Department of Environment
and Resource Management

Environmental Impact Statement (EIS) Assessment Report under the *Environmental Protection Act 1994*

Middlemount Coal Project, Stage 2

Proposed by Middlemount Coal Pty Ltd

October 2011

Prepared by: Environmental Impact Assessments Unit, Department of Environment and Resource Management

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October 2011

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1 Introduction

This report provides an evaluation of the environmental impact statement (EIS) process pursuant to Chapter 3 of the *Environmental Protection Act 1994* (EP Act) for the Middlemount Coal Project, Stage 2 EIS (the Project), proposed by Middlemount Coal Pty Ltd.

The Department of Environment and Resource Management (DERM), as the administering authority for the EP Act, has coordinated the EIS process for the Project under that legislation

The Project was also declared a controlled action under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), including assessment through the EIS process under the Agreement between the Commonwealth of Australia and the State of Queensland (the Bilateral Agreement) relating to Environmental Impact Assessment. This report also contains an assessment of the significance of impacts of the action on the controlling provisions.

This assessment report has been prepared pursuant to section 58 and 59 of the EP Act. The EP Act requires an EIS assessment report to:

- Address the adequacy of the EIS in addressing the final terms of reference (TOR).
- Address the adequacy of the draft environmental management plan (EM plan).
- Make recommendations about the suitability of the Project.
- Recommend any conditions on which any approval required for the Project may be given.

The purpose of this report is to provide an assessment of the EIS pursuant to section 40 of the EP Act, including to provide information for the assessment of the Project under the Bilateral Agreement for the purposes of the EPBC Act. A copy of this report will be given to the Commonwealth Environment Minister, who will decide whether to approve or refuse the controlled action under Part 9 of the EPBC Act.

This report summarises the key issues associated with the potentially adverse and beneficial environmental, economic and social impacts of the Project. It discusses the management, monitoring, planning and other measures proposed to minimise any adverse environmental impacts of the Project. It notes those issues of particular concern that were either not resolved or will require specific conditions for the Project to proceed. The giving of this report to the proponent will complete the EIS process under the EP Act.

2 Project details

The proponent for the Middlemount Coal Project, Stage 2 (the Project) is Middlemount Coal Pty Ltd (the Proponent), an incorporated joint venture between Macarthur Coal Limited and the Noble Group.

The Proponent's address is:

Middlemount Coal Pty Ltd

Ground Floor Reception

100 Melbourne Street

South Brisbane QLD 4101

The Project is located in the Central Bowen Basin, approximately 270 km north-west of Rockhampton and approximately 6 km south-west of the township of Middlemount within the Isaac Regional Council (IRC) area (refer to Figure 1 - Project Location). The Project would involve expansion of the existing Middlemount open-cut coal mine, referred to as Stage 1 in this report.

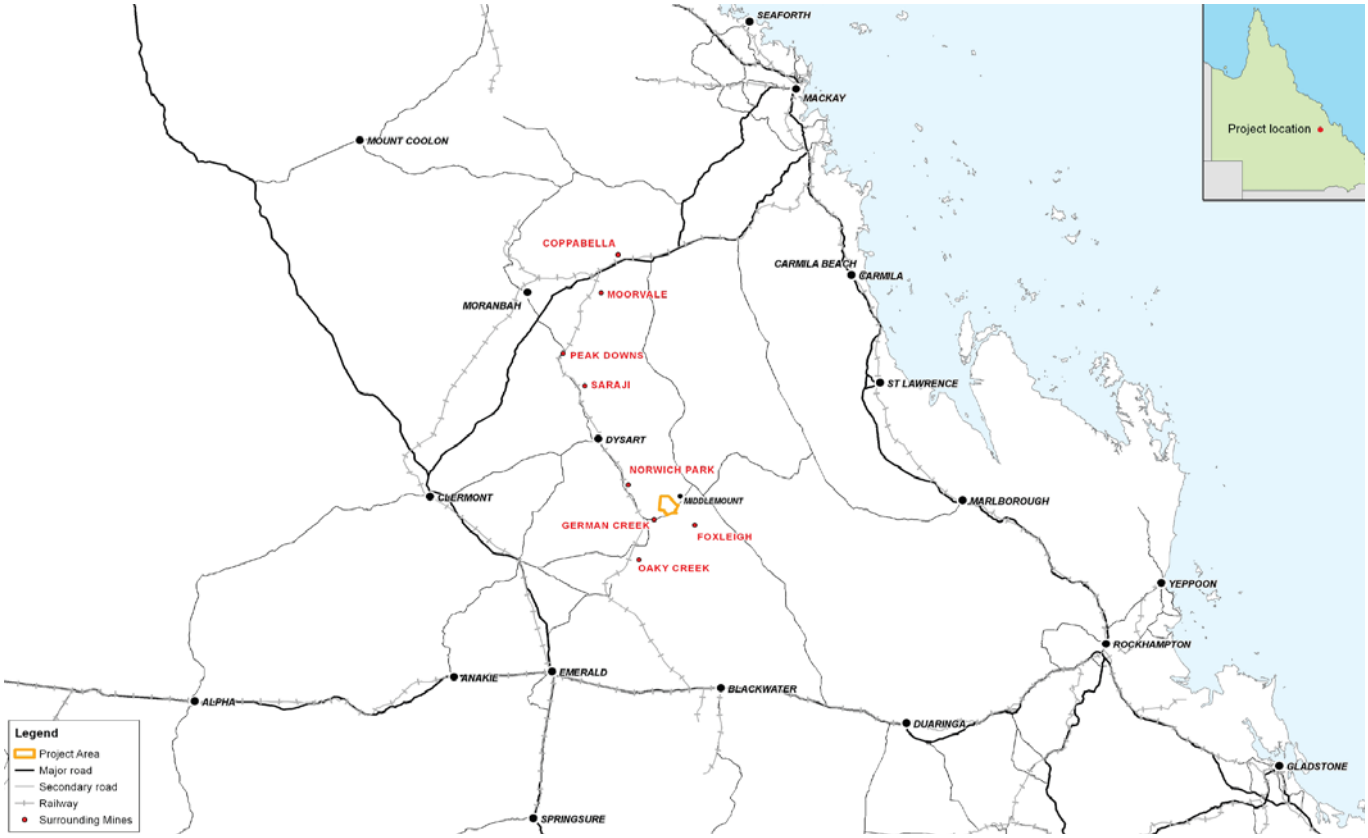

Figure 1 - Project Location

The proposed Project is located on mining lease (ML) 70379 and mining lease application (MLA) 70417:

- ML70379 – Middlemount Mine at 1585.5 hectares (ha), principally held by Ribfield Pty Ltd, a wholly owned subsidiary of the Proponent
- MLA70417 – Middlemount – Eastern Extension at 1188 ha, principally held by Middlemount Coal Pty Ltd, with the MLA lodged on 16 October 2009.
- Coal extraction for the Project would only occur from ML 70379.

Stage 1 operations are presently authorised under Environmental Authority (EA) Non Code Compliant Level 1 for mining activities MIN100646307, principally held by Middlemount Coal Pty Ltd and Ribfield Pty Ltd as a joint holder. The EA came into effect on 24 November 2009. Stage 1 operations involve an open-cut coal mine with an approved rate of mining of 1.8 million tonnes per year (Mt/y) of Run of Mine (ROM) coal. This is expected to yield approximately 1.4 Mt/y of total product coal. Product coal streams are estimated at approximately 70% semi-hard coking coal and 30% Pulverized Coal Injection (PCI) coal.

Stage 1 of the Middlemount Coal Mine is under construction and the Proponent has applied to amend the EA for the mine to authorise out-of pit spoil dumping on MLA70417. That amendment application is not part of this EIS process and is not considered further in this report.

Stage 2 of the Middlemount Coal Project (the subject of this report) would expand the mine to increase ROM coal production in response to the strong overseas demand for coking coal and PCI coal. There are an estimated 122.6 M/t (JORC Resource) of coal resource in the Middlemount and Pisces coal seams, which would enable expansion of mine production from the current 1.8 Mt/y to up to 5.4 Mt/y of ROM coal. This equates to approximately 4 Mt/y of product coal for an operating mine life of some 23 years. The estimated capital expenditure for the Project would be A$ 308 million. Two mining strategies were considered in the EIS and the Proponent has confirmed that truck and shovel operations would be the preferred mining method used for the Project.

Stage 2 expansion would involve an main open-cut with excavations to depths of approximately 100 to 120 metres. The ROM coal would be crushed and processed on site before being transported by rail to the Dalrymple Bay Coal Terminal, Abbot Point Coal Terminal, or Wiggins Island Coal Export Terminal for export.

Produced coal would comprise approximately 70% semi-hard coking coal and 30% PCI coal. It is expected that the maximum production rate, of 5.4 Mt/y, would be reached by year 4 of mine life.

The Stage 2 Expansion includes:

- installation of a package potable water treatment plant (WTP)
- installation of a package sewage treatment plant (STP)
- construction of a 'go line' area, housing mine vehicles, an office and crib facilities
- construction of Stage 2 flood protection levees
- creek diversions (12 km) of Roper Creek and Thirteen Mile Gully, including permanent habitat and floodplain loss
- construction of additional fuel storage
- upgrade of an existing Stage 1 Coal Handling and Processing Plant (CHPP) from a capacity of 400 tonnes per hour (t/h) to 700 t/h
- extension of a Mine Infrastructure Area (MIA) workshop by construction of four additional covered workshop bays, two additional outdoor bays, and associated construction aprons to support the increased production levels
- clearing of 1300 ha of vegetation
- construction of the partial diversion (10.9 km) of the Saraji water supply pipeline
- decommissioning of a portion of the existing Saraji water supply pipeline that traverses through the Project site
- storage of fine tailings from the CHPP in a Tailings Storage Facility (TSF) (Cell 1 and Cell2)
- storage of pit water in a mine water dam
- collection of runoff from the North ROM coal pad and hardstand area in the North ROM dam
- storage of recycled water and water from external water sources in a raw water dam
- collection of runoff from waste rock dumps in sediment sumps
- upgrade of existing flood protection levees.

The WTP would be based on reverse osmosis/ultra-filtration and waste streams from the WTP would be discharged to the TSF.

Treated effluent from the STP would be discharged to the TSF and solids from the treatment process would be collected and disposed of to an appropriately approved waste facility.

The TSF would consist of two major cells. Initially, only Cell 1 would receive tailings, while Cell 2 would be used for mine water storage. From year 3 of mine life, Cell 2 would also be used to store tailings.

All potentially acid-producing, dried tailings would be segregated, isolated and encapsulated within in-pit spoil dumps, along with any spoil displaying acid neutralising capacity.

3 The EIS process

3.1 Timeline of the EIS process

The Proponent initiated the EIS process on 11 March 2010, by lodging an amendment application for the existing environmental authority, EA MIN100646307, which had been effective since 24 November 2009. On 29 March 2010 DERM decided that an EIS was required, pursuant to section 246 of the EP Act. The Proponent submitted a draft TOR under section 41 of the EP Act on 23 April 2010.

A notice of publication of the draft TOR was issued to the Proponent on 18 June 2010. A public notice announcing the start of the comment period for the draft TOR was advertised in the Courier Mail on 12 June 2010 and the public comment period on the draft TOR commenced on Tuesday 15 June 2010, closing on Monday 26 July 2010.

Comments on the draft TOR were received from 11 stakeholders within the comment period. These comments, together with those provided by DERM, were forwarded to the Proponent on 9 August 2010. DERM considered all comments received on the draft TOR and the Proponent's response received on 30 August 2010, prior to issuing the final TOR on 27 September 2010. The final TOR were publicly notified in the Central Queensland News on 1 October 2010 and in the Courier Mail on 2 October 2010.

The Proponent submitted a draft EIS to DERM on 7 January 2011, as well as additional information on 14 January 2011. On 28 January 2011 the Proponent was advised that the submitted EIS did not address the final TOR in an acceptable form, and was therefore not suitable to proceed to public notification. On 1 February 2011, a revised EIS was submitted to DERM for review. DERM reviewed the relevant documentation and decided that it adequately addressed the TOR. On 2 February 2011, DERM issued a notice to the Proponent, advising of DERM's decision to proceed with the EIS.

The EIS was publicly notified in the Courier-Mail and the Central Queensland News on Friday, 4 February 2011, the Mackay Daily Mercury on Saturday, 5 February 2011 and the Miners Midweek on Wednesday, 9 February 2011. The public submission period for the EIS commenced on Monday, 7 February 2011 and concluded on Monday, 28 March 2011.

The proponent was required to issue copies of the public notice to all affected and interested persons. On 18 February 2011, the Proponent provided the required statutory declaration for the public notice requirements of the EIS, which was accepted by DERM.

Eight submissions were received on the EIS within the submission period and three submissions were received outside the comment period. All 11 submissions were accepted by DERM's chief executive, in accordance with section 55 of the EP Act. On 12 April 2011 the submissions together with a submission from DERM were forwarded to the Proponent for consideration and response.

A response in the form of an SEIS was received on 15 July 2011. DERM decided on 20 June 2011 under section 56A of the EP Act that the submitted EIS should proceed under Division 5 (EIS assessment report) and Division 6 (Completion of process) of the EP Act. On 26 August 2011 a notice of the decision to allow the submitted EIS to proceed was issued to the Proponent. The notice included an attachment with a list of outstanding matters that needed to be addressed prior to finalising the EM plan.

3.2 Regulatory Approvals

The EIS process was triggered by an application to amend the existing EA to add a new mining lease (ML70417). The Proponent provided a list of ancillary activities which would otherwise require approval under the *Sustainable Planning Act 2009* (SPA) and the EP Act as environmentally relevant activities (ERAs).

The EA amendment would include the relevant ERAs as well as appropriate conditions. Approvals under other State legislation would also be required (refer to section 4.2 Regulatory approvals and section 7 Conditions for regulatory approvals).

3.3 Consultation program

3.3.1 Public consultation

The Proponent undertook extensive public consultation, including with directly impacted landowners, business owners, and a community group specifically formed for the Project and State and local government agencies. The EIS described a rigorous, systematic process of issue identification and community consultation.

The main concerns raised through the public consultation process include:

- commuting
- social/community infrastructure
- potential impacts on waterways
- potential environmental impacts
- accommodation/housing
- community/mental health implications.

The EIS committed the Proponent to ongoing consultation, including but not limited to, the provision of financial support to the community, supporting local events and housing. The requirements for public consultation under the TOR have been met.

3.3.2 Advisory Body

The following organisations where invited by DERM to assist in the assessment of the TOR and EIS by participating as members of the advisory body for the Middlemount Coal (Stage 2) Project:

- Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC)
- Department of Communities
- Department of Community Safety
- Department of Education and Training
- Department of Infrastructure and Planning (now part of DEEDI)
- Department of Employment, Economic Development & Innovation (DEEDI)
- Department of Transport and Main Roads (DTMR)
- Queensland Health
- Queensland Police Service
- Capricorn Conservation Council
- Fitzroy Basin Association
- Central Highlands Regional Council
- North Queensland Land Council Native Title Representative Body Aboriginal Corporation (TOR stage only)
- Queensland Rail Limited
- Queensland South Native Title Services (EIS Stage only)
- Queensland Treasury.

An advisory body briefing for the Project was held in Brisbane on 8 March 2011 during the EIS public submission period. A site inspection was also conducted on 15 March 2011, which was attended by representatives of DERM, DEEDI and Queensland Health. Due to the cyclones and significant flooding in earlier months it was not possible

to gain access to the whole site. The site inspection was therefore restricted to the MIA, the CHPP, a view of the existing pit (refer to Figure 2 - Existing pit) and water storage dams.

Figure 2 - Existing pit

3.3.3 Public notification

In accordance with the statutory requirements, advertisements were placed in the Courier-Mail, Mackay Daily Mercury, Central Queensland News and the Miners MidWeek, to notify the availability of the draft TOR and EIS for review and public comment. In addition, notices advising the availability of the draft TOR and the EIS for public comment were displayed on the DERM website.

The draft TOR and EIS were placed on public display at the following locations during their respective public comment and submission periods:

- DERM Customer Service Centre, Level 3, 400 George Street, Brisbane
- DERM Customer Service Centre, 99 Hospital Road, Emerald
- Middlemount Library, Middlemount Shopping Mall, Middlemount
- Middlemount Coal Pty Ltd, Ground Floor Reception, 100 Melbourne Street, South Brisbane.

3.4 Matters considered in the EIS assessment report

This assessment report has been prepared to comply with section 58 and 59 of the EP Act and subordinate legislation.

3.4.1 Legislative requirements under the EP Act and subordinate legislation

Section 58 of the EP Act lists the criteria that DERM must consider when preparing an EIS assessment report and section 59 of the EP Act sets out the mandatory contents of an EIS assessment report.

Section 58 of the EP Act requires an EIS assessment report to address the following criteria:

(a) the final terms of reference for the EIS

(b) the submitted EIS

(c) all properly made submissions and any other submissions accepted by the chief executive

(d) the standard criteria

(e) another matter prescribed under a regulation.

Section 59 of the EP Act stipulates that an EIS assessment report must include the following:

(a) Address the adequacy of the EIS in addressing the final terms of reference.

(b) Address the adequacy of any environmental management plan for the Project.

(c) Make recommendations about the suitability of the Project.

(d) Recommend any conditions on which any approval required for the Project may be given.

(e) contain another matter prescribed under a regulation.

3.4.2 The final TOR

The final TOR, which were submitted to the proponent on 27 September 2010, were considered during the EIS assessment process. While the TOR were written to include all the potential major issues associated with the Project, they were not exhaustive. Nor were they interpreted as excluding other matters from consideration in the EIS process. Where matters outside of those listed in the final TOR were addressed in the EIS documentation, those matters were also considered in this EIS assessment report.

3.4.3 The submitted EIS

The EIS, received by DERM on 1 February 2011, and the Supplementary EIS (SEIS), received by DERM on 15 July 2011, were both considered in preparing this report.

3.4.4 Properly made submissions

DERM received eight submissions within the submission period and three after the submission period ended, which were accepted under section 55 of the EP Act. Submissions were received from the following stakeholders:

- DSEWPaC
- Department of Communities
- Department of Community Safety
- DEEDI
- Department of Infrastructure and Planning (now part of DEEDI)
- Department of Local Government and Planning
- DTMR
- Queensland Health
- Queensland Police Service

- Isaac Regional Council
- Fitzroy Basin Association.

DERM also provided its own submission on the EIS to the Proponent.

3.4.5 The standard criteria

Section 58 of the EP Act requires that, among other matters, the standard criteria listed in Schedule 3 of the EP Act must be considered when preparing an EIS assessment report. DERM has considered the standard criteria in preparing this report.

The standard criteria are:

(a) the principles of ecologically sustainable development as set out in the National Strategy for Ecologically Sustainable Development

(b) any applicable environmental protection policy

- Environmental Protection (Air) Policy 2008
- Environmental Protection (Noise) Policy 2008
- Environmental Protection (Water) Policy 2009
- Environmental Protection (Waste) Policy 2000.

(c) any applicable Commonwealth, State or local government plans, standards, agreements or requirements

(d) any applicable environmental impact study, assessment or report

(e) the character, resilience and values of the receiving environment

(f) all submissions made by the applicant and submitters

(g) the best practice environmental management for activities under any relevant instrument, or proposed instrument, as follows—

(i) an environmental authority

(ii) a transitional environmental program

(iii) an environmental protection order

(iv) a disposal permit

(v) a development approval.

(h) the financial implications of the requirements under an instrument, or proposed instrument, mentioned in paragraph (g) as they would relate to the type of activity or industry carried out, or proposed to be carried out, under the instrument

(i) the public interest

(j) any applicable site management plan

(k) any relevant integrated environmental management system or proposed integrated environmental management system

(l) any other matter prescribed under a regulation

3.4.6 Prescribed matters

Prescribed matters relevant to the EIS process can be found in the Environmental Protection Regulation 2000 (EP Reg) as follows:

- Chapter 1, Preliminary, Part 2 - section 9 Prescribed matters for EIS assessment report—Act, s 59(e)
- Schedule 1 Matters to be addressed by assessment under EIS
- Chapter 4, Part 2 Regulatory requirements for all environmental management decisions.

These matters were all considered in preparing this report.

3.5 Environment Protection and Biodiversity Conservation Act 1999

The Middlemount Coal Project, Stage 2 is a controlled action (EPBC 2010/5394) under the Commonwealth EPBC Act. The controlling provisions are Listed threatened species and communities (sections 18 and 18A), which are considered Matters of National Environmental Significance (MNES) under the EPBC Act. This EIS process is accredited for the assessment under Part 8 of the EPBC Act, in accordance with the Agreement between the Commonwealth of Australia and the State of Queensland (the Bilateral Agreement) relating to Environmental Impact Assessment.

The Commonwealth was included as an advisory body for the assessment of the Project and provided its comments on the draft TOR and EIS documents. A copy of this report will be given to the Commonwealth Minister for DSEWPaC to assist in making a decision on the Project under the EPBC Act.

4 Adequacy of the EIS in addressing the TOR

4.1 Introduction

The EIS provided an adequate introduction to the Project, its objectives and its scope. The EIS identified a range of regulatory approvals and outlined the relevant assessment and approvals processes.

4.2 Regulatory approvals

The EIS provided a summary of applicable Commonwealth, State and Local Government legislation and associated approvals. Refer to Table 4.1 in this report for further information.

4.2.1 Amendment of existing environmental authority under the EP Act

The Project will require an amendment of the existing EA MIN100646307 under Chapter 5 of the EP Act on MLA70417 and ML 70379. The amended EA will cover the following ERAs associated with the Project:

- ERA 8 (3)(b) - Chemical storage
- ERA 15 - Fuel burning
- ERA 17 - Abrasive blasting
- ERA 18 - Boiler making
- ERA 31 - Mineral processing
- ERA 33 - Crushing, milling, grinding or screening
- ERA 38 - Surface coating
- ERA 57 - Regulated waste transport
- ERA 63 (1) - Waste disposal.

However, the requirements of the TOR have not been met for the following ERAs as no thresholds (as set out in the EP Reg) were provided by the proponent:

- ERA 18 - Boilermaking or engineering
- ERA 31 - Mineral processing
- ERA 38 - Surface coating
- ERA 57 - Regulated waste transport.

Outstanding action

The Proponent must provide further, sufficient information on all relevant ERA thresholds in the Environmental Management Plan (EM Plan) for the project.

Table 4.1 Approvals required for the Project

Approval	Legislation (Administering Authority)
Commonwealth legislation	
Approval to undertake action that may impact on a matter of national environmental significance. Refer to section 3.5 *Environment Protection and Biodiversity Conservation Act 1999* for details.	*Environment Protection and Biodiversity Conservation Act 1999* (Department of Sustainability, Environment, Water, Population and Communities)
State legislation	
Preparation of appropriate Indigenous cultural heritage management plan(s) Duty of Care statement.	*Aboriginal Cultural Heritage Act 2003* (Department of Environment and Resource Management)
Insufficient information provided in the EIS to determine if approvals may be required.	*Queensland Heritage Act 1992* (Department of Environment and Resource Management)
Permit for tree removal within road reserves	*Forestry Act 1959* (Department of Environment and Resource Management)
Approval for Mining Leases	*Mineral Resources Act 1989* (Department of Employment, Economic Development and Innovation)
Water Licence to take or interfere with water, including from a watercourse or overland flow or groundwater	*Water Act 2000* (Department of Environment and Resource Management)
Riverine Protection Permit	*Water Act 2000* (Department of Environment and Resource Management)
Development Permit for a Referable Dam	*Water Act 2000* (Department of Environment and Resource Management)
Various permits for interfering with cultural or natural resources, flora or wildlife protected under the Act: • Protected Animals Movement Permit • Protected Plants Clearing Permit • Wildlife Movement Permit.	*Nature Conservation Act 1992* (Department of Environment and Resource Management)
Ancillary Works and Encroachment Approval for State Controlled Roads (Road Corridor Permit)	*Transport Infrastructure Act 1994 (*Department of Transport and Main Roads)
• Approval to Permanently or Temporarily Close Road (Stock route) • Permit to occupy (occupation of unallocated State land, a reserve or a road) - structural improvements • Approval for an easement.	*Land Act 1994* (Department of Environment and Resource Management)
Where occurring off a mining lease only: • Development Permit for a Major Hazard Facility • Approval for the storage and handling of	*Dangerous Goods Safety Management Act 2001* (Department of Community Safety) *Sustainable Planning Act 2009* (Isaac Regional Council)

Approval	Legislation (Administering Authority)
flammable and combustible liquids.	
Licence to Use Explosives	*Explosives Act 1999* (Department of Employment, Economic Development and Innovation)
Local Laws	
Compensation agreement to address potential damage to local government roads	Local Law No. 21 Roads 2002 (Isaac Regional Council)
For off-mining lease infrastructure Development Permits may be required for: • Material Change of Use • Operational Works • Building Works • Plumbing and Drainage Works • Reconfiguring a lot.	*Sustainable Planning Act 2009* (Isaac Regional Council) Broadsound Shire Planning Scheme 2005 *Building Act 1975* (Department of Employment, Economic Development and Innovation)
For on-mining lease infrastructure Development Permits may be required for Plumbing and Drainage Works	*Sustainable Planning Act 2009* (Isaac Regional Council) *Building Act 1975* (Department of Employment, Economic Development and Innovation)

The EIS stated that approval may be required under SPA for operational works under the local planning scheme and for vegetation clearance, depending upon the final pipeline alignment of the Saraji pipeline, whilst a range of other approvals were indicatively listed.

The EIS did not conclusively state if approvals were needed for the following:

- diversion of Saraji water pipeline (SPA)
- creek diversions (*Water Act 2000*)
- archaeological significance (*Queensland Heritage Act 1992*)
- non-Indigenous cultural heritage (*Queensland Heritage Act 1992*)
- tree removal within road reserves (*Forestry Act 1959*)
- dams and levees (*Water Supply (Safety and Reliability) Act 2008*)
- improvements or easements (*Land Act 1994*)
- storage of flammable and combustible liquids (*Dangerous Goods Safety Management Act 2001 and SPA*)
- Material Change of Use, Operational Works, Building Works, Plumbing and Drainage Works, Reconfiguring a lot (SPA, Broadsound Shire Planning Scheme 2005 and *Building Act 1975*)
- Plumbing and Drainage works (SPA and *Building Act 1975*).

4.3 Project need and alternatives

The EIS stated that coal was Queensland's most important export commodity, resulting in benefits to the State through financial returns and increased employment opportunities. Coal mining would also contribute to regional economic development in Central Queensland.

The Proponent intends to take advantage of the export market opportunities for semi-hard coking coal and PCI coal and proposes to recover 122 Mt of coal resource within ML70379. This requires a production increase from the approved 40 Mt resource at 1.8 Mt/y to a 122 Mt resource at up to 5.4 Mt/y.

The EIS has met the TOR requirements for Project need and alternatives.

4.4 Climate

The EIS described the climate for the Project based on information pertaining to Central Queensland, which is characterised by a sub-tropical climate with hot and wet summers and cool and dry winters. Mean temperatures indicated that December and January were typically the hottest months whereas July was the coldest.

The risk of flooding is highest during the summer months. The EIS further stated that the occurrence of cyclones was low and therefore posed an unlikely risk for the Project. Storms may affect the Project throughout its life and required proper design and management of the pit, water management system dams, waste containment systems such as site bunding/levees and the TSF, and creek diversions. Refer to section 4.8 Water resources for further information.

The EIS stated that bushfires had been identified as another potential natural hazard for the Project site with significant bushfires recently occurring immediately west of the mine.

Potential impacts associated with soil erosion and climate change were also identified in the EIS. Refer to section 4.8 Water resources for further information on soil erosion and 4.9 Air for greenhouse gases.

The EIS committed to updating the Emergency Preparedness and Response Plan currently developed for the existing Stage 1 mine to address all foreseeable site specific climate-related risks, such as major floods, bushfire and drought.

Outstanding action

Provide an updated Emergency Preparedness and Response Plan with additional mitigation measures prior to finalising the EM plan.

4.5 Land

4.5.1 Land use

The EIS stated that the Project site was situated in a rural area of the IRC. The land was typically used for grazing, agriculture and mining, with rural homesteads located on properties surrounding the Project site. Several other mining and petroleum tenements are located within and surrounding the Project site, including the German Creek Coal Mine which adjoins the Project site to the west and south.

The proposed Project is generally located in an area containing coal, mineral and coal seam gas resources.

The Norwich Park Refuge is located approximately 13 km north-west of the Project site. Bundoora State Forest is situated approximately 14 km west of the Project site.

The EIS identified potential impacts on current land use including:

- rural residences and the township of Middlemount from noise, vibration and dust (refer to section 4.9 Air and 4.10 Noise and vibration)
- vegetation clearing (refer to section 4.11.1 Terrestrial Ecology)
- MNES (Refer to section 4.11.3 Matters of National Environmental Significance)
- stock route network (refer to section 4.6 Transport)
- diversion of the Saraji water pipeline (refer to section 4.8 Water resources)
- deterioration of land suitability post-mining (refer to section 4.5.2 Soils and land suitability and section 4.17 Rehabilitation).

The EIS has met the TOR requirements for land use, however does not include sufficient descriptions of the proposed post-mining land use and rehabilitation commitments. Refer to section 4.17 Rehabilitation for further outstanding actions.

4.5.2 Soils and land suitability

The EIS stated that a soil survey had been conducted for the Project site, identifying six different soil types:

- yellow duplex
- grey-brown duplex
- brown uniform clay
- alluvial clay
- red lithosols
- Warwick.

The EIS stated that from all soils encountered on the Project site, the brown uniform clay soil was considered to be good agricultural land. The EIS stated that all topsoil encountered in the Project was suitable for rehabilitation except for the red lithosols.

Subsoil suitability for rehabilitation could be limited through dispersivity, a tendency for gully erosion and alkalinity/sodicity. It was further stated that if dispersive subsoils would be left exposed and not rehabilitated within an adequate timeframe they could be impacted by wind erosion. The risk of soil salinity was considered low.

The requirements of the TOR for soils have not been met as the EIS did not include an adequate assessment of the topsoil stripping depths, adequate soil mapping or land suitability assessment.

The EIS stated that the predominant land uses on the Project site, i.e. cattle grazing and broad acre cropping would be disturbed and the land suitability reduced as follows:

- Land currently suitable for dry land cropping would be reduced to land with limitations Classes 4 and approximately 2,059 ha (74%) of land with severe limitations.
- Dry land cropping land currently classified as Class 3 would no longer be suitable for cropping post-mining but would be reduced to pasture land.
- 9% of land on the Project site is considered limited or unsuitable for beef cattle grazing. This figure would increase post-mining to 79% of land with severe limitations.
- The TSF, the overburden dump and the final void would be generally rendered unsuitable for agricultural activities.

The EIS identified the permanent residual impacts on land use as follows:

- deterioration of land suitability classes (refer section 4.17 Rehabilitation for additional information)
- permanent anthropogenic landforms such as overburden dumps, creek diversion and a final void (refer to section 4.17 Rehabilitation for additional information)
- redistribution of existing landforms such as the partial diversion of sections of Roper Creek and Thirteen Mile Gully (refer to section 4.8 Water resources and section 4.17 Rehabilitation).

The EIS stated that the Project site was not considered strategic cropping land.

Outstanding actions

The following outstanding matters have to be addressed prior to finalising the EM plan:

- Provide soil mapping at the same level of detail or better than that in Land Resource Assessment of the Windeyers Hill area, Isaac-Connors and Mackenzie River catchments, Central Queensland (Burgess, 2003).
- Provide a re-assessment of topsoil stripping depths and land suitability.

4.5.3 Resource utilisation

The TOR requirements for resource utilisation have been adequately addressed.

The Proponent advised DERM that the coal resource would be mined via truck and shovel option. The EIS stated that the Project had been planned to minimise sterilisation of the coal resource. This sterilisation was considered unavoidable in the EIS so as to be able to form the creek diversion over natural ground rather than through in-pit spoil. The anticipated amount of coal being sterilised was not provided in the EIS.

4.5.4 Land disturbance

Total overburden and interburden would be 54 million bank cubic metres (Mbcm) per year for the life of the mine. The EIS did not provide an amount in tonnes.

The following land disturbance areas have been predicted in the EIS:

- waste rock dumps
- mine pit
- final void of an anticipated size of 143 ha and 60 to 80 m deep
- approximately 20.4km^2 loss of catchments associated with Roper Creek and Thirteen Mile Gully at the end of the mine life
- clearing of approximately 1100 ha of remnant and non-remnant vegetation, including 1028 ha of Eucalypt woodland/forest and 41 ha of riparian habitat
- mine infrastructure including dams.

Dewatered tailings and coarse coal rejects will be co-disposed and encapsulated in the in-pit dump.

The total footprint of anticipated land disturbance under the Project as well as individual footprints for the waste rock dumps, mine pit, mine infrastructure including dams have not been provided in the EIS as required under the TOR.

4.5.5 Land contamination

The EIS identified the following activities located on the Project site that may have caused contamination:

- potential use of pesticides in areas of cultivation
- potential hydrocarbon release associated with the maintenance and operation of the Bingegang Intermediate Pump Station.

The EIS confirmed that a search of the Environmental Management Register (EMR)/Contaminated Land Register (CLR) revealed that three lots on the Project site were recorded on the EMR for the notifiable activities of:

- 24 Mine wastes (two lots)
- 22 Livestock dip/spray race operations (one lot).

as defined in Schedule 3 of the EP Act.

The EIS stated that neither the cattle dip nor any historical mine wastes were observed on the Project site.

The EIS listed the following notifiable activities relevant to land contamination that may arise from the proposed Project:

- 7 Chemical storage
- 24 Mine wastes
- 25 Mineral processing
- 29 Petroleum product or oil storage.

The EIS did not meet the TOR requirements for contaminated land because it did not contain a preliminary site investigation including a soil sampling program as required by the TOR. The EIS committed to undertaking proper

assessments of any potentially contaminated land in accordance with the DERM Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland prior to any disturbance and to notify any new notifiable activities for inclusion on the EMR/CLR.

The EIS did not include a proper assessment of the potential contaminants associated with waste rock and tailings disposal. The EIS has met the TOR requirements for contaminated land except for contamination through waste rock and tailings. Refer to section 4.7 Waste and section 4.8 Water resources.

4.6 Transport

The EIS identified a number of main modes of transport, transport infrastructure and transport associated issues as follows:

- railway/port facilities
- stock routes
- work force travel
- roads.

4.6.1 Railway/port facilities

The EIS stated that the Project would utilise existing railway facilities to transport product coal to either DBCT, Abbot Point or Wiggins Island for export. At this point, coal from existing operations and the future expansion is being exported via the DBCT only. The EIS stated an impact assessment had been conducted only on rail/road intersections. The EIS did not include an impact assessment on the rail network required by the TOR. No external submissions were made on this matter.

4.6.2 Stock routes

The EIS stated that two stock route sections, i.e. the Fitzroy Developmental Road and an unformed section of Barwon Park Middlemount Road would have to be closed. The EIS stated that the Fitzroy Developmental Road had already been closed to accommodate existing mine operations; however that the Proponent had to enter into a compensation agreement with the IRC for the closure of the section of the Barwon Park Middlemount Road stock route.

A road closure permit needs to be obtained pursuant to the *Land Act 1994* which would include conditions to mitigate any potential impact on the Stock Route Network as identified under the *Land Protection (Pest and Stock Route Management) Act 2002*. Refer to section 4.2 Approvals for additional information. The EIS committed to re-establishing the unformed stock route when mining ceases. Generally DERM is satisfied that the TOR requirements for stock routes have been met.

Outstanding actions

Deliver on commitments in the EIS:

- Re-establishing the stock route on an equivalent basis when mining ceases.
- Complete a compensation agreement with the IRC for the Barwon Park Middlemount Road stock route.
- Provide a practical alternative route if and when required during mining for as long as the stock route is closed.

4.6.3 Work force travel

The EIS stated that mine personnel is expected to reside either in the existing MAC Village in Middlemount, in Middlemount itself and surrounding areas or in areas that require long-distance travel. A 'Bus In-Bus Out' system may be implemented for workers from Mackay and/or Rockhampton and some workers may choose the 'Fly in-fly Out' system. Significant movements of staff for both the construction and operation phases of the Project are expected to occur along Dysart-Middlemount Road between Middlemount and the mine access.

The EIS stated that roads in and around Middlemount are single carriageway roads of a good standard. Speed and driver-fatigue incidents particularly for the Mackay to Middlemount roads have been identified. There is no public transport, pedestrian or cycle option from the town to the mine. Workers who are not locally based have the option to privately drive or bus to Middlemount township, as the closest commercial airports are either in Emerald or Mackay. The EIS assumes that the option to transport workers by bus will reduce the number of cars on local roads and therefore reduce the potential for fatigue related accidents, however no clarification has been provided in the EIS. Generally the requirements of the TOR have been met for work force travel.

Outstanding actions

- DTMR considers it essential that a 'statement of commitments' regarding the management of workforce movements to and from the site be developed to minimise private vehicle use accessing the mine site and its facilities to ensure the ongoing safety and efficiency of the state-controlled road corridor.
- The Queensland Police Service requested that fatigue related procedures as identified in the EIS be included in the site induction for mine staff and contract staff.

4.6.4 Roads

The EIS stated that the three most utilised roads to and from the Middlemount mine are the Dysart-Middlemount Road, the Fitzroy Developmental Road and the Peak Downs Highway. The Fitzroy Developmental Road provides access to the town of Middlemount, as well as the surrounding mines (via Dysart-Middlemount Road).

The EIS stated that the Dysart-Middlemount Road had been improved by DTMR in late 2009 and that road and intersection upgrades were scheduled for the Dysart-Middlemount Road and the Peak Downs Highway.

The EIS identified that during both construction and operational phases, the increased traffic associated with the Project would not exceed 4% on both Dysart-Middlemount Road and Fitzroy Developmental Road and that there would be an increase in excess of 5% in heavy vehicle pavement loadings along sections of the Dysart-Middlemount Road. The EIS stated that no additional mitigation measures for road capacity are required.

Outstanding actions

Generally the requirements of the TOR have been met for roads, however DTMR stated further consultation was required regarding a number of issues, including:

- pavement loading impacts
- safety issues
- requirements for the mine access intersection
- intersection lighting
- funding
- Road Impact Assessment and Road-Use Management Plan
- 'statement of commitments' regarding the management of workforce movements.

4.7 Waste

The EIS identified the following waste sources associated with the Project that will potentially impact on the environment:

- waste rock
- coarse rejects and tailings
- liquid and solid waste.

4.7.1 Waste rock, coarse rejects and tailings

The EIS stated that approximately 54 million bank cubic meters of overburden/interburden, described as waste rock, would be generated per year. The waste rock would consist mainly of weathered fresh sandstone, siltstone, mudstone and claystone of Tertiary & Permian age and unconsolidated Tertiary and Permian sediments.

The EIS identified coarse rejects and dried fine rejects (tailings) as potential waste materials that would be generated when washing the coal in the CHPP. The yearly amount of tailings was estimated to be 0.4 million tonnes and 1 million tonnes of coarse rejects. Tailings would be discharged into the TSF prior to placement in the in-pit overburden dump along with coarse rejects.

Waste rock, coarse rejects and tailings associated with coal mining can be saline, generate acid and contain heavy metals. The assumption of the EIS that waste rock would not pose a significant risk in terms of acid generation and heavy metals has not been supported by sufficient evidence, e.g. geochemical characterisation.

The requirements of the TOR for waste rock, coarse rejects and tailings have not been met, as the TOR requires a geochemical analysis of the waste rock/overburden/interburden, coarse rejects and tailings to determine their potential to cause environmental harm through improperly managed surface runoff or leaching to waters including groundwater.

The TSF needs to be properly designed to maintain its structural integrity and have adequate seepage control in place. Refer to section 4.8 Water resources regarding the adequacy of the structural design of the TSF.

The EIS committed to:

- developing a Mining Waste Management Plan including waste rock characterisation prior to in-pit disposal
- developing a Coarse and Fine Reject Waste Management Plan prior to the commencement of haulage of reject material to the waste dumps.

Outstanding action

Provide a Mining Waste Management Plan and a Coarse and Fine Reject Waste Management Plan prior to finalising the EM plan. This must include detailed geochemical characterisation of all materials proposed to be disturbed and or excavated to determine their chemical properties, including heavy metal content and potential to generate acid.

4.7.2 Liquid and solid waste

Liquid and solid waste generated from the Project could result in contamination of land and water if improperly stored or treated. The EIS identified solid waste streams including construction and demolition waste, general and putrescible waste, green waste, timber and wood, scrap metal, batteries and tyres.

The EIS stated that regulated waste would be transported, treated and/or disposed of in accordance with legislative requirements.

Liquid waste (except for tailings and mine-affected water) would comprise of oil/grease, treated effluent from the STP and waste water from the potable WTP. Liquid waste from the STP and the WTP would be discharged into the TSF.

The EM plan included a commitment to develop a Waste Management Plan which would contain commitments with auditable targets to reduce, reuse and recycle waste. That plan has not been included in the EIS.

The EIS has generally met TOR requirements for solid and liquid waste (other than tailings, coarse rejects, waste rock and mine-affected water). For information on mine-affected water refer to section 4.8 Water resources.

Outstanding action

Provide a Waste Management Plan prior to finalising the EM plan.

4.8 Water resources

The EIS identified the following matters/activities associated with the Project that could cause environmental harm:

- water sources
- stormwater
- levees and creek diversion
- dams
- surface water discharge
- groundwater
- diversion of the Saraji water pipeline
- water and erosion management.

4.8.1 Water sources

The EIS stated that potable and raw water was used for existing mine operations. Under the Project, the demand for potable and raw water would increase. At present, potable water is trucked onto the site. To ensure ongoing long-term water supply, the EIS stated that a package potable (30kL/day) WTP would be installed on site to avoid the use of potable town water designated for the township of Middlemount. The potable WTP would be Reverse Osmosis/Ultra-filtration expected to produce potable water to Australian Drinking Water Guidelines.

The existing mine has approval to use 1800 ML/year of raw water for mine operations from the Mackenzie River Bingegang Weir. The demand for additional raw water would increase by approximately 1262 ML/year under Project.

The following options were presented in the EIS to source additional raw water:

- to seek approval for additional water uptake from the Mackenzie River
- to obtain water from the German Creek East Pit, which would be subject to a contractual arrangement between MCPL and Anglo Coal (Cap Coal Management) Pty Ltd
- to obtain water from a future multi-user pipeline from the Bingegang Weir, which would be owned and operated by SunWater.

The EIS did not comment on any potential impacts through the proposed raw water supply.

Generally the TOR requirements for water sources have been met.

4.8.2 Stormwater

The EIS stated that the Project would generate clean and contaminated surface water runoff, which would be segregated and managed through existing and proposed water infrastructure. The EIS further stated that contaminated stormwater had the potential to impact on land and water if not properly managed.

The EM plan committed to implementing stormwater control measures, however neither the commitment for stormwater control nor any mitigation measures have been included in the EM plan. Requirements of the TOR have not been met for stormwater.

Outstanding actions

Include stormwater management procedures and mitigation measures in the EM plan prior to its finalisation.

4.8.3 Levees and creek diversion

The Project proposes an extension to the existing pit flood levee and TSF levee to prevent the pit and the TSF from being flooded by Roper Creek and Thirteen Mile Gully. The existing and proposed open cut pits are located within the three to four km wide floodplain between Roper Creek and Thirteen Mile Gully. Diversions of Thirteen Mile Gully and two sections of Roper Creek are proposed. The total diversion length of Roper Creek would be approximately 3km. The total length of Thirteen Mile Gully was not confirmed in the EIS, however it stated that the total diversion length for both water bodies was 12 km. The EIS stated that the diverted sections would be as similar to the existing channels as possible in accordance with Australian Coal Association Research Program stream diversion design criteria.

Flooding scenarios were calculated using a hydrological model for the proposed levees and creek diversion. The EIS stated that flood levels would increase up to 2.5m above pre-mine conditions upstream of the western boundary of ML70379 for the 20 year ARI flood event and greater.

Potential impacts associated with levees and creek diversions identified in the EIS are:

- levee failure
- erosion to levees, the Roper Creek channel and associated floodplain
- flooding of mine infrastructure, adjacent land and the Middlemount Road
- Middlemount Road could become impassable during the peak of the 100 year ARI flood
- loss of catchment and catchment flows
- vegetation clearing and habitat loss (refer to section 4.11 Ecology for impacts on the terrestrial and aquatic environment and to section 4.17 Rehabilitation).

The EIS did not include a geotechnical assessment for the levees to demonstrate their feasibility and sustainability.

The EIS committed to implementing erosion controls and mitigation measures, which have not been included in the EM plan.

The EIS committed to developing and implementing flood mitigation measures, which have not been incorporated in the EM plan.

Insufficient information was provided in the EIS to determine at what ARI the proposed stream diversion would increase the depth of flow over Middlemount Road, which would impact on emergency response vehicles during a defined flood event.

The EIS stated that the loss of catchments associated with Roper Creek and Thirteen Mile Gully would be approximately 20.4km^2 at the end of the mine life. The loss of catchment would cause long-term impacts such as the removal of flora and fauna as well as reduce water flow in Roper Creek and Thirteen Mile Gully and potentially contaminate receiving waters through mining activities. The EIS committed to rehabilitating the catchment at the end of the mine life to allow catchment flow back to surface water. Refer to section 4.17 Rehabilitation.

Outstanding actions

The EIS partially met the requirements of the TOR, however the following outstanding actions are required before finalisation of the EM plan:

- Provide a geotechnical assessment to confirm the feasibility of location of the proposed levees and setbacks, particularly from the eventual high wall of the proposed pit and from watercourses.
- Include procedures for levee maintenance, a risk assessment of failure scenarios for flap valves and mitigation measures should the flap valves fail.
- Re-calculate channel roughness to assess any impacts on the design of the proposed diversions for Roper Creek.
- Develop suitable flood mitigation measures and incorporate them in the EM plan. Confirm that the proposed flood mitigation measures maintain the safety of people on the Project site. Include appropriate mitigation measures to respond during emergencies at times when Middlemount Road is inundated.

4.8.4 Dams

The Project requires a number of dams to manage tailings and water including:

- TSF (Cell 1 and Cell2) to store fine tailings from the CHPP
- mine water dam to store pit water
- 'North ROM' dam to collect runoff from the North ROM coal pad and hardstand area
- raw water dam to store recycled water and water from external water sources
- eight sediment dams that would receive runoff from waste rock dumps.

Potential environmental risks associated with the above dams include:

- uncontrolled discharges/catastrophic failures of dams
- groundwater and surface water contamination through seepage
- release limit exceedences for controlled/authorised releases of contaminated water to the receiving environment (refer to the section 4.8.5 Surface water discharge).

The EIS proposed to use TSF Cell 2 for the initial storage of pit water until the mine water dam had been constructed. The EIS assumed that TSF Cell 2, the mine water dam and the raw water dam were likely to be regulated dams within the 'significant hazard' category. The 'North ROM' dam was expected to be a 'low hazard' dam. The EIS indicated that the TSF cells would be located close to a watercourse. DERM considers that the TSF cells require erosion protection and adequate seepage control prior to construction. DERM notes that the EIS proposed to pump water from the TSF cells to the raw water dam which has a limited capacity and consequently should not receive water from the TSF cells.

The EIS stated that sediment dams would receive runoff from unrehabilitated overburden dumps. The EIS contained insufficient information on overburden characterisation and as such did not provide evidence that the sediment dams would receive water containing no contaminants other than sediment. The EIS stated that it was not planned to pump the sediment dams out into the water management systems on site. On that basis DERM considers the eight sediment dams to be sediment sumps which would receive mine-affected water from the overburden dumps. Water should be pumped out to on-site storage rather than discharge to surface water unless appropriate limits are established.

The proposed storage capacities for the sediment sumps are inadequate. Storage capacities for the sediment sumps should be based on a 72 hour ARI 100 rainfall event and have a mandatory reporting level.

The EIS did not contain sufficient information on:

- the adequacy and performance of the proposed water management system including dams and levees
- the suitability of Cell 2 to store pit water beyond its current authorisation under the existing EA
- certified design plans including hydraulic design storage allowance and hazard categories by a suitably qualified and experienced person for the TSF Cell 2, the mine water dam, the raw water dam, the 'North ROM' dam, sediment dams and the levees.

Outstanding actions:

- Provide sufficient information on the water management system on site, which should be designed, staged and documented in the EM plan for timely delivery of storages that can provide the design storage allowance (DSA). Include contingency arrangements for pumping between on-site storages to minimise releases to surface water.
- Provide certified design plans by a suitably qualified and experienced person for all regulated dams and levees prior to finalising the EM plan.

4.8.5 Surface water discharge

Surface water discharge to Roper Creek or Thirteen Mile Gully would be required from the following dams:

- TSF (Cell 1 and Cell2)
- mine water dam
- raw water dam
- eight sediment sumps.

Disposal of water to surface water is considered the least preferable option under the waste hierarchy, however is acceptable where no other feasible method of disposal is available and no unacceptable contamination of the receiving environment will occur. The discharge water is expected to contain contaminants and as such would be subject to conditions regulating the release of contaminants and the impact on the receiving environment.

Outstanding actions

TOR requirements have largely been met for surface water discharge; however the following matters are required:

- Provide sufficient information on trigger levels, in-stream monitoring for all controlled discharges, including sediment sumps, monitoring frequencies, minimum flow requirements and minimum release rates prior to finalising the EM plan.
- Include clarification of flow modelling including the 20th percentile flow for Thirteen Mile Gully.

4.8.6 Diversion of the Saraji water pipeline

The EIS stated that a partial realignment of 10.85 km of the Saraji water supply pipeline was required. The realignment would include the commissioning of a new pipeline section and the decommissioning of the existing pipeline section. The EIS identified the following potential impacts of the realignment:

- erosion associated with the disturbance of banks and beds of surface water bodies
- increased turbidity in Thirteen Mile Gully, Roper Creek and two unnamed tributaries
- habitat destruction of flora and fauna (refer to section 4.11 Ecology and section 4.17 Rehabilitation).

The EIS committed to not interrupt the water supply or associated power supply during the diversion.

Potential impacts and appropriate mitigation measures for the Saraji water pipeline realignment were not readily identifiable in the EIS and not included in the EM plan.

Outstanding actions

- The following requirements of the TOR have not been met and must be included in the EM plan.
- Include potential impacts and mitigation measures for the Saraji water pipeline diversion.
- Include commitments given in Chapter 5 Project Construction and Chapter 8 Land Use of the EIS.

4.8.7 Groundwater

The EIS assumed that sand layers within the weathered Tertiary deposits in the Project site were likely to be locally important aquifers with the capacity to transmit and contain significant quantities of groundwater. The EIS stated that the Middlemount and Pisces Coal Seams were expected to be the most important aquifers within the Permian strata.

The EIS identified the following potential impacts of the Project on groundwater aquifers in the Project site:

- decline of water quality and quantity in groundwater bores utilised by groundwater users
- groundwater impact on wetlands and stygofauna (Refer to Section 4.11 Ecology)
- changes of chemical and physical groundwater characteristics during and post mining.

Upon completion of mining, any groundwater extraction from the pit would cease. The EM plan contained insufficient information on mitigation measures for changes of chemical and physical groundwater characteristics during and post mining.

The EIS identified the potential to impact on five private groundwater bores near the Project site; however no groundwater contour maps had been provided to show the predicted impact. The EM plan committed to discussing and agreeing on mitigation measures to ameliorate potential groundwater impacts with potentially affected property owners prior to the commencement of mining activities.

Groundwater monitoring data included in the EIS appeared not to be representative and complete in parts. Insufficient information regarding a groundwater monitoring program was provided. The EIS indicated that a groundwater monitoring program was in place; however it consisted of some bores which had not been properly constructed. Flow directions were not determined as required. The requirements of the TOR have not been met for groundwater.

Outstanding actions

- The following requirements need to be addressed prior to finalising the EM plan:
- Supply a series of plans that show the drawdown contours caused by mine dewatering which includes the locations of bores and wetlands. The plans should show predicted drawdown at 1 year, 5 year, 10 year, end of mining, maximum predicted drawdown and a date for equilibrium.
- Include suitable mitigation measures to minimise any impacts on groundwater height, flow or quality, or impacts on groundwater-dependent flora and stygofauna.

4.8.8 Water and erosion management

The EIS did not provide adequate water and erosion management and mitigation information. It committed to protection of relevant environmental values by implementing a mine site water management plan according to DERM's guideline Preparation of Water Management Plans for Mining Activities (DERM, 2009). That water management plan was not provided in the EIS.

The EIS provided insufficient information on how erosion would be appropriately managed and mitigated. The EIS committed to developing a Water Management, Erosion and Sediment Control Plan which would include mitigation measures for erosion; however this plan was not included. The requirements of the TOR have not been met for water and erosion management.

Outstanding action

Provide a Water Management, Erosion and Sediment Control Plan and a water resource management plan prior to finalising the EM plan.

4.9 Air quality

The EIS stated that the existing land use in the Project area/region consisted of agriculture, industry, state forest or national park and was sparsely populated. The main industry in the region was coal mining with several other open-cut coal mines located in proximity of the existing Middlemount coal mine, including:

- German Creek Open Cut – approximately 15km south-west
- Foxleigh – approximately 10km south
- Lake Lindsay – approximately 15km south-west
- Norwich Park – approximately 20km north-west.

4.9.1 Air emissions

National Pollution Inventory database records indicate that the above mines, including the Middlemount mine, emit (NO_X), sulphur dioxide (SO_2), odorous compounds or volatile organic compounds (VOC) that would impact on the air quality objectives. Modelling indicated that worst case emissions of SO_2, NO_x, CO and VOCs from the Project would not exceed any air quality objectives at any sensitive receptors. Odour nuisance was not expected.

The EIS identified that particulate matter/dust was the main contributor to decreasing the environmental values of the airshed under this Project. The major sources of particulate matter in the region were from mining operations and agricultural activities.

The EIS listed the following activities associated with the Project that would generate dust:

- areas disturbed by mining
- overburden emplacement areas
- ROM coal handling and stockpiles
- haul roads
- topsoil and overburden removal, handling, transport and dumping
- drilling
- blasting.

The EIS identified earthworks during the construction phase as a major dust source. The EIS stated that the preferred option of truck and shovel would result in exceedences of the EPP (Air) objective of 50 µg/m3 for 24-hour average PM10 at fifteen sensitive receptors, including the township of Middlemount for three modelled years 7, 14, 22.

The EIS stated that the major sources of dust included the active pit, in-pit dump, out-pit dump and overburden haul.

The EIS identified a number of mitigation measures to reduce dust emissions; however no measurable indicators have been provided. It committed to implementing a reactive management plan to manage dust nuisance, however this plan was not provided in the EIS.

Outstanding actions

Information in the EIS generally meets TOR requirements for air; however the following matters need to be addressed in the EM plan:

- Commit to exposing non-active disturbed areas for no longer than six months prior to rehabilitation.
- Commit to implementing a real-time, on-line integrated high-volume air sampling and dust deposition monitoring system.
- Provide measurable performance indicators for dust mitigation.
- Provide a Dust/Air Quality Management Plan.

4.9.2 Greenhouse gases

The major activities that would produce greenhouse gases and ultimately contribute to global warming and climate change under the Project have been identified as:

- diesel fuel combustion (CO_2)
- vegetation clearing (CO_2)
- fugitive releases of coal seam gas (methane)
- electrical usage (CO_2).

The EIS stated that the major contribution of the Project's annual CO_2 emissions could be attributed to combustion of diesel fuel (51%). The EIS did not include a greenhouse gas emission inventory resulting from such activities as

transportation of products and consumables under the Project as required under the TOR. The EIS stated that insufficient baseline data on greenhouse gas emissions associated with off-site activities under the Project was available to provide reliable estimates.

The EIS did not include an assessment of how mitigation measures will reduce GHG emissions, a comparison of proposed technology to best practice or any information on greenhouse gas offsets as required under the TOR.

The EM plan included commitments/mitigation measures to reduce greenhouse gas emissions; however it did not include performance standards as to how these commitments would be achieved.

The requirements of the TOR for greenhouse gases have not been met.

Outstanding actions

The following matters must be addressed in the EM plan:

- Include objectives, measures and performance standards relating to greenhouse gas reduction commitments given in the EIS.
- Assess the performance of the proposed mitigation measures for greenhouse gas emissions.

4.10 Noise and vibration

4.10.1 Noise

The Project would result in the introduction of additional noise and vibration sources with the potential to cause environmental nuisance. The EIS stated that potential health and vibration emissions were limited to:

- mild stress symptoms caused by annoyance
- physiological and environmental psychological symptoms caused by sleep disturbance
- physiological symptoms caused by low frequency noise
- hearing damage.

These symptoms could be avoided by achieving compliance with noise criteria stated in the EPP (Noise) and DERM's Planning for noise control guideline.

Potential noise sources associated with the Project include:

- construction noise
- operations noise
- road traffic noise.

The EIS stated that modelling for the truck and shovel option for unmitigated noise levels predicted noise exceedences for year 7 and 14 at 24 and 37 sensitive receptors respectively without applying any mitigation measures.

When mitigated, significant exceedences were still predicted at four sensitive receptors for years 7, 22 and 23 and at six sensitive receptors for year 14 and minor exceedences for several other receivers in years 7 and 14. At all other locations in years 22 and 23, predicted noise levels achieve the criteria for the mitigated operations.

Noise exceedences will be expected at two sensitive receptors in the MAC Middlemount Village in years 7 and 14. exceedences are also expected at two sensitive receptors located to the north and south of the Project site.

The EIS committed to implementing noise mitigation measures to reduce noise impact.

Draft noise conditions are recommended as outlined in section 7 Conditions for regulatory approvals based on information provided in the EIS.

The EM plan includes a range of commitments and implementation of noise mitigation measures. Generally the requirements of the TOR have been met for noise, however the accuracy of the model has not been determined including likely upper noise limits.

Outstanding actions

Check the accuracy of the noise model prior to finalising the EM plan.

4.10.2 Vibration

The EIS stated that ground vibrations and airblast effects would be caused by the Project as well as by neighbouring open-cut coal mines. The EIS indicated that there was the potential of ground vibration and airblast overpressure to impact on sensitive receptors.

The EIS stated that there was a requirement for a blast exclusion zone which was to be re-assessed on a case-by-case basis. The EIS committed to adopting a 1000 m blast exclusion zone for mine personnel. The requirements for an exclusion zone were to be addressed in the mine Blast Management Plan, as well as further commitments to monitor and report on blasting activities. This plan has not been included in the EIS. An exclusion zone of this size can be implemented within the mining tenement boundaries with no effect on neighbouring public or private property.

The EIS identified five off-site sensitive receptors that may be impacted by noise/vibration from blasting activities. The EIS provided acceptable mitigation measures to address any potential impacts.

Outstanding action

Provide a Blast Management Plan prior to finalising the EM plan.

4.11 Ecology

4.11.1 Terrestrial ecology

The Project site is located in the Isaac-Comet Downs subregion of the Brigalow Belt North bioregion and the Fitzroy River Basin. Vegetation within the region is generally fragmented, with large expanses of cleared land separating vegetation patches. Large areas of land in the Project site are currently vegetated and relatively undisturbed, including a floodplain located between Thirteen Mile Gully and Roper Creek. This floodplain provides a link between vegetated areas in the north-east, south and south-west of the Project site. The central and western portions of the Project site have been largely cleared for grazing.

All vegetation within the Project site and Roper Creek has been mapped as part of a State significant wildlife corridor under DERM's Brigalow Belt Biodiversity Planning Assessment. This corridor provides a linkage between Bundoora State Forest and Junee National Park.

Threatened species under the *Nature Conservation Act 1992* and/or EPBC Act present in the Project site are the Little Pied Bat (*Chalinolobus picatus*), the Squatter Pigeon (southern race) (*Geophaps scripta scripta*) and the Ornamental Snake (*Denisonia maculata*).

DERM recognises that the Ornamental Snake only occurs in the Bowen Basin/Dawson River drainage system of central eastern Queensland. The species is sparsely distributed across its geographic range and is likely to be at risk of extinction.

Iconic animals such as the Koala, Brolga, Laughing Kookaburra, Emu, Eastern Grey Kangaroo, and Short-beaked Echidna occur in the Project site as determined under DERM's Back on Track species prioritisation framework.

Likely impacts on terrestrial ecology include:

- clearing of approximately 1100 ha of remnant and non-remnant vegetation, including 1028 ha of Eucalypt woodland/forest and 41 ha of riparian habitat
- cumulative total habitat loss of 1300 ha
- severance of a State significant wildlife corridor and result in habitat fragmentation, loss of habitat connectivity and flow-on effects such as barrier effects, genetic isolation and edge effects
- permanent reduction of the size of the existing floodplain and loss of its ecological function including loss of habitat for the Ornamental Snake

- The impacts on the habitats of the Little Pied Bat and Squatter Pigeon and riparian vegetation are considered long- term and semi- permanent. Revegetation and habitat restoration, if successful, are expected to take 100+ years for revegetation and restored habitat to achieve habitat values equivalent to the existing drainage lines or woodlands (e.g. development of tree hollows of sufficient size to act as habitat). A Rehabilitation Plan has not been completed including an assessment to determine if rehabilitation will adequately mitigate these impacts.

The EIS stated that mitigation measures such as avoidance and minimisation were not possible for areas to be cleared. The EIS committed to developing a Biodiversity Management Plan (or other equivalent management documents) to avoid or mitigate any impact to the terrestrial ecology during the construction and operation of the Project. This plan has not been provided in the EIS.

Measures to minimise/mitigate harm to flora and fauna from weeds, feral and pest animals should be set out in a Biosecurity Management Plan which has not been included in the EM plan.

The EIS generally meets terrestrial ecological requirements according to the TOR.

Outstanding actions

DERM and DSEWPaC consider the impact on the terrestrial ecological value including the Ornamental Snake to be significant and require offsets pursuant to the:

- *Environmental Protection and Other Acts Amendment Act 2011*
- Queensland Government Environmental Offsets Policy
- EPBC Act
- Queensland Biodiversity Offsets Policy 2011 to be implemented on 3 October 2011

Biodiversity offsets for terrestrial ecological impacts have to be legally secured pursuant to applicable State and Commonwealth legislation prior to any clearing under this Project. This will be required through an EA condition.

Address the following outstanding matters prior to finalising the EM plan:

- Provide a Rehabilitation Plan (refer to section 4.17 Rehabilitation for further details).
- Provide a Biosecurity Management Plan.
- Provide a Biodiversity Management Plan.
- Include all commitments given in Chapter 29 Commitments of the EIS regarding terrestrial ecology in the EM plan.

4.11.2 Aquatic ecology

The major waterways of the Project site are Roper Creek and Thirteen Mine Gully, which are a part of the Mackenzie River catchment. The Project site includes two High Environmental Significance (HSE) wetlands under DERM's Draft State Planning Policy: Wetlands of High Ecological Significance in Great Barrier Reef (GBR) Catchments, 10 December 2010.

The EIS considered that the biological values of aquatic ecosystems within the study areas are consistent with those of the wider catchment. Creeks in the study area and catchment were generally in moderate condition. Physical water quality in the study area was poor to moderate during the surveys, and was characterised by high turbidity and low dissolved oxygen levels. Biodiversity was relatively low, with only fish and macroinvertebrate species that are tolerant of varying and often harsh conditions of the study area. The creeks within the study area provided ‘upstream’ dispersal and possibly breeding habitat for the fish species that were recorded in the study area. Macroinvertebrate and fish communities found within the study area were likely to contribute to the success of upstream and downstream populations through movement/migration. No vulnerable or endangered species of aquatic flora or fauna have been recorded from, or were likely to occur in, the waterways of the study area.

No surveys of stygofauna were conducted and the EIS assumed the likely presence and high biodiversity of stygofauna in alluvial and tertiary deposits and aquifers immediately surrounding the Project site.

The following potential impacts on aquatic ecology can be expected:

- reduced water quality through contaminated runoff and unplanned discharge of mine-affected water
- vegetation clearing and earthworks including the clearing of two HSE wetlands
- loss of catchment area
- loss of on-site dams
- creek diversions and changes to flow regimes
- construction of creek crossings, including roads and the partial diversion of the Saraji water supply pipeline
- loss of stygofauna from alluvial and tertiary deposits on the Project site and immediate surrounds.

The above impacts may result in the direct destruction of aquatic habitat; affect the water quality and impact on aquatic fauna and flora diversity and abundance. Mitigation measures for protecting the aquatic environment have been listed in the EIS; however this has not been carried over into the EM plan.

The EIS did not fulfil the requirements of the TOR for:

- cumulative impacts on the aquatic environment
- determining the presence and nature of stygofauna.

DERM requires (meeting on 1 July 20110) an extension of the aquatic survey radius beyond 4.5 km downstream in order to include an assessment of any areas of high ecological value and other sensitive uses and sensitive receptors that could be affected by the Project. That survey has not been provided.

The EIS did not asses the Project's potential cumulative impact on aquatic ecosystems such as the Great Barrier Reef World Heritage Area or the Shoalwater and Corio Bays Ramsar site. In the absence of a conclusive cumulative impact assessment, contaminant discharge from the site has to be minimised and will be regulated through appropriate conditions. Refer to section 4.8 Water resources for more information on discharges to surface water.

Outstanding actions:

- Biodiversity offsets for aquatic environmental impacts have to be legally secured pursuant to applicable State and Commonwealth legislation prior to any clearing under this Project. This will be required through an EA condition.

Address the following matters prior to finalising the EM plan:

- Provide a Biodiversity and a Biosecurity Management Plan to address potential impacts and mitigation measures for the aquatic ecology.
- Determine aquatic ecological values and any sensitive uses have to be identified beyond the 4.5km. Potential impacts must be assessed and suitable mitigation measures developed.
- Provide clear and readily identifiable mitigation measures for the protection of aquatic ecosystems.
- Commit to only destroy 34% of Wetland ID 37 767 and to protect the remaining wetland and Wetland ID 37 454.
- Provide appropriate mitigation measures for impacts on wetlands for changed groundwater levels.
- Include a commitment to ensure effective fish passage through the watercourses within the study area and the protection of fish habitats recommended by DEEDI in their EIS comment dated 28 March 2011.
- Include a commit to monitoring stygofauna and develop appropriate mitigation measures.
- Include all commitments given in Chapter 29 Commitments of the EIS regarding aquatic ecology.

4.11.3 Matters of National Environmental Significance

The EIS stated that the following habitat losses for MNES under the EPBC Act were expected under the Project and should be directly replaced outside the clearing footprint:

- approximately 6 ha of Brigalow (*Acacia harpophylla* dominant and co-dominant) Endangered ecological community
- approximately 0.4 ha of Natural Grasslands of the Queensland Central Highlands and the Northern Fitzroy Basin Endangered ecological community listed under the EPBC Act
- loss of approximately 47 ha of habitat for the Ornamental Snake
- loss of 1100 ha of habitat for the Squatter Pigeon and other Threatened Species
- cumulative total habitat loss of 1300 ha.

The EIS committed to developing a biodiversity offsets package to address ecological impacts. For further information refer to section 4.12 Ecology. The EIS generally meets requirements of the TOR for MNES.

On 30 September 2011 DERM records indicated that Middlemount Coal Pty Ltd had been issued with a statutory notice relating to water offences in 2008 under the *Water Act 2000* pertaining to the unauthorised removal of a road crossing on Roper Creek located on Mineral Development Licence 282, which underlies MLA 700417. The unauthorised work had resulted in severe erosion damage to the bed and banks of Roper Creek immediately upstream and downstream of the road crossing. The Proponent was ordered to rehabilitate the erosion damage on the bed and banks of Roper Creek.

DERM records did not indicate any legal proceedings pertaining to State environmental law against Ribfield Pty Ltd and Macarthur Coal Limited.

On 26 July 2011, DSEWPaC confirmed that no offences had been recorded under the EPBC Act.

4.12 Cultural heritage

The EIS has addressed both the Indigenous cultural heritage and non-Indigenous cultural heritage matters raised in the TOR.

4.12.1 Indigenous cultural heritage

The EIS identified two native title claims associated with this Project:

- Barada Barna People – who have an active registered native title claim (Queensland QC08/11 QUD380/08)
- Barada Barna, Kabalbara & Yetimarla People #4 (BBKY #4) – who have a finalised (dismissed) native title claim (Queensland QC01/25 QUD6023/01).

Potential impacts could affect Indigenous cultural heritage sites, objects and values. Without application of mitigation measures, impacts will include the full loss and destruction of all heritage values and materials. This would be mitigated by a Cultural Heritage Management Plan (CHMP) for both claims.

The EIS stated that a DERM approved CHMP for the Barada Barna People was already in place.

The EIS stated that a CHMP was agreed with the BBKY #4 and executed by all parties on 29 September 2010. DERM confirms that the CHMP was approved on 21 January 2011.

The EIS generally meets the TOR requirements for Indigenous cultural heritage.

4.12.2 Non-Indigenous cultural heritage

The EIS stated that a stockmen's camp with significant heritage value was located on the Project site. Insufficient information has been provided in the EIS as to how the determination of 'significant' has been derived under section 60 of the *Queensland Heritage Act 1992* (QH Act).

The EIS stated that all identified non-Indigenous cultural heritage sites on the Project site would be permanently altered, however it did not describe the nature of the alteration. The EIS committed to developing mitigation

measures detailed in a Heritage Management Plan, however the plan has not been provided. The EIS does not meet TOR requirements for non-Indigenous cultural heritage.

Outstanding action

- Explain the significance of the stockmen's camp to be significant under Section 60 of the QH Act.
- Provide a Heritage Management Plan prior to finalising the EM plan.

4.13 Social issues

The EIS indicated that the maximum number of contracted staff will be 160 during the construction of this Project. 120 employees are expected to work at the mine in year 1, reaching approximately 397 in year 3. The EIS stated that the operational workforce would comprise of approximately 397 to 500 personnel, comprising both contracted and permanent staff.

Operational and maintenance personnel will generally work 12 hours per day, 7 day on, 7 day off roster, with shift changes at 6 am and 6 pm. It is expected that the majority of these workers will leave Middlemount and return to their home cities and towns during their “off” time. Management, engineering / technical services and administration personnel will generally work a 5 day on, 2 day off roster, with working hours from 7 am to 5 pm. These personnel will work from Monday to Friday. Approximately 220 employees will be in Middlemount at any given time. Approximately 100 employees will be working on-site at any given time.

All personnel are offered bus transport from the MAC Middlemount Village to site as a proactive control against possible fatigue-related vehicle incidents. The Proponent committed to the provision of bus transport options for rostered staff from the MAC Middlemount Village to several major city centres at the start/end of each roster cycle.

The EIS assumed that the majority of these workers would reside in Middlemount in a workforce accommodation village during their shifts and would travel by bus to and from either Mackay or Rockhampton during their time off. The proponent committed to avoiding unacceptable pressure on housing and community resources within the region, however insufficient information has been provided in the EIS as to how sufficient housing could be provided to the work force.

The EIS stated that the Project offered very little opportunity to encourage workers to reside more permanently in the Middlemount community due both to the low number of private residences available for sale or rent and the nature of the working shifts proposed. The Proponent committed to liaising with the IRC and the Queensland Government to seek the release of additional land for development of further private housing in Middlemount.

The EIS generally meets the requirements of the TOR for social issues.

4.14 Economy

The EIS stated that the economic base of the region is supported by agricultural, forestry and fisheries activities based on the number of businesses and by coal mining based on the number of employees in the region. The EIS stated that for the region, unemployment was lower and weekly income higher than the state average.

The current land use at the Project site is agriculture (grazing and cropping) and coal mining on the existing site. While some of the land could be rehabilitated for a mix of future use, the expansion of mine would result in the permanent alienation of some land from the pre-mining land use. For example, unsuitable soils, steep slopes, vegetation cover, final voids and remaining infrastructure areas would remain at the end of the mine operations.

The EIS did not make any statement about the economic impact of the loss of the existing land use that would be replaced by the mine, although it was stated that there would be a permanent reduction of the quantity and quality of cropping and grazing land.

The EIS did not consider the estimated value of ecosystem services for the vegetation habitat to be cleared for the Project.

Economic expenditure of the full mine construction phase (estimated at A$331.65 Million) was estimated across region (11%), State (11%), national (0%) and international (78%) levels. Of that approximately 50% of the total spend was to occur in the second year of the Project (then 2011). Annual operational expenditure was estimated at

$176 million and shared across the same levels as 27%, 33%, 40% and 0 % respectively. With an estimated A$88 million valued added annually (39% region, 34% state and 26% national). Job creation was estimated as 424 direct and indirect jobs (40% region, 38% State and 22% National).

Whilst provided as estimates, the EIS stated that there was no certainty in the achievement of these opportunities, especially at the local level due to regional constraints including housing, local skilled labour and regional business capacity. Those constraints may result in benefits, if achieved, deferred to State or national levels. The added regional economic pressure is expected to change the underlying economic base and industrial structure as regional business shifts to service coal mining opportunity, however there is no mention of the impact that may have on the existing regional economy or business.

The EIS stated that additional royalty to the State of A$31.93 million per annum is expected, along with A$63.69 million per annum in Rail and A$13.5 million in port charges.

There are matters of negative economic impact that relate to the provision of regulatory function and infrastructure that are not accounted for despite being acknowledged in other sections of the EIS, including for example:

- road upgrades
- road safety
- health
- policing.

The EIS did not fulfil the requirements of the TOR in relation to:

- existing land use and the economic impact of the displacement of that use
- impacts to all levels of government of any additional regulatory function or infrastructure provision
- consideration of the impacts of the Project in relation to energy self-sufficiency, security of supply and balance of payments benefits
- value of lost opportunities of other economic activities anticipated in the future
- economic impacts on local property values
- Objectives and practical measures for avoiding or mitigating impacts or enhancing economic benefits to the local, regional or national economy and economic stakeholders. Including no description of quantitative standards and indicators to achieve economic management and how the achievement of the objectives will be monitored, audited, reported and managed.
- No consideration of the Local Industry Policy – A Fair Go for Local Industry (Qld Gov., 2008). Offers made in the EIS to look at local buy/hire strategy are not clearly established, measureable or enforceable so there is a low likelihood of them being effective in resolving the economic benefit to the region.

4.15 Health and safety

The Health and Safety (H&S) section of the EIS adequately addressed the matters raised in the TOR, noting specifically that the potential impacts on the workforce were not considered as they were stated to be covered by existing OH&S protocols.

The EIS stated, on the basis of the existing mine being suitably operated, that the expansion will not introduce new H&S risks and that the separation of the sources of noise, vibration, and air emissions from sensitive receptors resulted in a generally low risk of H&S issues off site. The existing Health Safety Environment and Community System will be applied to the expanded Project; however there was no mention of improvements required. The 1in 2000 ARI design of mine water system was stated to result in low probability of controlled discharge and lower probability of overflow resulting in health and safety issues off site.

The EIS stated that the relatively low volume of water storage on site compared to catchment flows results in a low health and safety impact scenario in the event of rain induced dam break, similarly a dry weather dam break is stated to be fully contained on the lease due to the scale of the catchment storage compared to the volume lost.

4.16 Hazard and risk

The EIS conducted a preliminary risk assessment of the potential hazard and risks to people and property associated with the Project. The EIS summarised the risk and hazard sources and outlined control (risk treatment) measures, though those actions were often linked to other EIS chapters. Though the EIS satisfactorily addressed the matters related to hazard and risk raised in the TOR, many of those risk mitigation commitments include no information on how they will specifically applied or achieved.

4.17 Rehabilitation

The Project would result in permanent and/or long-term alterations to the environment as a consequence of mining activities and associated infrastructure. The EIS identified the following aspects associated with the Project that would have to be rehabilitated to reduce the impact on final land suitability:

- in-pit and out-of-pit waste rock dumps
- levees
- water storage and management dams
- haul roads and access tracks
- creek diversion

or decommissioned and rehabilitated:

- TSF
- infrastructure areas.

Waste rock dumps would be progressively levelled, shaped, capped and rehabilitated as the mine progresses. Rehabilitation and revegetation of the waste rock dumps was anticipated to commence within two years following a pit strip being mined. Limited information on the waste rock dump design was provided.

The levees would form the toe of the overburden dumps and have a height of 220 m AHD, approximately 50m above the Probable Maximum Flood height. Following rehabilitation of the overburden dumps, the sediment sumps would continue to receive runoff from the rehabilitated waste rock dumps.

The mine water dam would be rehabilitated by partially removing a section of the dam wall to allow free drainage. The ground surface of the mine water dam would be excavated to remove any accumulated salts and covered with topsoil to encourage revegetation. Insufficient information was provided as to how the dam would be revegetated. Other mine water management dams would either be retained or decommissioned.

The EIS indicated that an unconfirmed length of haul roads and access tracks would either be retained or converted to pre-mining land use.

The EIS stated that areas of creek diversion and levee banks would have to be unsuitable for agriculture or cattle grazing. The EIS stated that these areas required rehabilitation and revegetation. Mitigation measures would be defined in a Creek Diversion Rehabilitation Management Plan; however this plan was not included in the EIS.

The tailings storage facility (TSF) surface would be covered and capped with benign waste rock material to prevent rainwater ingress and would be topsoiled and vegetated.

Mine infrastructure may either be partially or completely decommissioned depending on agreements between the Proponent and post-mining land owners. The EIS stated that the infrastructure area would, where possible, be returned to pre-mining landform. The final void, overburden dumps and tailings storage facility will generally be unsuitable for agricultural use.

The EIS stated that the main post-mining land uses are envisaged to be nature conservation with some cattle grazing compared to mainly cattle grazing pre-mining. It is not clear what nature conservation would entail.

The EIS committed for undisturbed land to either retain its current land use during mining or to reinstate the original land use once mining had ceased and to:

- Rehabilitate areas disturbed by mining and leave it in a safe, stable, non-polluting condition.
- Ensure an agreed post-mining land use.
- Provide a Mine Closure Plan.
- Provide a Final Void Plan as part of the Mine Closure plan at least five years prior to completion of mining. The Final Void plan would include assessments of groundwater hydrology and properties, surface water hydrology and pit wall stability and will form part of the Mine Closure Plan.
- Provide a Creek Diversion Rehabilitation Management Plan.

The EIS identified the following potential ongoing environmental impacts after rehabilitation:

- erosion of constructed final land forms
- soil compaction
- destabilisation of waste rock dumps
- change to the land use, both during the mine operation and post-mining
- soil contamination from saline seepage associated with the mine water management dams
- redistribution of existing landforms such as diversion of sections of Roper Creek and Thirteen Mile Gully that traverse the mining tenements, including change in landscape form.

The EIS stated that the Project would result in permanent residual impacts as follows:

- A single final void would remain and be partially backfilled it with potentially saline waste rock. Its anticipated size would be 143 ha and be 60 to 80 m deep. The final void would be located on the hillslopes on the northern side of Thirteen Mile Gully.
- Land currently suitable for dry land cropping would be reduced to land with limitations Classes 4 and approximately 2059 ha (74%) of land with severe limitations.
- Dry land cropping land currently classified as Class 3 would no longer be suitable for cropping post-mining but would be reduced to pasture land.
- 9% of land on the Project site is considered limited or unsuitable for beef cattle grazing. This figure would increase post-mining to 79% of land with severe limitations.
- Permanent anthropogenic landforms such as overburden dumps, creek diversion and a final void would remain (refer to section 4.17 Rehabilitation for additional information).
- Existing landforms such as the partial diversion of sections of Roper Creek and Thirteen Mile Gully would be redistributed (refer to section 4.8 Water resources).

The EIS stated that returning land to Class 5 cropping and beef cattle grazing would result in a lower value land use and consequently would not be an ideal rehabilitation outcome. The EIS identified that further investigations into the potential for agricultural land-use and nature conservation post-mining was required.

The EIS included insufficient information on safety aspects associated with the decommissioning, which is required under the TOR. The EIS provided information on proposed rehabilitation goals, objectives and indicators, however no completion criteria had been included. It is a requirement of the TOR that measurable completion criteria for rehabilitation be developed as part of the EM plan.

The requirements of the TOR for rehabilitation have not been met.

Outstanding actions:

- Provide clarification on the suitability of the design for the waste rock dumps.
- Provide suitable environmental protection objectives include suitable rehabilitation objectives and identify measurable indicators by referencing to specific rehabilitation completion criteria.

- Specify the proposed post mining land use in accordance with the DERM guideline Rehabilitation requirements for mining Projects, 28 March 2011 or any subsequent versions thereof.
- Provide a Mine Closure Plan.
- Provide a Creek Diversion Rehabilitation Management Plan.
- Include a commitment that for woodland/riparian communities, artificial or salvaged wood hollows would be installed at the average rate (90 hollows/ha for riparian areas, 107 hollows/ha for woodland areas).
- Specify the proposed post -mining land use in accordance with the DERM guideline Rehabilitation requirements for mining Projects, 28 March 2011 or any subsequent versions thereof and include this information in the EM plan prior to its finalisation.
- Conduct conclusive rehabilitation investigations to further determine the potential for post-mining agricultural land-use and nature conservation. Derive commitments, mitigation measures and measurable performance indicators based on the outcome of the investigations in the EM plan.

5 Adequacy of the environmental management plan

The latest EM plan submitted as part of this EIS does not meet the content requirements under section 203 of the EP Act. It is a legislative requirement that environmental commitments and protection objectives be included in the EM plan. These must have control strategies assigned and measurable indicators to ensure the environmental objectives are achieved.

A revised EM plan incorporating the requirements outlined in this report should be prepared for the purpose of assessment under the EA process pursuant to Chapter 5 of the EP Act.

6 Recommendations about the suitability of the Project

The EIS process has compiled information about the proposed Project, the values of the Project site and the potential impacts to those values. A range of mitigation measures and residual impacts unable to be mitigated are summarised in this assessment report. According to requirements of the EP Act, one of the primary tools to implement mitigation measures and environmental commitments is the EM plan. The EM plan sets out how each matter is to be managed to deliver an acceptable environmental outcome.

This report recommends that the following outstanding matters be addressed prior to finalising the EM plan and be included in the EM plan:

- development and submission of an updated Emergency Preparedness and Response Plan with additional mitigation measures
- development and submission of a Mining Waste Management Plan and a Coarse and Fine Reject Waste Management Plan. This must include detailed geochemical characterisation of all materials proposed to be disturbed / excavated to determine their chemical properties including heavy metal content and potential to generate acid
- development and submission of a Waste Management Plan
- development an submission of a Water Management, Erosion and Sediment Control Plan
- development and submission of a Water Resource Management Plan
- development and submission of a Dust/Air Quality Management Plan
- development and submission of a Blast Management Plan
- development and submission of a Rehabilitation Plan
- development and submission of a Biosecurity Management Plan
- development and submission of a Biodiversity Management Plan
- development and submission of a Creek Diversion Management Plan
- development and submission of a Erosion and Sediment Control Plan
- development and submission of a Mine Closure Management Plan
- information on all relevant ERA thresholds
- submission of commitments made for lighting and visual amenity, including suitable measures and performance standards
- inclusion of stormwater management procedures and mitigation measures

submission of a re-assessment of topsoil stripping depths and land suitability

- development and submission of procedures for levee maintenance, a risk assessment of failure scenarios for flap valves and mitigation measures should the flap valves fail
- development and submission of suitable flood mitigation measures. Confirm that the proposed flood mitigation measures maintain the safety of people on the Project site. Include appropriate mitigation measures to respond during emergencies at times when the Middlemount Road is inundated
- submission of sufficient information on the water management system on site, which should be designed, staged and documented for timely delivery of storages that can provide the design storage allowance (DSA). Include contingency arrangements for pumping between on-site storages to minimise releases to surface water

- provision of sufficient information on trigger levels, in-stream monitoring for all controlled discharges, including sediment sumps, monitoring frequencies, minimum flow requirements and minimum release rates
- provision of potential impacts and mitigation measures for the Saraji water pipeline diversion
- inclusion of commitments given in Chapter 5 Project Construction and Chapter 8 Land Use of the EIS
- inclusion of suitable mitigation measures to minimise any impacts on groundwater height, flow or quality, or impacts on groundwater-dependent flora and stygofauna
- commitment to exposing non-active disturbed areas for no longer than six months prior to rehabilitation
- commitment to implementing a real-time, on-line integrated high-volume air sampling and dust deposition monitoring system
- provision of measurable performance indicators for dust mitigation
- inclusion of objectives, measures and performance standards relating to greenhouse gas reduction commitments given in the EIS in the EM plan
- assessment of the performance of the proposed mitigation measures for greenhouse gas emissions.
- clarification on the accuracy of the noise model
- inclusion of all commitments given in Chapter 29 Commitments of the EIS regarding terrestrial ecology
- identification of aquatic ecological values and any sensitive uses beyond the 4.5km. Potential impacts must be assessed and suitable mitigation measures developed
- provision of clear and readily identifiable mitigation measures for the protection of aquatic ecosystems
- commitment to only destroy 34% of Wetland ID 37 767 and to protect the remaining wetland and Wetland ID 37 454
- provision of appropriate mitigation measures for impacts on wetlands for changed groundwater levels
- commitment to ensure effective fish passage through the watercourses within the study area and the protection of fish habitats recommended by DEEDI in their EIS comment dated 28 March 2011
- commitment to monitor stygofauna and to develop appropriate mitigation measures
- inclusion of all commitments given in Chapter 29 Commitments of the EIS regarding aquatic ecology
- provision of a biodiversity offsets package for ecological impacts which have to be legally secured pursuant to applicable State and Commonwealth legislation prior to any clearing under this Project
- provision of suitable environmental protection objectives and suitable rehabilitation objectives and identify measurable indicators by referencing to specific rehabilitation completion criteria
- specification of the proposed post-mining land use in accordance with the DERM guideline Rehabilitation requirements for mining Projects, 28 March 2011 or any subsequent versions thereof
- inclusion of a commitment that for woodland/riparian communities, artificial or salvaged wood hollows would be installed at the average rate (90 hollows/ha for riparian areas, 107 hollows/ha for woodland areas)
- specification of the proposed post -mining land use in accordance with the DERM guideline Rehabilitation requirements for mining Projects, 28 March 2011 or any subsequent versions thereof
- conduction of conclusive rehabilitation investigations to further determine the potential for post-mining agricultural land-use and nature conservation. Derive and include commitments, mitigation measures and measurable performance indicators based on the outcome of the investigations

Other outstanding matters:

- provision of a practical alternative stock route if and when required during mining for as long as the stock route is closed

- Completion of a compensation agreement with the IRC for the Barwon Park Middlemount Road stock route.
- Re-establishment of the stock route on an equivalent basis when mining ceases.
- submission of soil mapping at the same level of detail or better than that in Land Resource Assessment of the Windeyers Hill area, Isaac-Connors and Mackenzie River catchments, Central Queensland (Burgess, 2003)
- explanation of the significance of the stockmen's camp under Section 60 of the QH Act
- submission of re-calculated channel roughness and impact assessment on the design of the proposed diversions for Roper Creek
- submission of a geotechnical assessment to confirm the feasibility of location of the proposed levees and setbacks, particularly from the eventual high wall of the proposed pit and from watercourses
- provision of certified design plans by a suitably qualified and experienced person for all regulated dams and levees
- clarification of flow modelling including the 20th percentile flow for Thirteen Mile Gully
- provision of plans that show the drawdown contours caused by mine dewatering which includes the locations of bores and wetlands. The plans should show predicted drawdown at 1 year, 5 year, 10 year, end of mining, maximum predicted drawdown and a date for equilibrium
- development of a ‘statement of commitments’ regarding the management of workforce movements to and from the site to minimise private vehicle use accessing the mine site and its facilities to ensure the ongoing safety and efficiency of the state-controlled road corridor as requested by DTMR
- inclusion of fatigue related procedures in the site induction procedures for mine staff and contract staff as requested by the Queensland Police Service
- consultation with DTMR regarding:
    - pavement loading impacts
    - safety issues
    - requirements for the mine access intersection
    - intersection lighting
    - funding
    - Road Impact Assessment and Road-Use Management Plan
    - 'statement of commitments' regarding the management of workforce movements.

7 Conditions for regulatory approvals

7.1 Environmental Protection Act 1994

Throughout this EIS process, including development of the draft EM plan, a range of environmental impacts and mitigation measures have been identified. Where that is the case and where legislation, policy or guidelines dictate, the actions of the project need to be constrained to achieve an acceptable environmental outcome.

Section 59 of the EP Act states that this EIS assessment report must recommend any conditions on which any approval required for the project may be given. However, section 202 of the EP Act states it is the purpose of the submitted EM plan to propose environmental protection commitments to help the administering authority prepare the draft environmental authority for the application. In this case, the submitted EM plan is not adequate and must be significantly revised before it could be used as the basis to recommend specific conditions for the draft environmental authority.

Nevertheless, section 4 of this EIS assessment report has recommended several areas where conditions should be developed for inclusion in the draft environmental authority. Due to the inadequate EM plan only conditions related to noise are provided here. The conditions are not considered complete or final and are provided for consideration in developing final conditions if an environmental authority is granted for the Project. The full range of conditions is yet to be developed.

On receipt of a satisfactory EM plan the administering authority will decide, under section 210 of the EP Act, what conditions are necessary or desirable for that approval.

Department Interest: Noise

D6 If monitoring indicates that the activity component level exceeds the limits in Table D1, the environmental authority holder must:

a) Address the complaint including use of appropriate dispute resolution if required

b) Immediately implement noise abatement measures so that emissions of noise from the activity do not result in further environmental nuisance.

Table D1 Activity Component Noise Limits

Noise Level [dB(A)] at a 'Sensitive Place' expressed as	Monday to Sunday		
	7am – 6pm	6pm – 10pm	10pm – 7am
LAeq,adj,10 mins1	RBL3 + 5	RBL3 + 5	RBL3 + 5
LA1,adj,10 mins2	40	40	40
Noise Level [dB(A)] at a 'Commercial Place' expressed as			
LAeq,adj,10 mins1	RBL3 + 10	RBL3 + 10	RBL3 + 10
LA1,adj,10 mins2	45	45	45

Note 1 External noise limit

Note 2 Internal noise limit

Note 3 Rated Background Level (RBL) as defined in the DERM Coaches Guideline, Planning for Noise Control.

D10 Noise monitoring

When requested by the administering authority, noise monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of noise nuisance at any sensitive place, and the results must be notified within fourteen (14) days to the administering authority following completion of monitoring.

Monitoring results must include:

- LAeq,adj,15 mins (external)
- LA1,adj,15 mins (internal – or a measured external noise level and calculation of corresponding internal noise level)
- the level and frequency of occurrence of impulsive or tonal noise;
- atmospheric conditions including wind speed and direction;
- effects due to extraneous factors such as traffic noise; and
- location, date and time of recording.

The conditions are neither considered complete nor finalised. Conditions under section 210 of the EP Act will be determined during the decision process for the amendment of the existing environmental authority provided the amendment will be granted.

7.2 Other legislation

7.2.1 EPBC Act

The Project is a controlled action under the EPBC Act. The controlling provisions are Listed threatened species and communities (sections 18 and 18A), which are considered MNES. The EIS contains sufficient information to determine that an approval under the EPBC Act is required for this Project.

7.2.2 Aboriginal Cultural Heritage Act 2003

The *Aboriginal Cultural Heritage Act 2003* (ACH Act) contains provisions for identifying and protecting significant Aboriginal cultural heritage from development, including:

- undertaking a duty of care towards Aboriginal cultural heritage
- development of a CHMP.

Duties of Care Guidelines in support of the ACH Act were gazetted on 16 April 2004. The guidelines outline reasonable and practicable measures for ensuring activities are managed to avoid or minimise harm to Aboriginal cultural heritage. DERM confirms that CHMPs have been approved for the Barada Barna People and the BBKY #4.

7.2.3 QH Act

The EIS stated that no registered (protected) place pursuant to the QH Act had been identified on the Project site. Insufficient information has been provided in the EIS to determine if approvals may be required for potential impacts on non-indigenous cultural heritage.

7.2.4 Forestry Act 1959

The EIS stated that the Project will not interfere with any forest products within the Bundoora State Forest. Approval may be required should tree removal within road reserves be required. Insufficient information has been provided in the EIS to determine if approvals may be required.

7.2.5 Mineral Resources Act 1989

An application was lodged with DEEDI under the *Mineral Resources Act 1989* for MLA 70417. DEEDI will make a decision on the mining lease application once DERM has decided the EA amendment process which will commence after the EIS process.

7.2.6 Water Act 2000

The EIS stated that approval under the *Water Act 2000* would be required for the following activities:

- levee construction/creek diversion of Roper Creek and Thirteen Mile Gully
- taking or interfering of water associated with overland flow
- riverine protection
- referable dams.

The EIS has provided insufficient detail on the proposed activities to determine any approvals or suitable conditions.

A determination has to be made if Thirteen Mile Gully and Roper Creek are 'watercourses' pursuant to the *Water Act 2000*. If they are defined as watercourses they will require separate assessment and approval.

7.2.7 Nature Conservation Act 1992

The EIS stated that permits for interfering with cultural or natural resources, flora or wildlife protected under the *Nature Conservation Act 1992* (NC Act) would be required due to vegetation clearing and associated ecological impacts:

- Protected Animals Movement Permits
- Protected Plants Clearing Permits
- Wildlife Movement Permits for wildlife not protected under the NC Act but found in certain areas covered by conservation plans created and implemented under the NC Act.

These permits have to be obtained prior to any disturbance. Suitable conditions would be determined once a permit application was made and approved.

7.2.8 Water Supply (Safety and Reliability) Act 2008

The EIS stated that approval for referable dams and levees pursuant to the *Water Supply (Safety and Reliability) Act 2008* may be required. Insufficient information has been provided in the EIS on dams and levees to determine if approvals are required.

7.2.9 Transport Infrastructure Act 1994 and Transport Operations (Road Use Management) Act (Qld) 1995

The EIS stated that the proposed diversion of the Saraji water pipeline may require a permit to temporarily close a Sate-controlled road pursuant to the *Transport Infrastructure Act 1994* (TI Act).

The administering authority for the TI Act and the *Transport Operations (Road Use Management) Act (Qld) 1995* (TORUM) is DTMR.

DTMR made the following recommendations regarding proposed activities under the TI Act and TORUM:

Intersection Lighting Recommendation:

Three months prior to the commencement of construction the proponent shall assess and provide the intersection lighting configuration required at the Mine Access Road/Dysart Middlemount Road intersection in accordance with the department's Road Planning and Design Manual and the Interim Guide to Road Planning & Design Practice.

Updated Road Impact Assessment and Road-Use Management Plan Recommendation:

Three months prior to the commencement of construction, when more certain information is available on vehicle types and numbers, the proponent shall reassess the impact of pavement loadings on the Dysart-Middlemount Road.

Reassess, review and finalise the road impact assessment (RIA) that includes details of all Project transport impacts on the safety and efficiency of state-controlled roads (In particular the Dysart-Middlemount Road) in accordance with Guidelines for Assessment of Road impacts of Development (2006) in consultation with the Regional Director of DTMR Mackay/Whitsunday Regional Office; then submit the RIA to the Regional Director for review and approval.

Three months prior to the commencement of construction:

- Finalise a road-use management plan (RMP) for all use of state-controlled and other roads for each phase of the Project. Fatigue management of trips to and from major regional centres shall also be addressed in the RMP.
- Provide any necessary road pavement rehabilitation and road maintenance contributions identified in the finalised RIA and RMP to ameliorate any adverse impacts of the road use by the Project on the assets of DTMR to the Dysart-Middlemount Road

Proposed Traffic Management Plan Recommendation:

- Three months prior to commencement of any construction works on site prepare detailed drawings and traffic management plans for all construction and other activities in the state-controlled road corridor.
- Present detailed drawings and traffic management plans for review by DTMR, the Queensland Police Service, IRC and take account of the reviews.
- Prior to commencing any program of oversize transport movements that may be required for the construction of the Project consult with DTMR, the Queensland Police Service, and IRC.

The proponent shall obtain the necessary permits for any excess mass or over-dimensional loads associated with the Project as required under the *Transport Operations (Road Use Management) Act (Qld) 1995*.

The proponent shall implement the traffic management plan during construction and commissioning of the Project and construction of all access road intersection/s and other required works in road reserves.

7.2.10 Land Act 1994

The EIS stated that *Land Act 1993* approvals would be required for:

- permanent or temporary road closure (stock route)
- permit to occupy (occupation of unallocated State land, a reserve or a road) - structural improvements
- approval for an easement.

Suitable conditions for the proposed closure of the stock route would be determined once an application was made and approved. The EIS contains insufficient information on any structural improvements or easements to determine if an approval may be required.

7.2.11 SPA and Dangerous Goods Safety Management Act 2001

The Project may require a Development Permit pursuant to SPA and the *Dangerous Goods Safety Management Act 200*1 for a Major Hazard Facility for the storage and handling of flammable and combustible liquids off the mining lease. Insufficient information has been provided in the EIS on off-site storage of flammable and combustible liquids to determine if a Development Permit may be required.

7.2.12 Explosives Act 1999

The Project will require approval under the *Explosives Act 1999* for the use of explosives associated with the proposed blasting including its storage. Suitable conditions would be determined once an application was made and approved.

7.2.13 SPA, Broadsound Shire Planning Scheme 2005 and Building Act 1975

The EIS stated that for off-mining lease infrastructure Development Permits may be required for:

- Material Change of Use
- Operational Works
- Building Works
- Plumbing and Drainage Works
- Reconfiguring a lot.

The EIS provided insufficient information on activities to determine if any of the above matters would require an approval.

7.2.14 SPA and Building Act 1975

The EIS stated that for on-mining lease infrastructure Development Permits may be required for Plumbing and Drainage Works. Insufficient information was provided to determine if approvals are required.

7.3 External submissions

The IRC raised the following matters of concern:

- The EIS did not meet the IRC's goal of 30% non-resident and 70% resident workers.
- The EIS did not provide an assessment of the social impacts of transitional work forces compared to housing workers locally.

8 Suitability of the Project

The Project is considered suitable provided that:

any outstanding matters raised in this report be resolved

the EM plan be completed

the subsequent environmental authority, if granted, is conditioned suitably to implement the specific environmental protection commitments set out in the EIS.

Consequently, the Project is considered suitable to proceed to the next stage of the approval process noting that the recommendations of this EIS assessment report should be fully implemented.

8.1 Approved by

Signed	10-10-2011
Signature	Date

Lindsay Delzoppo
Director
Environmental Impact Assessments
Delegate of the Chief Executive
Environmental Protection Act 1994

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