly by the mining project and where relevant, rare or threatened flora and fauna communities, MNES and environmentally sensitive localities will be described in relation to potential impacts from the mining activities.

The EIS will include a plant species list, vegetation mapping at an appropriate scale, and an assessment of the significance of native vegetation from a local, regional and State perspective, including the Biodiversity Planning Assessment (BPA) produced by the EPA. Reference will be made the Queensland *Vegetation Management Act 2000* (VMA), including the findings of any Regional Vegetation Management Plan, NCA and EPBC Act.

The EIS will identify issues relevant to sensitive areas or areas which may have low resilience to environmental change, and assess the capacity of the environment to assimilate discharge/emissions.

The occurrence of pest plants and animals in the mining project area will be described.

Should any key flora and fauna indicators be identified, further monitoring may be proposed. Surveys of flora and fauna within those areas not previously assessed as part of the investigations for the approved Isaac Plains Coal Mine will be conducted at the appropriate time of year to reflect seasonal variation in communities and provide details of species structure, assembly, diversity and abundance and to identify migratory species.

Within each defined (standard system) vegetation community, a minimum of at least one site will be surveyed for plant species, preferably in both summer and winter, as follows.

- Site data will be recorded in a form compatible with the Queensland Herbarium (QH) CORVEG database.
- The minimum site size will be 20 by 50 metres.
- A complete list of species present at each site will be recorded.
- The relative abundance of plant species present will be recorded.
- Any plant species of conservation, cultural, commercial or recreational significance will be identified.
- Specimens of species listed as Protected Plants under the *Nature Conservation (Wildlife) Regulation 1994* (NCR), other than common species, are to be submitted to the QH for identification and entry into the HERBRECS database.

Where existing information on plant species has been derived from surveys consistent with the above methodology, this information may be used instead of new survey work. The methodology used for flora surveys will be provided.

4.7.1.1 Terrestrial Flora

A terrestrial vegetation map (at a suitable scale) will be provided, with descriptions of the units mapped. Sensitive or important vegetation types will be highlighted and their value as habitat for fauna and conservation of specific rare floral and faunal assemblages or species/community types discussed. The existence of rare or threatened species will be specifically addressed.

Appropriately scaled mapping of riparian flora showing dimensions, species/community type and commenting on the continuity of and degree of disturbance to the riparian corridor. Any wetlands and/or fish habitat areas will be included.

The location of any horticultural crops in the vicinity of the site will be shown and the existence of important local and regional weed species will also be discussed.

Vegetation mapping at an appropriate scale will, where relevant, identify:

- the mining project, including new infrastructure;
- the terrestrial vegetation communities within the affected areas showing:
    - the location and extent of vegetation types using the EPA's regional ecosystem type descriptions in accordance with the Regional Ecosystem Description Database (REDD) available at the EPA's website;
    - the location of vegetation types of conservation significance based on EPA's RE types and occurrence of species listed as Protected Plants under the NCR and subsequent amendments, as well as areas subject to the VMA;
    - the current extent (bioregional and catchment) of protected vegetation types of conservation significance within the protected area estate (National Parks, Conservation Parks, Resource Reserves, Nature Refuges);
    - any plant communities of cultural, commercial or recreational significance; and
    - the location and abundance of any exotic or weed species.

Vegetation community boundaries will be generated using aerial photography and ground truthing as appropriate.

4.7.1.2 Terrestrial Fauna

The terrestrial and riparian fauna occurring in the areas affected by the mining activities will 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 will include:

- species diversity (i.e. a species list) and abundance of animals, including amphibians, birds, reptiles, and mammals;
- any species which are poorly known but suspected of being rare or threatened under State and Commonwealth legislation;
- species habitat requirements and sensitivity to changes, including movement corridors and barriers to movement;
- the existence of feral or exotic animals;
- endangered, rare and vulnerable fauna, migratory and other species listed under the EPBC Act;
- the existence of any rare, threatened or otherwise noteworthy species/communities in the mining project area, including discussion of range, habitat, breeding, recruitment, feeding and movement requirements, and current level of protection (e.g. any requirements of Protected Area Management Plans); and
- the use of the area by migratory birds, nomadic birds and terrestrial fauna.

The EIS will indicate how well any affected communities are represented and protected elsewhere in the province where the mining project is located.

4.7.1.3 Aquatic Biology

A description of the streams likely to be affected by the project will be provided, noting any patterns, distribution, diversity and relative abundance of flora and fauna in the waterways. Historical species information (e.g. former distribution, diversities) should be included where available. The description will be illustrated by photographs and address the flora and fauna present or likely to be present in the ephemeral streams during and after flow events, and during prolonged periods of low rainfall. The description will include:

- fish species, mammals, reptiles, amphibians, crustaceans and aquatic invertebrates occurring in the waterways within the affected area;
- aquatic plants;

- aquatic and benthic substrate; and
- habitat at the site, upstream and downstream of the project area.

Information should be provided on fish habitat, fish movement and usage requirements in the area affected by the project, including life cycle and seasonal or flow related variations. Local knowledge may be used to describe aquatic biology.

4.7.2 Potential Impacts and Mitigation Measures

This section will define the objectives and practical measures for protecting or enhancing nature conservation; describe how nominated quantitative standards and indicators will be achieved for nature conservation management, and how the achievement of objectives will be monitored, audited and managed.

The EIS will address any proposed actions or likely impacts that will require a permit under the NCA and/or would be assessable development for the purposes of the VMA, and will cover all likely direct and indirect potential environmental harm on flora and fauna, particularly on sensitive areas. Human impacts and the control of any domestic animals introduced to the area will also be described.

Strategies for protecting any rare or threatened species will be described, and any obligations imposed by State or Commonwealth legislation or policy or International treaty obligations (Japan and Australia Migratory Bird Agreement (JAMBA) and China and Australia Migratory Bird Agreement (CAMBA)) will be discussed.

The potential environmental harm to the ecological values of the area arising from the mining project such as clearing, salvaging or removal of vegetation will be described, and the indirect effects on remaining vegetation will be discussed. Short-term and long-term effects will be considered with comment provided on whether the impacts are reversible or irreversible. Mitigation measures and/or offsets will be proposed to compensate for adverse impacts. Any departure from no-net-loss of ecological values will be described.

The potential environmental harm on flora and fauna arising from any alterations to the local surface water and groundwater environment will be discussed with specific reference to environmental harm to riparian vegetation or other sensitive vegetation communities. A monitoring program and measures to mitigate the potential for environmental harm to habitat and remaining endangered ecosystems; the inhibition of normal movement, propagation or feeding patterns, and change to food chains, will be described if appropriate.

Similarly the provision of buffer zones and movement corridors, and strategies to minimise environmental harm on migratory, nomadic and aquatic animals, will be discussed, if relevant.

Potential environmental harm to aquatic faunal communities (including fish) in the area affected by the project including impacts on reproduction and lifecycles and fish movement upstream and downstream and between the waterway and the floodplain from changes to flow patterns and from barriers will be provided. Potential impacts of the project on fish habitat in the area affected by the project including riparian vegetation, aquatic flora, distribution of pool and riffle environments, water quality, instream and bank profiles and floodplain habitat (e.g. wetlands) will be discussed. Aquatic biology will be considered during the design of waterway diversions and crossings, and measures to control discharge to waterways and any necessary water quality safeguards to be incorporated will be discussed.

For all considerations of aquatic biota, where data on distributions within affected waterways are unavailable in the timeframes of the EIS due to lack of flow, reference to data from similar sites nearby may be considered. However, in these circumstances the proponent must also propose a monitoring program to collect data within directly affected waterways as soon as they experience sufficient flows.

Weed management strategies aimed at containing existing weed species (that is, Parthenium and other declared plants) and ensuring no new declared plants are introduced to the area will be discussed, and feral animal management strategies will be addressed. Weed control strategies will include specific components relating to washdown procedures, education of on-site staff and reporting mechanisms during all phases of the mining project. The EIS will present strategies to ensure that the mining project does not contribute to increased encroachment of a feral animal species, with reference made to the local government authority pest management plans when determining control strategies. The strategies for flora, fauna and pest management will be discussed in the main body of the EIS and provided in a working form in a pest management plan as part of the overall EM Plan for the mining project.

Rehabilitation of disturbed areas will be discussed in the context of the existing rehabilitation methods and outcomes for the approved Isaac Plains Coal Mine.

The following information will be provided if areas are proposed to be cleared:

- the area of remnant vegetation listed by RE (on both freehold and leasehold land); and
- the area of non-remnant vegetation on leasehold land.

The EIS will outline mitigation measures, taking into consideration the Regional Vegetation Management Code for Ongoing Clearing Purposes for Nebo-Broadsound (Brigalow Belt Bioregion).

Areas regarded as sensitive with respect to terrestrial and aquatic flora and fauna have one or more of the following features and will be identified, mapped and, if relevant, avoided or the effects minimised:

- Important habitats of species listed under the NCA and/or EPBC Act as presumed extinct, endangered, vulnerable or rare.
- REs recognised by the EPA as 'endangered' or 'of concern' and/or ecosystems listed as presumed extinct, endangered or vulnerable under the EPBC Act.
- Good representative examples of remnant REs or REs which are poorly represented in protected areas.
- Sites containing near-threatened or bio-regionally significant or EPBC-listed species, or essential, viable habitat for near-threatened or bio-regionally significant or EPBC-listed species.
- Sites in, or adjacent to, areas containing important resting, feeding or breeding sites for migratory species of conservation concern listed under the Convention of Migratory Species of Wild Animals, and/or bilateral agreements, JAMBA and CAMBA.
- Sites containing common species which represent a distributional limit and are of scientific value or which contains feeding, breeding, resting areas for populations of echidna, koala, platypus and other species of special cultural significance.
- Sites containing high biodiversity that are of a suitable size or with connectivity to corridors/protected areas to ensure survival in the longer term. Such land may contain:
    - natural vegetation in good condition or other habitat in good condition, for example, wetlands; and/or
    - degraded vegetation or other habitats that still support high levels of biodiversity or act as important corridors for maintaining high levels of biodiversity in the area.
- A site containing other special ecological values, for example, high habitat diversity and areas of high endemism.
- Ecosystems which provide important ecological functions e.g. riparian vegetation, and important buffers to a protected area or, an important habitat corridor.
- Sites of palaeontologic significance such as fossil sites.
- Protected areas which have been proclaimed under the NCA or are under consideration for proclamation.
- Areas of major interest, or critical habitat declared under the NCA or high nature conservation value areas or areas vulnerable to land degradation under the VMA.

4.8 CULTURAL HERITAGE

This section will describe the existing cultural heritage values that may be affected by the mining activities in the context of the *Aboriginal Cultural Heritage Act 2003* (ACH Act).

4.8.1 Environmental Values

A cultural heritage study was undertaken over the area of the existing approved Isaac Plains Coal Mine during the preparation of the approved EM Plan. Subject to the outcomes of discussions with the Traditional Owners

(TOs), a cultural heritage study of the Expansion Area and areas of planned disturbance in ML70342 not previously assessed will be undertaken with the existing cultural heritage management plan (CHMP) amended as required. The CHMP will outline the measures to be taken to describe and protect indigenous and non-indigenous cultural heritage sites and places, and their values. Any studies undertaken will be in accordance with the ACH Act.

4.8.2 Potential Impacts and Mitigation Measures

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

A cultural heritage study will be required over the proposed MLs (and areas of planned disturbance not previously assessed) which will describe indigenous and non-indigenous cultural heritage sites and places, and their values. In accordance with the ACH Act, the study will be conducted by an appropriately qualified cultural heritage practitioner and:

- involve liaison with relevant indigenous community/communities concerning:
    - places of significance to that community (including archaeological sites, natural sites, story sites etc);
    - appropriate community involvement in the field surveys;
- recognise that any requirements by communities and/or informants relating to confidentiality of site data must be highlighted. Non-indigenous communities may also have relevant information;
- include a systematic field investigation of the proposed development area to locate and record indigenous and non- indigenous cultural heritage places;
- include a significance assessment of any cultural heritage sites/places located;
- provide an assessment of the impact of the proposed mining project on cultural heritage values; and
- include a report of work done including background research, relevant environmental data and methodology, as well as results of field work, significance assessment and recommendations.

A permit to conduct the research and survey will be acquired under the provisions of the ACH Act.

4.9 SOCIAL

4.9.1 Environmental Values

The function of this section is to describe the existing social values which may be affected by the mining activities.

The social amenity and use of the proposal area and adjacent areas for rural, agricultural, forestry, fishing, recreational, industrial, educational or residential purposes should be described, with consideration to:

- community infrastructure and services, access and mobility;
- population and demographics of the local community;
- local community values, vitality and lifestyles;
- recreational, cultural, leisure and sporting facilities and activities in relation to the affected area;
- health and educational facilities;
- on farm activities near the proposed mining activities;
- current property values;
- the number of properties directly affected by the mining project; and

- the number of families directly affected by the mining project. This will include not only property owners but families of workers either living on the property or workers where the property is their primary employment.

The values of social attributes for the affected area will be described in terms of:

- the integrity of social conditions, including amenity and liveability; harmony and well being; sense of community; access to recreation and social and community services and infrastructure; and
- values, housing (in both the owner-occupied and rental markets and public housing), community infrastructure and services that may be affected by cumulative impacts caused by the mining project, either in isolation or in combination with other known existing or planned operations.

4.9.2 Potential Impacts and Mitigation Measures

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

The social impact assessment for the mining project will consider the information gathered in the community consultation program and the analysis of the existing socio-economic environment, and describe the potential impacts of the project (both beneficial and adverse) on the local community. The impacts of the project on local and regional residents, community services and recreational activities are to be analysed and discussed for all stages of the development. The nature and extent of the community consultation program will be described and a summary of the results incorporated in the EIS.

The social impact assessment of the project is to be carried out in consultation with affected local authorities and relevant State authorities, such as the Department of Communities, DLGPSR, Queensland Health and Education Queensland.

The social impact assessment should include sufficient data to enable affected local authorities and State authorities, such as Queensland Health and Education Queensland, to plan for the continuing provision of public services in the region of the project. The social impact assessment will address:

- impacts on demographic, social, cultural and economic profiles;
- impacts on local residents, current land uses and existing lifestyles and enterprises;
- impacts on local residents' values and aspirations;
- impacts on the ability of social infrastructure, such as health and education facilities, and emergency services to meet the community's needs; and
- cumulative impacts on the social environment, including values, housing (in both the owner-occupied and rental markets and public housing), community infrastructure and services.

The EIS will describe changes to the existing Isaac Plains Coal Mine workforce as a consequence of the construction of the proposed additional infrastructure and its commissioning, as well as any consequential changes in the operational workforce, including any additional accommodation, community infrastructure or community services that will be required as a result of the mining project.

The EIS will include an assessment of impacts on local and state labour markets, with regard to the source of the workforce. This information is to be presented according to occupational groupings of the workforce. In relation to the source of the workforce, information is required as to whether the proponent and/or contractors are likely to employ locally or through other means and whether there are initiatives for local employment opportunities.

The EIS will provide comment on how much service revenue and work from the project (e.g. provisioning, catering and site maintenance) would be likely to flow to existing communities in the area of the project.

Estimates will be provided of the:

a) construction workforce - that is, the number of workers to be employed on-site during the construction activities, including the number of sub-contractors and an outline of the recruitment schedule and policies for the recruitment of workers.

b) commissioning and operational phase workforce - that is, the number of workers to be employed on-site during any commissioning activities and of mine personnel in addition to those employed in the current mining operation.

With respect to accommodation of workers, the EIS will provide:

- an estimate of the number of additional employees that will be housed in the existing facilities;
- an estimate of the number of new workers who will be accompanied by dependents;
- a description of the existing facilities, and the circumstances of workers currently occupying the accommodation (i.e. single or accompanied);
- the spare capacity of the existing facilities and their suitability for housing the new workforce;
- details of the tenure of the existing facilities (i.e. whether exclusively owned or managed by IPCM);
- the size of the private rental market in the catchment area, including caravan parks, backpacker hostels, hotel and motel accommodation;
- the current vacancy rate of rental accommodation, including an assessment of seasonal fluctuations;
- the availability and median cost of housing for purchase in the catchment area; and
- any identified constraints and opportunities for new housing construction in the catchment area, including the capacity of the local land development and housing construction industries to provide new housing.

The potential environmental harm on the amenity of adjacent areas will be discussed, together with the implications of the mining project for future developments in the local area.

4.10 HEALTH AND SAFETY

4.10.1 Environmental Values

This section will describe the existing community values for health and safety which may be affected by the mining activities. Nearby and other potentially affected populations will be identified and described when assessing air, odour and noise emissions from the mining activities. Particular attention will be paid to those sections of the population, such as children and the elderly, which are especially sensitive to environmental health factors.

4.10.2 Potential Impacts and Mitigation Measures

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

The EIS should assess the effects on the project workforce of occupational health and safety risks and the impacts on the community in terms of health, safety, and quality of life from project operations and emissions. Any impacts on the health and safety of the community, workforce, suppliers and other stakeholders should be detailed in terms of health, safety, quality of life from factors such as air emissions, odour, dust and noise.

Map(s) should be provided showing the locations of sensitive receptors, such as, but not necessarily limited to, kindergartens, schools, hospitals, aged care facilities, residential areas, and centres of work (e.g. office buildings, factories and workshops). The EIS, illustrated by the maps, should discuss how planned discharges from the project could impact on public health in the short and long term, and should include an assessment of the cumulative impacts on public health values caused by the proposal, either in isolation or by combination with other known existing or planned sources of contamination.

The EIS should address the project's potential for providing disease vectors. Measures to control mosquito and biting midge breeding should be described. Any use of recycled water should be assessed for its potential to cause infection by the transmission of bacteria and/or viruses by contact, dispersion of aerosols, and ingestion (e.g. via use on food crops). Similarly, any use of recycled water should be assessed for its potential to cause harm to health via the food chain due to contaminants such as heavy metals and persistent organic chemicals. Practical monitoring regimes should also be recommended in this section.

The EIS will address measures related to safety impacts from driver fatigue of workers residing in the Mackay area and driving long distances to or from construction camps before or after work periods.

4.11 ECONOMY

This section will describe the existing economic environment which may be affected by the mining activities.

4.11.1 Environmental Values

The character and basis of the local and regional economies will be addressed including:

- economic viability (including economic base and economic activity) and future economic opportunities;
- current local and regional economic trends, in particular drought and 'rural downturn' etc;
- the existing housing market, particularly rental accommodation, which may be required for, and available to the incremental increase in the mining project workforce; and
- historical descriptions of large scale resource developments and their effects in the region.

The economic attributes of the mining project will be described in terms of the integrity of economic conditions and the economic benefits to the affected communities.

An analysis of the economy of the impacted area will be undertaken, covering:

- economic viability – economic base, level of economic activity, future economic opportunities;
- types and numbers of businesses;
- existing property and land values; and
- availability and prices of goods and services.

4.11.2 Potential Impacts and Mitigation Measures

An economic analysis, including a cost-benefit analysis, will be presented from National, State, regional and local perspectives as appropriate to the scale of the mining project, and the general economic benefits from the mining project will be described.

Attention will be given to the short and long term effects of the mining project on the land-use of the surrounding area, regional income and employment, and the State economy.

4.12 HAZARD AND RISK

This section will describe the potential hazards and risks that may be associated with the mining activities.

4.12.1 Environmental Values Affected

The environmental values likely to be affected by any hazardous materials or activities at the mining project site, and the degree of risk and sensitivity of the environmental values at risk, will be detailed.

An analysis will be conducted into the potential impacts of both natural and induced emergency situations and assess counter-disaster and rescue procedures as a result of the mining project on sensitive areas and resources, State and Local Government controlled roads, places of residence and work, and recreational areas, as relevant.

4.12.2 Potential Impacts and Mitigation Measures

This section defines and describes the objectives and practical measures for protecting people and places from hazards and risk, describes how nominated quantitative standards and indicators may be achieved for hazard and risk management, and how the achievement of the objectives will be monitored, audited and managed.

The EIS should provide an 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 transport, 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; and
- the procedures to prevent spillages, and the emergency plans to manage hazardous situations.

A preliminary hazard analysis (PHA) will be conducted for the mining project. The assessment will outline the implications for and the impacts on surrounding land uses, and will involve consultation with Department of Emergency Services, Queensland Fire and Rescue Authority and Queensland Ambulance Service. The PHA will:

- describe the processes, type of the machinery and equipment to be used;
- address all relevant hazards (minor and major), both technological and natural;
- assess the possible frequency of potential hazards, accidents, spillages and abnormal events occurring over the life of the mining project;
- provide an indication of cumulative risk levels to surrounding land uses;
- identify the life of any identified hazards;
- identify the hazardous substances to be used, stored, processed or produced and the rate of usage; and
- outline the public liability of the State for private infrastructure and visitors on public land.

The EIS should address the development of an integrated risk management plan for the whole of the life of the project including construction, operation and decommissioning phases. The plan should include the following components:

- operational hazard analysis;
- regular hazard audits;
- fire safety, emergency;
- response plans;

- qualitative risk assessment; and
- construction safety.

5 CROSS REFERENCE WITH THE TERMS OF REFERENCE

This section will provide a cross reference of the relevant sections of the EIS to the appropriate sections of the ToR.

6 ENVIRONMENTAL MANAGEMENT PLAN

The draft EM Plan for the mining project will be an integral part of the EIS, but will be capable of being read as a stand-alone document without reference to other parts of the EIS. An amendment to the existing EM Plan will be developed from the information contained in the EIS and set commitments to environmental management in order to protect the identified environmental values. As the mining project outlined in this ToR refers to the integration of activities and infrastructure within the Expansion Area with those at the approved Isaac Plains Coal Mine, a single project authority will be sought for the IIPP by applying for an amendment to the current Isaac Plains Coal Mine EA. The EM Plan will incorporate the current EA conditions and management strategies (land, rehabilitation) for the Isaac Plains Coal Mine and, where necessary, prepare additional or amended EA conditions and management strategies for the mining project. The current EA for the approved Isaac Plains Coal Mine will be included in the EIS as a separate appendix for cross-referencing purposes.

The general contents of the EM Plan will comprise:

- IPCM'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;
- impact prevention and control strategies to satisfy the commitments; and
- corrective actions to rectify any deviation from performance standards.

Through the EM Plan, the commitments to environmental performance, contained in the EIS, can be used as regulatory controls through conditions to comply with those commitments. Therefore, the EM Plan is a relevant document for project approvals, environmental authorities and permits and may be referenced by them.

7 REFERENCES

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

8 RECOMMENDED APPENDICES

Based on the current stage of project planning, it is envisaged that the following appendices will be provided in the EIS.

A1 FINAL TERMS OF REFERENCE FOR THIS EIS

A copy of the final ToR will be included in the EIS. If it is intended to bind the appendices in a separate volume from the main body of the EIS, the ToR at least will be bound with the main body of the EIS for ease of cross-referencing. A summary, cross-referencing specific items of the ToR to the relevant section of the EIS, will also be provided in the EIS.

A2 DEVELOPMENT APPROVALS

A list of the development approvals required by the mining project will be presented.

A3 THE STANDARD CRITERIA

A brief summary of the compatibility of the mining project with the ESD policy and other relevant policy instruments, such as the Standard Criteria as defined by the EP Act, will be presented. Consideration will focus

on The National Strategy for ESD, (Commonwealth Government, 1992). Each principle will be discussed and conclusions drawn as to how the mining project conforms. A life-of-project perspective will also be shown.

A4 CURRENT ENVIRONMENTAL AUTHORITY

This appendix will include a copy of the current Environmental Authority for the approved Isaac Plains Coal Mine.

A5 RESEARCH

Any proposals for researching alternative environmental management strategies or for obtaining any further necessary information will be outlined.

A6 CONSULTATION REPORT

The summary Consultation Report appendix for an EIS under the EP Act should commence by including the details of affected and interested persons, and the statement of planned consultation with those persons, originally provided with the draft terms of reference. It should describe how 'interested' and 'affected persons,' and any 'affected parties' as defined in the EPBC Act, were identified.

A list of referral agencies will be provided in a summary Consultation Report, together with the Commonwealth, State and Local Government agencies and non-government individuals and groups consulted. The discussion will include the methodology used in the community consultation program, including the criteria used for identifying stakeholders and the communication methods employed.

A summary of the issues raised by these parties, and the means by which the issues were considered in finalising the EIS, will be provided.

A7 STUDY TEAM

This appendix will identify the qualifications and experience of the study team, specialist sub-consultants and expert reviewers involved in the preparation of the EIS.

A8 GLOSSARY OF TERMS

This appendix will provide a glossary of technical terms, acronyms and abbreviations used within the EIS.

A9 SPECIALIST STUDIES

All reports generated by specialist studies undertaken as part of the EIS will be included as appendices. Based on the current scoping for the IIPP, the likely appendices will include studies in the fields of:

- flora and fauna;
- hydrogeology;
- soils;
- waste characterisation;
- cultural heritage;
- socio-economic aspects;
- hazard and risk;
- land use and land capability; and
- road impact assessment.

A10 CORPORATE ENVIRONMENTAL POLICY

IPCM will include a copy of its corporate environmental policy and planning framework document in this appendix.

APPENDIX 1 – LEGISLATION, POLICIES, GUIDELINES AND STANDARDS

This appendix to the TOR provides as guidance a list of legislation, regulations, policies, guidelines and standards that have been identified at the TOR stage as potentially applicable to the project. The requirements of applicable legislation, policies, guidelines and standards should be fully addressed in the EIS, together with any additional requirements identified during the preparation of the EIS:

- *Aboriginal Cultural Heritage Act 2003*;
- *Environmental Protection Act 1994;*
- *Fisheries Act 1994;*
- *Integrated Planning Act 1997;*
- *Land Protection (Pest and Stock Route Management) Act 2002*;
- *Mineral Resources Act 1989;*
- *Nature Conservation Act 1992;*
- *Nature Conservation (Wildlife) Regulation 1994;*
- *Transport Infrastructure Act 1994;*
- *Transport Planning and Coordination Act 1994;*
- *Transport Operations (Road Use Management) Act 1995;*
- *Transport Infrastructure (SCR) Regulation 2006;*
- *Transport Operations (Road Use Management-Fatigue Management) Regulation 1998;*
- *Main Roads' Guidelines for Assessment of Road Impacts of Development 2006;*
- *Main Roads' Road Planning and Design Manual;*
- *Vegetation Management Act 1999;*
- *Water Act 2000*;
- Environmental Protection Regulation 1998;
- Environmental Protection (Waste Management) Regulation 2000;
- Environmental Protection (Waste Management) Policy 2000;
- The Central Queensland Strategy for Sustainability – 2004 and Beyond;
- Environmental Protection (Air) Policy 1997;
- Environmental Protection (Noise) Policy 1997;
- Environmental Protection (Water) Policy 1997;
- Environmental Management Policy for Mining in Queensland 1991;
- A policy framework to encourage the progressive rehabilitation of large mines 2004;
- The Australian and New Zealand Environment and Conservation Council's (ANZECC 2000) National Water Quality Management Strategy;
- Australian Water Quality Guidelines for Fresh and Marine Waters;
- Noise and Vibration from Blasting (EPA) Guideline;
- Planning for Noise Control (EPA) Guideline;
- Biodiversity Planning Assessment (EPA);
- Queensland Water Quality Guidelines (EPA) 2006;

- Technical guidelines for the environmental management of exploration and mining in Queensland 1995;
- Water Resource (Fitzroy Basin) Plan 1999;
- Bowen Basin River Diversions Design and Rehabilitation Criteria (ACARP 2002);
- Australasian code for reporting on mineral resources and ore reserves (the JORC Code);
- Australian guidelines for the estimating and reporting of inventory coal, coal resources and coal reserves;
- Planning guidelines: the identification of Good Quality Agricultural Land (DPI, DHLGP, 1993);
- State Planning Policy 1/92: Development and the conservation of agricultural land; and
- Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland.

Disclaimer

While this document has been prepared with care, it contains general information and does not profess to offer legal, professional or commercial advice. The Queensland Government accepts no liability for any external decisions or actions taken on the basis of this document. Persons external to the Environmental Protection Agency should satisfy themselves independently and by consulting their own professional advisors before embarking on any proposed course of action.

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9 APPROVED BY

Signature

21/3/2007.

Date

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