

**Assessment Report under the**  
***Environmental Protection Act 1994***  
*on the*  
**Environmental Impact Statement**  
*for the*  
**Vermont Coal Project**  
*proposed by*  
**Bowen Basin Coal Pty Ltd**

**January 2005**

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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 Vermont Coal Project proposed by Bowen Basin Coal Pty Ltd. The EIS process was coordinated by the Environmental Protection Agency (EPA) as the administering authority of the EP Act. This assessment report has been prepared pursuant to Sections 58 and 59 of the EP Act.

The objective of this assessment report is:

- (a) to summarise key issues associated with the potential adverse and beneficial environmental, economic and social impacts of the Vermont Coal Project and the management, monitoring, planning and other measures proposed to minimise any adverse environmental impacts of the project; and

- (b) make recommendations on the suitability of the project to proceed and where so, to make recommendations on necessary conditions for any approval required for the project.

It is a requirement of sections 58 and 59 of the EP Act that the EPA considers certain matters when preparing an EIS assessment report and that the assessment report then covers other prescribed matters listed in these sections. In summary, this assessment report addresses the adequacy of the EIS in addressing the final Terms of Reference (TOR), the suitability of the draft Environmental Management Plan (EM Plan) and other prescribed matters.

This report does not detail all the issues that were identified through the EIS process, but discusses those issues that raised specific concerns and were either not resolved or required specific conditions for the project to proceed. With regard to conditions, the EPA has developed a basic set of conditions that would typically apply to level 1 mining projects. Those are referred to in this report as the streamlined level 1 conditions. This report assumes that those conditions will be applied to the draft Environmental Authority (EA) for the project, except where this report recommends modification of a condition in the streamlined set or additional conditions.

Delivery of this EIS assessment report to the proponent completes the EIS process under the EP Act.

## 1.1 Project details

Bowen Basin Coal Pty Ltd (BBC) is the proponent for a new coal mine project titled “Vermont Coal Project” (VCP). The proposed mine is centred on a 103Mt resource of the Rangal Coal Measures in the Bowen Basin coal province. The proposed primary mining lease (ML70331) will be located in the southwestern corner of MDL303, while a second proposed mining lease for mining infrastructure (ML70332) extends northeast from ML70331 to an area outside MDL303 that covers part of the Isaac River.

The proposed mine would be located 15km north-east of the township of Dysart on the Mineral Development Licence (MDL) 303. Dysart is a small town approximately 76km north-east of Capella and 120km north-east of Emerald. The area is an established mining, grazing and farming region and is wholly within the Broadsound Shire in Central Queensland.

BBC proposes to manage the VCP as a contractor operated open cut mine producing approximately 2.65Mt/a coking coal and 1.25Mt/a “pulverised coal injection” coal (PCI, average of 5.0Mt/a run-of-mine coal) from a 700tph coal handling and processing plant (CHPP) for at least 15 years.

Products are to be transported directly from the mine site 235km to the coal exporting facility at Dalrymple Bay Coal terminal within the Port of Hay Point. An 18km rail spur and balloon loop is proposed from the main Dysart railway to a train loader constructed beside the CHPP. The train loader is planned to have a loading capacity of 4,000tph. The rail spur and a mine access road will be partly located in areas not covered by the mining lease.

Mine overburden removal is proposed to be undertaken by blasting, dozing and truck and excavator operations in the first five years of production. It is then planned to introduce draglines into operations from 2011 or 2012.

The fulltime permanent workforce on site at full production of 5.0Mt/a will be approximately 196, reducing to 156 when draglines are operational at the mine. The construction workforce is expected to peak at near to 200 for short periods during the 12 months main construction phase.

It is proposed that a primary water supply of up to 3,000ML/a will be flood harvested from the Isaac River with supplementary water (from the Eungella Dam) being brought by a pipeline system from Moranbah north-west of the VCP.

## 1.2 Approvals

The following approvals are required for the VCP:

Approval	Legislation (Administering Authority)
Environmental Authority (mining activities)	<i>Environmental Protection Act 1994</i> (EPA)
Mining Leases	<i>Mineral Resources Act 1989</i> (Natural Resources and Mines)
Water Licence	<i>Water Act 2000</i> (Natural Resources and Mines)

Approval	Legislation (Administering Authority)
Water Allocation (Isaac River)	<i>Water Act 2000</i> (Natural Resources and Mines)
Fishway Barrier Works	<i>Fisheries Act 1994</i> (Primary Industries and Fisheries)
Development Approval (for the rail spur)	<i>Integrated Planning Act 1997</i>
Development Approval (for the supplementary water supply)	<i>Integrated Planning Act 1997</i>

## 1.3 Impact assessment process

### 1.3.1 The EIS process

The EIS for the VCP was conducted under Chapter 3 of the EP Act. This process is described in the EPA's guideline "*The EIS process for non-standard mining projects*" [NB: non-standard mining projects are now known as level 1 mining projects].

The EIS process was initiated by BBC on 27 August 2003 by application to the EPA to prepare a voluntary EIS under section 70 of the EP Act for the VCP. The EPA requested additional information on 27 August 2003 with regard to whether the proposal was a controlled action under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The proponent responded on 5 September 2003 that the project would not be referred to the Commonwealth. The EPA approved the application to undertake a Voluntary EIS on 26 September 2003.

The draft Terms of Reference (TOR) and Initial Advice Statement (IAS) were available for public comment from 6 October 2003 to 17 November 2003 with a public notice being placed on the EPA's website on 6 October 2003 and in *The Courier Mail* and *Mackay Daily Mercury* on 11 October 2003. The EPA issued a "Notice of Publication of the draft TOR" on 17 October 2003 to BBC.

Eleven submissions (including one from the EPA) were received on the draft TOR within the public comment period. Submissions were received from 10 State Government departments and agencies, and one from a local government authority. These submissions were forwarded to BBC on 24 November 2003 to which the BBC responded on 1 December 2003. The EPA considered all submissions received on the draft TOR and the BBC's responses prior to issuing the final TOR to BBC on 23 December 2003.

BBC submitted the draft EIS on 2 July 2004 to the EPA for review prior to public notification. The EPA compared the draft EIS to the final TOR issued to BBC and advised BBC on 22 July 2004, prior to a formal decision being made, that the EPA considered the draft EIS did not sufficiently address the TOR to allow the draft EIS to proceed to public notification. It was agreed at a meeting on 27 July 2004 between the EPA and BBC that an extension of time for assessing the draft EIS would be made to allow the draft EIS to be revised by BBC prior to the final decision on publication of the draft EIS by the EPA.

BBC submitted an amended draft EIS on 13 August 2004 to the EPA for review prior to public notification. The EPA approved the draft EIS to proceed to the public notification stage of the EIS process on 27 August 2004. The public notification and submission period was set at 20 business days.

BBC commenced the public notification and submission period of the draft EIS on 20 September 2004 (concluding 15 October 2004) by advertising in *The Courier Mail* and *Mackay Daily Mercury* on 18 September 2004. The EPA also placed notification on the EPA's website on 20 September 2004 stating that the draft EIS could be viewed at various locations during the submission period.

Sixteen submissions (including one from the EPA) were received on the draft EIS within the submission period. Submissions were received from 11 State Government departments/agencies, one from a local government authority, three from affected persons and one member of the public. These submissions were forwarded to BBC on 29 October 2004. BBC submitted a submissions response report (Supplementary Report) to the EPA on 26 November 2004 in response to the submissions.

Copies of the Supplementary Report were issued to members of the Advisory Body (on 29 November 2004) who requested further information for their consideration and comments were requested by 7 January 2005.

Copies of the Supplementary Report were also forwarded to public submitters who had raised specific issues with the project.

Ten submissions were received on the Supplementary EIS. Eight submissions were received from State Government and two from the general public.

Comments from the Advisory Body and other interested parties were considered by the EPA in the preparation of this EIS assessment report. Copies of this EIS assessment report are to be forwarded to all members of the Advisory Body, interested and affected persons and is to be available on the EPA's website ([www.epa.qld.gov.au](http://www.epa.qld.gov.au)).

### **1.3.2 Consultation program**

#### **Public consultation**

In addition to the statutory requirements for public notification of the TOR and draft EIS, BBC included a public consultation program during the development of the draft TOR and draft EIS. This program included correspondence such as personal letters, newsletters and notice board information and one-on-one discussions and meetings with the following groups:

- local landholders on, adjacent to and neighbouring the project area;
- residents in the Dysart township;
- representatives of State agencies and Broadsound and Nebo Shire Councils; and
- local community/ interest groups.

#### **Advisory Body**

The EPA invited the following organisations to assist in the assessment of the TOR and draft EIS by participating as members of the Advisory Body for the project:

- Barada Barna Kabalbara & Yetimarla People
- Broadsound Shire Council
- Department of Emergency Services
- Department of Families
- Department of Local Government and Planning
- Department of Main Roads
- Department of Natural Resources and Mines
- Department of Primary Industries & Fisheries
- Department of State Development & Innovation
- Department of Transport
- Education Queensland
- Environmental Protection Agency
- Fitzroy Basin Association (including Nebo Landcare Group)
- Gurang Land Council Aboriginal Corporation
- Queensland Rail
- Queensland Health
- Queensland Police Service
- Treasury

#### **Public notification**

In accordance with the statutory requirements, advertisements were placed in *The Courier-Mail* and the *Mackay Daily Mercury* to notify the availability of the draft TOR for review and public comment as stated above. Advertisements were also placed in these papers to notify the availability of the draft EIS for review and public comment. In addition, notices advising of the availability of the draft TOR and the draft EIS for public comment were displayed on the EPA website.

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

- EPA Website (draft TOR and IAS only);
- Naturally Queensland Information Centre, EPA Central Office, Brisbane;

- EPA Regional Office, Mackay;
- Council Office, Broadsound Shire Council, Dysart; and
- Bowen Basin Coal Pty Ltd, Brisbane (copies of the draft EIS could also be purchased from BBC).

### **Site visit**

A site visit was organised for the Advisory Body and affected persons on 28 September 2004, during the public notification period for the draft EIS. It was attended by a number of representatives from the Advisory Body and landowners from surrounding properties. BBC used the site visit as an opportunity to show members of the Advisory Body and the affected persons key areas of the project site. The Advisory Body and affected persons used the site visit as an opportunity to ask BBC questions about the project and clarify any issues of interest or concern.

### **1.3.3 Environment Protection and Biodiversity Conservation Act 1999**

BBC stated in their application to undertake a voluntary EIS that a preliminary assessment of the impacts the proposed project would have on matters of National Environmental Significance (NES) (as defined in the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) had been undertaken and that the project would not have a significant impact on NES matters. BBC advised that the project did not require referral under the EPBC Act and no referral was made. Consequently, the State's EIS process has not been accredited under the bilateral agreement.

## **2. Matters considered in the EIS assessment report**

Section 58 of the EP Act requires, when preparing this EIS assessment report, the consideration of the following matters:

- (a) the final TOR 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.

These matters are addressed in the following subsections.

### **2.1 The final TOR**

The final TOR document, issued on 23 December 2003, was considered when preparing this EIS assessment report. While the TOR were written to address all of the major issues associated with this proposal, they were not exhaustive, nor were they to be interpreted as excluding all other matters from consideration. The TOR stated that if significant matters arose during the course of preparation of the EIS that were not incorporated in the TOR, eg. currently unforeseen issues that emerge as important or significant from environmental studies, then these issues should also be fully addressed in the EIS.

Where matters arose outside of those listed in the TOR dated 23 December 2003, those matters have been considered when preparing this EIS assessment report as though they were incorporated into the final TOR.

### **2.2 The submitted EIS**

The "submitted EIS" was considered when preparing this EIS assessment report. The "submitted EIS" comprised the:

- (i) draft EIS that was publicly released on 20 September 2004;
- (ii) the submissions response report (Supplementary Report) received by the EPA on 26 November 2004 that was provided to relevant Advisory Body members;
- (iii) a Response Supplement – Additional Information Attachment 2 to the Department of Natural Resources and Mines (provided to the EPA on 13 December 2004);
- (iv) a separate and confidential financial feasibility assessment; and
- (v) a separate and confidential cultural heritage assessment and management plan.

## 2.3 Properly made submissions

Twenty-six submissions were received by the EPA on the submitted EIS. All were properly made and all were considered when preparing this EIS assessment report.

## 2.4 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 the EIS Assessment 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;*
- (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) *an environmental management program;*
  - (iii) *an environmental protection order;*
  - (iv) *a disposal permit;*
- (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.*

The EPA has considered the standard criteria when assessing the project.

## 2.5 Another matter prescribed under a regulation

There is no other matter prescribed under a regulation that required consideration.

## 3. Adequacy of the EIS in addressing the TOR

The submitted EIS adequately addressed many components of the TOR. These sections are generally not discussed in this assessment report except where they were crucial in the assessment of the project. However, a number of sections in the TOR were inadequately addressed by the submitted EIS and these sections have been discussed below.

### 3.1 Infrastructure requirements

#### 3.1.1 Water supply

The TOR (section 4.5.3) required the EIS to provide descriptions of and requirements for constructing, upgrading or relocating all water supply infrastructure including pipelines associated with the project, information on the quality and quantity of all water supplied to the site and estimated rates of supply from each source.

The draft EIS identified that the VCP would require two separate water supplies to meet the raw water requirements for the project. These water supplies being (a) a flood-harvesting system based on the Isaac River to deliver up to 3,000ML/a and (b) a supplementary water supply that had not been confirmed prior to the release of the draft EIS.

### Isaac River flood-harvesting – instream infrastructure

The flood harvest system proposed in the draft EIS was to be constructed on the western bank of the Isaac River about 13.5km northeast of the mine infrastructure area. The system included a pumping pool behind a three metre high bund constructed across the river to pool water when flows in the Isaac River exceed the threshold flow of two cumecs (172.8ML/day). However, following release of the draft EIS, the cross-river bund option was abandoned by BBC due to the potential for upstream sedimentation and consequential environmental degradation.

The Supplementary Report introduced a revised flood-harvesting design that incorporates an instream sump (to submerge the intake pumps) and an instream sediment stabilization structure that redirects low flows of the river. The structure no longer blocks flows of the Isaac River, but diverts the flows through the instream pumping facility. The harvesting of water will not occur until the flows exceed two cumecs.

The submitted EIS has not adequately addressed the requirements of the TOR. In particular, the deficiencies of the submitted EIS with respect to the instream flood-harvesting infrastructure were:

- lack of details of staging and timing for construction of the infrastructure;
- no description of vegetation at the site;
- lack of an assessment of the impacts associated with the construction of the instream flood-harvesting infrastructure; and
- lack of details of how impacts will be managed during construction.

Whilst the revised structure is not expected to result in any ponding of, or impediment to, flows of the Isaac River, the Supplementary Report states that the Isaac River's deep mobile sandy bed poses a number of problems which still need to be resolved via model studies at detailed design. The submitted EIS does not explain what those problems might be.

The proposed instream flood-harvesting infrastructure is an integral component of the VCP and should have been adequately addressed by the submitted EIS.

#### *Adequacy of this section of the EM Plan*

The draft EM Plan relates to all mining activities on the proposed mining leases and this includes the construction of flood-harvesting infrastructure. However, no details have been provided relating to the management of impacts during construction associated with instream floodwater harvesting infrastructure at the Isaac River. The draft EM Plan is deficient in this regard and should be amended.

#### *Assessment of information in this section of the EIS*

It has not been possible to fully assess the impacts of construction and operation of the instream flood-harvesting infrastructure, nor to develop conditions for the management of those impacts, due to a lack of information in the submitted EIS.

Despite this, what is known indicates that impacts are not expected to be of a significant magnitude to preclude the installation of the infrastructure if the disturbance area is minimised to the footprint of the infrastructure and maintenance areas.

The Department of Primary Industries and Fisheries (DPI&F) has advised that should the concrete capping proposed for the sediment stabilization structure be above the bed level of the Isaac River, it is likely that the structure will require barrier works approval under the *Fisheries Act 1994*. DPI&F has also recommended consideration of the following issues as part of the design of the instream infrastructure:

- (i) fish movement behaviour;
- (ii) scour from the sediment stabilization structure; and
- (iii) the exclusion of fish from the pump intake.

The Isaac River is covered by the Fitzroy Water Resource Plan and the Resource Operations Plan and consequently natural flow regimes have been determined and the quantities of water that are available for allocation to proposals like the VCP have been established. NR&M has indicated that BBC has satisfied their requirements with regard to compliance with the requirements of the *Water Act 2000*, the Fitzroy Water Resource Plan and the Resource Operations Plan, as well as provision of the detailed design of infrastructure for interfering or taking water at the licence application stage.

The proposed flood-harvesting arrangement will require licences under the *Water Act 2000* to build and operate the infrastructure in the Isaac River and for the abstraction of water from the river.

#### Isaac River flood-harvesting – off-stream infrastructure

An off-stream flood-harvesting dam with a capacity of up to 2,000MI – external dimensions of approximately 500m by 500m and a depth of 10 metres – was proposed in the draft EIS to store water collected by the instream flood-harvesting infrastructure. The off-stream flood-harvesting dam is to be located on the 4.4km wide flood plain of the Isaac River approximately 750m from the western bank of the river. However, the draft EIS did not assess the direct ecological impacts associated with the clearing of land for the dam and associated pipeline to the mine site.

The Supplementary Report provided a revised design of the flood-harvesting dam with the arrangement being changed to a 538m-ring embankment with a nine and a half metre maximum water depth. Again, no information was supplied on the potential impacts from the proposal except that the flood-harvesting dam will interfere with Q5 ARI and higher flood flows in the Isaac River.

The submitted EIS has not adequately addressed the requirements of the TOR. In particular, the deficiencies of the submitted EIS with respect to the off-stream flood-harvesting infrastructure were:

- construction staging and timing;
- details of the impacts to the environment during construction;
- details of how impacts will be managed during construction; and
- assessment of any impacts to the hydrology of the flood plain due to afflux caused by the flood-harvesting dam in the flood plain.

The proposed off-stream flood-harvesting dam and pipeline are an integral component of the VCP and should have been adequately addressed by the submitted EIS.

#### *Adequacy of this section of the EM Plan*

The draft EM Plan relates to all mining activities on the proposed mining leases and this includes the construction of infrastructure within these areas. However, no details have been provided relating to the management of off-stream infrastructure associated with floodwater harvesting from the Isaac River during either construction, operational or decommissioning phases of the VCP. The draft EM Plan is deficient in this regard and should be amended.

#### *Assessment of information in this section of the EIS*

The draft EIS and Supplementary Report did not adequately address the potential sterilisation of resources by the off-stream flood-harvesting dam and associated water pipeline. However, a meeting in December 2004 between BBC and officers of NR&M and a subsequent written submission (Response Supplement) by BBC have satisfied NR&M's concerns with regard to this issue for the purposes of the EIS. This issue is discussed further in section 3.2.2 of this report.

#### Supplementary water supply

The draft EIS stated that sourcing of the supplementary water supply was being investigated from either Fairbairn Dam or Eungella Dam or both. The Supplementary Report stated that the final proposal was to purchase 1500MI of water per year (one third of the water requirements for the VCP) from Sunwater with the water sourced from the Eungella Dam. Furthermore, it was stated that Sunwater would construct an extension to the Eungella Pipeline Company pipeline from Moranbah to the VCP and that this proposed pipeline is to be approximately 70km in length. No further information was supplied in the submitted EIS.

The requirements of the TOR have not been adequately addressed by the submitted EIS as the information provided is insufficient to assess the potential impacts of the proposed supplementary water supply infrastructure and how the impacts would be managed.

The deficiencies of the submitted EIS were details on:

- proposed routes of the pipeline;
- the potential impacts associated with construction of the pipeline;
- how impacts will be managed during construction; and
- approvals required for the supplementary water supply pipeline.

The proposed supplementary water supply is an integral component of the VCP and should have been adequately addressed by the submitted EIS.

*Adequacy of this section of the EM Plan*

As the proposed supplementary water supply pipeline will not be located within the mining leases, the draft EM Plan submitted as part of the EIS is not required to cover the pipeline construction activities. Consequently, a separate EM Plan would need to be developed for the construction activities. This should have been noted in the VCP's draft EM Plan. In the submitted EIS, BBC placed the onus on Sunwater to develop and present for approval, the necessary impact assessment documents for construction of the pipeline to the mining tenement including an appropriate EM Plan to mitigate impacts that may occur.

*Assessment of information in this section of the EIS*

It will be necessary to assess the potential impacts of the proposed supplementary water supply pipeline through the Integrated Development Approval System (IDAS) and no certainty can be given to either BBC or Sunwater at this stage regarding the likelihood of obtaining the necessary approvals for the pipeline, nor what conditions would attach to any forthcoming approval.

Due to the lack of information in the submitted EIS on this issue, it is not known whether the construction of the pipeline will include any environmentally relevant activities for which the EPA would be a concurrence agency. However, it is recommended that the Assessment Manager refer the development application to the EPA, as an advice agency if not a concurrence agency, so that the role the EPA should have fulfilled during the EIS process can be completed.

**Recommendations:**

- 1) It is recommended that DPI&F be consulted over the final design of the instream flood-harvesting infrastructure.**
- 2) It is recommended that the EA include a condition requiring a water infrastructure management plan be provided to the administering authority at least 28 days prior to the commencement of any works on site. The plan must include the following items:**
  - a) the finalised design and construction details of the instream flood-harvesting infrastructure, off-stream flood-harvesting dam and associated water pipeline from the instream flood-harvesting infrastructure;**
  - b) details of the impacts due to construction of both instream and off-stream flood-harvesting infrastructure;**
  - c) details of the impacts to the Isaac River flood plain and downstream users because of the afflux caused by the dam in the flood plain; and**
  - d) details of how impacts will be managed during construction of the off-stream flood-harvesting dam and associated water pipeline.**
- 3) It is recommended that the EA include a condition that if the administering authority gives to the holder of the authority any comment on the water infrastructure management plan outlined in recommendation 2 within 21 days of receiving the documents, the holder of the authority must have due regard to those comments when constructing the off-stream flood-harvesting dam and associated water pipeline.**
- 4) It is recommended that the EA include a condition requiring that the Plan of Operations is consistent with the water infrastructure management plan outlined in recommendations 2 and comments (outlined in recommendation 3) provided by the administering authority.**
- 5) It is recommended that the application to NR&M under the *Water Act 2000* for the instream flood-harvesting infrastructure demonstrate that the disturbance area of the infrastructure is minimised to the smallest possible footprint of the infrastructure and maintenance areas.**

- 6) It is recommended that the EA include a condition that requires the water pipeline associated with the off-stream flood-harvesting dam to not impact areas of Endangered or Of Concern regional ecosystems.
- 7) It is recommended that the Assessment Manager for any development approval application(s) associated with the supplementary water supply pipeline include the following requirements in the information request to the proponent during the processing of the development application:
  - a) details of approvals required for the supplementary water supply pipeline;
  - b) details of the proposed route of the supplementary water supply pipeline;
  - c) details of the potential impacts associated with construction of the pipeline; and
  - d) details of how impacts will be managed during construction of the supplementary water supply pipeline.
- 8) It is recommended that the Assessment Manager for any development approval application(s) associated with the supplementary water supply pipeline provide the proponent's response to the information request (referred to in recommendation 7) to the EPA within two business days of its receipt.

Other conditions may be recommended by the EPA to the Assessment Manager of the IDAS application(s).

### 3.1.2 Rail requirements

*Adequacy of this section of the EIS against the TOR*

The TOR (sections 4.5.1 & 5.11.2) required the EIS to provide:

- an assessment of how the existing rail network would be affected;
- details of any proposed rail infrastructure;
- the potential impacts along the route of such infrastructure; and
- information on how any impacts would be managed.

The draft EIS provided a proposed alignment and this alignment was addressed in the document "*Additional Information Attachment 2 to the Department of Natural Resources and Mines*" (Response Supplement). However, the final alignment has not yet been confirmed.

The submitted EIS states the selection of the proposed rail spur alignment had regard to: avoiding areas of remnant Brigalow communities; access across the existing mining leases operated by BHP Billiton Mitsubishi Alliance (BMA); access to the Norwich Park line; powerline crossings; the chosen location for the Vermont Mine Industrial Area; and minimisation of costs.

The submitted EIS provided limited information on the details of the proposed infrastructure, stating that the design and construction of the rail spur would be undertaken as two packages with BBC acting as manager on behalf of Queensland Rail (QR) for the construction. The general construction works are to be undertaken by the same contractor that is developing the mine, whereas track laying, line electrification and signalling are to be carried out by experienced QR staff.

The requirements of the TOR have not been adequately addressed by the submitted EIS as the information provided in the submitted EIS is insufficient to make an assessment of the potential impacts along the route of the proposed rail infrastructure and how the impacts would be managed.

The deficiencies of the submitted EIS were:

- construction staging and timing;
- details of the approvals that will be for the construction of the proposed rail spur;
- details of the impacts to the surrounding environment and stakeholders along the rail alignment during construction and operation;
- how impacts will be managed along the rail alignment; and
- an assessment of the potential sterilisation of resources by the rail spur.

The proposed rail spur is an integral component of the VCP and should have been adequately addressed by the submitted EIS.

#### *Adequacy of this section of the EM Plan*

The submitted EIS stated that details have been expressly excluded from the EM Plan on the management of impacts associated with the development of the proposed rail spur. In the EIS the proponent has placed the onus on Queensland Rail to develop the following documentation for the construction and operation of the rail infrastructure loop:

- an environmental management plan (EMP);
- an environmental investigation risk management report (EIRMR);
- flood modelling and mapping for the Downs Creek crossing to determine pre-crossing and post-crossing flood levels; and
- the design of creek crossings that aim to minimise the impact on drainage flows in order to maintain the natural hydro-geological pattern of the project area, including flood effects at bridge and culvert crossings.

However, the EIS states that the formation and drainage works are likely to be undertaken by the mine contractor. The proponent is responsible for developing and presenting for approval the necessary impact assessment reports and environmental management plans for the construction phase. The approved environmental provisions should then be imposed by the proponent on the contractor through the contract.

While the rail spur will not be on a mining tenement, the EM Plan should as a minimum requirement alert the mining contractor to the location of a separate EM Plan for the spur construction. The draft EM Plan is deficient in this regard and should be amended.

#### *Assessment of information in this section of the EIS*

The submitted EIS made the commitment that all remnant regional ecosystems would be avoided by the final alignment of the rail spur except for the crossing of Downs Creek where a 60m by 300m corridor will be cleared to cross Downs Creek (a total area of 1.8ha). The regional ecosystems in this area include ecosystem 11.4.9 *Acacia harpophylla* shrubby open forest to woodland with *Terminalia oblongata* on Cenozoic clay plains that is listed as endangered under the *Vegetation Management Act 1999*.

Because the rail spur will not be on a mining lease, it will be subject to the *Vegetation Management Act 1999*. Ordinarily, clearing of vegetation subject to the *Vegetation Management Act 1999* would require a development approval under the *Integrated Planning Act 1997*. However, NR&M has indicated that clearing of vegetation for the rail spur would be exempt development under Part 1A(j), Schedule 8 of the *Integrated Planning Act 1997*, in which case a development approval would not be required. However, for the exemption to apply, the land must be gazetted as a rail corridor before any clearing occurs.

The submitted EIS did not adequately address the potential sterilisation of resources by the rail spur. However, a meeting in December 2004 between the proponent and officers of NR&M, and a subsequent written submission by the proponent, satisfied the requirements of NR&M with regard to this issue.

It will be necessary to assess the potential impacts of the rail spur through the Integrated Development Assessment System (IDAS). Consequently, at this stage no certainty can be given to the proponent regarding the likelihood of obtaining the necessary approval for the route proposed in the EIS, nor what conditions would attach to any forthcoming approval.

#### *Conclusions*

The construction of the rail spur would not be an environmental relevant activity. Consequently, the EPA would not be a concurrence agency. However, it is recommended that the Assessment Manager should refer the development application to the EPA as an advice agency so that the role the EPA should have fulfilled during the EIS process can be completed.

#### **Recommendations:**

- 9) It is recommended that the Assessment Manager include the following requirements in the information request to the proponent during the processing of the development application and that the proponent's response to the information request be provided to the EPA in time for the Agency to provide advice on the application:**

- a) a detailed description of the proposed rail spur including the number and types of track;
- b) designation under the local planning scheme;
- c) details of the approvals that will be for the construction of the proposed rail spur;
- d) construction details of the proposed rail spur including construction staging and timing;
- e) details of the impacts to the surrounding environment and stakeholders along the rail alignment during construction and operation;
- f) proposed arrangements for the acquisition and ownership of land needed for the rail corridor;
- g) how impacts will be managed along the rail alignment;
- h) an environmental management plan (EMP);
- i) an environmental investigation risk management report (EIRMR);
- j) flood modelling and mapping for the Downs Creek crossing to determine pre-crossing and post-crossing flood levels; and
- k) the design of creek crossings that aim to minimise the impact on drainage flows in order to maintain the natural hydro geological pattern of the project area, including flood effects at bridge and culvert crossings.

Other conditions may be recommended by the EPA to the Assessment Manager of the IDAS application(s).

### **3.1.3 Road requirements**

The TOR (sections 4.5.1 & 5.11.2) required the submitted EIS to provide an assessment of how the existing road network (including infrastructure) would be affected and details of any proposed new road infrastructure, the potential impacts along the route of such infrastructure and how any impacts would be managed.

The requirements of the TOR have been adequately addressed by the submitted EIS.

The workforce to be based in Dysart (construction and operational) is expected to generate 40 to 50 vehicles per day (each way) with most traffic related to travel at the commencement and end of each mining shift and mostly to Dysart. Furthermore, an increased incidence of oversize vehicle movements will occur on the Golden Mile Road and main roads connecting with this road, due to the delivery of plant and equipment and construction materials. Access for mine construction and operation materials will primarily be via the Peak Downs Highway to the Fitzroy Development Road (state controlled roads) to the Golden Mile Road from the Mackay area, with the mine accessed directly from the Golden Mile Road. After mine commissioning, all mine consumables (including dangerous goods) are to be delivered by road.

Main Roads raised concerns that the increased mine traffic was likely to cause an unacceptable impact on the pavement and road verges at the intersection of the Golden Mile Road with the Fitzroy Development Road and consequently cause an increase in road safety risk at the intersection. BBC made a commitment through the submitted EIS to enter into discussions with Main Roads to address these issues. However, Main Roads has advised the EPA that the required upgrade works must be completed prior to commencement of construction of the development to alleviate its concerns over the potential impact to the safety, efficiency and operating performance of the Fitzroy Development Road and the Golden Mile Road intersection.

The submitted EIS also identified that most employee-generated traffic will be between Dysart and the mine area. The Saraji Road, the Golden Mile Road and the Carfax Road are local government roads controlled by the Broadsound Shire Council (BSC) and impacts on these roads will be significant as the increase in the average annual daily traffic (AADT) is above the recognised 5% threshold for the roads. BBC made a commitment through the submitted EIS to enter into discussions with BSC to determine an appropriate contribution to road maintenance and upgrade, which will be provided by BBC for the BSC controlled roads.

## Recommendations:

- 10) It is recommended that the EA contain a condition that requires the following State controlled road upgrade works to be completed prior to submission of the first Plan of Operations for the mining activity to the administering authority:
- a) Upgrade the existing intersection of the Fitzroy Development Road (Dingo–Mt Flora) and Golden Mile Road to provide it with an Auxiliary Lane right (AUR) intersection and Basic Intersection left (BAL) layout for Golden Mile Road, in accordance with Main Roads' *Road Planning & Design Manual*, to a 100kph standard:
    - i) construct raised concrete kerbing on the inside of the left turn curves to make the intersection more visible;
    - ii) design the left turn radii of the BAL layout to accommodate B-double vehicles;
    - iii) supply and install additional road edge guide posts as required for the upgrading of this intersection; and
    - iv) provide “flag lighting” at this intersection to make the intersection more obvious at night.
  - b) Ensure that conceptual layouts (prepared by a pre-qualified engineering design consultant acceptable to Main Roads) for any works to be undertaken within State controlled road reserves are provided to Main Roads;
  - c) Provide or construct the above works, at no cost to Main Roads, using a contractor pre-qualified by Main Roads to a minimum Level R1 standard; and
  - d) Complete all intersection upgrading and associated works prior to any construction work commencing on the proposed development.
- 11) It is recommended that written confirmation of finalisation of the negotiations on contribution to road maintenance and upgrade for the BSC controlled roads between BBC and the BSC be supplied to the administering authority with the submission of the Plan of Operations for the mining activity.

### 3.1.4 Sewerage

The TOR (section 4.5.5) required details of proposed sewage treatment and disposal facilities, volume estimates of effluent that will be produced, the physical and chemical characteristics of such effluent and the proposed method of disposal.

The requirements of the TOR have been adequately addressed.

The submitted EIS stated that a package sewage treatment plant (STP) would be used for the management of sewage and general ablutions waste water generated by personnel in the mine industrial area, the CHPP and the train loadout. The system is to be based on a workforce of 100 persons per shift.

The STP to be used at the VCP is to be designed to produce a secondary treated effluent with the quality criteria consistent with “Guidelines for Reuse or Disposal of Reclaimed Water” issued by NR&M. The treated effluent is to be reused for dust suppression if sufficient volumes are available otherwise it will be allowed to evaporate in a small evaporation pond to be “designed and operated so that it never overflows”. Solids that accumulate in the STP are to be removed from the VCP by an adequately licensed technician/manufacturer and disposed of under the terms and conditions of the licence at a location removed from the VCP.

It is expected that the potential impacts of the sewage treatment system can be adequately managed under the proposed methodologies committed to in the draft EIS. However, the commitments have not been fully carried through to the draft EM Plan and these deficiencies should be rectified.

## Recommendations:

- 12) It is recommended that the EA contain a condition that requires the sewage treatment plant to produce a secondary treated effluent with quality criteria consistent with “Guidelines for Reuse or

### Disposal of Reclaimed Water” issued by NR&M.

- 13) It is recommended that the EA contain a condition that requires the solids that accumulate in the STP (including the evaporation pond) to be removed by an appropriately licensed regulated waste transporter and disposed of under the terms and conditions of the licence at a location removed from the VCP.
- 14) It is recommended that the EA contain the streamlined level 1 conditions C3-2 and C3-3 regarding sewage treatment.
- 15) It is recommended that the EA also contain the following modified streamlined level 1 condition C3-4:

*“Subject to Conditions (C3-1) to (C3-3) inclusive, secondary treated sewage effluent from sewage treatment facilities must be reused on the mining lease in a manner that would prevent its discharge off the lease, or evaporated in a dedicated evaporation pond.”*

## 3.2 Land

### 3.2.1 General

Section 5.1 of the TOR had requirements related to management of overburden material. The following sections of the TOR have particular relevance:

- Section 5.1.1.2: The EIS should provide a description...of the geology of the project area...with particular reference to the physical and chemical properties of surface and sub-surface materials and geological structures within the proposed areas of disturbance...[and] the geological properties that may influence...the quality of wastewater leaving any area disturbed by the proposal.
- Section 5.1.2.3: The EIS should describe...acid generation and saline impacts from mining activities.
- Section 5.5.2: [The EIS should describe] methods to prevent seepage and contamination of groundwater from stockpiles and/or dumps.

#### *The submitted EIS*

The main text of the draft EIS provided no data but rather gave brief overview of the characteristics of the overburden, roof, interburden and floor materials in the initial box cut mining area. Section 5.1.2 of the draft EIS stated that *‘pyrite appears to occur in pockets in the roof material overlying the Vermont Seam’*, but gave no more detail on occurrence. That section further stated that:

While the bulk spoil will not be an acid source, most of it will be a poor vegetation growth medium due to elevated salinity and sodicity. Therefore, spoil will be covered with topsoil as part of the rehabilitation program to limit the potential impact of these properties beyond the immediate area of the pit. By encouraging moisture infiltration, it is expected that salts below the redeveloping subsoil horizons will be transported into the body of the spoil.

That is, the proposed method for management of saline spoil is to cover it with topsoil, revegetate it and encourage it to leach.

Appendix 7 of the draft EIS contained the report written by B. Emmerton<sup>1</sup> on an investigation of overburden, roof, interburden and floor characteristics for the initial mining area of Lake Vermont. The report commented on the characteristics of material other than coal to be extracted and placed in the mine lease. The evaluated characteristics included acidity/alkalinity, salinity, sodicity, dispersivity, and the location, quality and quantities of potential acid forming materials (PAF). This study tested fifteen samples to determine the amount of PAF and the net acid generation (NAG) capacity. [NB: pyrite, a sulfide mineral, produces acid on oxidation, and the chemical oxidation of sulfur as pyrite provides the basis for deriving the amount of PAF and the NAG potential]

BBC determined that pyrite occurs in pockets in the roof material overlying the Vermont Seam, that similar material could also be present in the immediate floor of the Vermont Seam, and consequently some PAF material will occur in ROM coal, reporting to the rejects/waste stream. Appendix 7 stated *‘There does...appear*

<sup>1</sup> B.R. Emmerton Pty Ltd, March 2004. *Investigation of Overburden and Floor Characteristics for the Initial Mining Area of Lake Vermont – Potential Acid Production – Chemical and Physical Characteristics*

to be occasional areas of acid generation in carbonaceous material close to the coal seam and it is recommended that this material should not be placed on, or near, the surface of the recontoured spoil.' However, that recommendation was not carried over into the main text of the draft EIS. Furthermore, the submitted EIS concluded that the volume of PAF material '*is insignificant relative to the rest of the overburden material, which has a net neutralising effect. From the data, there does not appear to be any basis for concerns that PAF materials are present in significant volumes in the overburden*' (p50 Supplementary EIS).

With regard to other characteristics of the material to be excavated, Appendix 7 made the following statements:

'The recommendation of the most acceptable material for near surface material is difficult as all materials have some undesirable aspects and some materials were not tested.

The tertiary materials with no basaltic influence appear to have very poor salinity and physical [properties] and their inclusion as surface materials should be avoided.

The tertiary/quaternary materials with basaltic influence...were not tested but...[elsewhere have been]...prone to some piping and slumping where loosely consolidated.'

That report also noted that:

- the tertiary material is acidic, has very high chloride levels, extreme exchangeable sodium percentage and very poor physical characteristics;
- the weathered Permian materials have moderate to high salinity and chloride, high sodicity and relatively high dispersion;
- the fresh Permian materials are alkaline with moderate to high salinity, high chloride, very high sodicity and moderate to high dispersion.

With regard to acid neutralising capacity (ANC), Appendix 7 stated:

- the tertiary materials had low ANC being less than 2kg H<sub>2</sub>SO<sub>4</sub>/t on average;
- weathered Permian overburden and fresh Leichhardt/Vermont interburden (non roof material) had high levels of ANC 50kg H<sub>2</sub>SO<sub>4</sub>/t on average; and
- almost all other roof and floor material and fresh overburden above the Leichhardt seam had lower levels of ANC averaging less than 10kg H<sub>2</sub>SO<sub>4</sub>/t.

However, none of that information is discussed in the main text of the draft EIS with regard to the placement or management of the waste rock material.

The EM Plan reflects the conclusions stated in the submitted EIS and does not state any specific management measures for PAF materials or other spoil with undesirable characteristics.

The requirements of the TOR have not been adequately addressed by the submitted EIS as the information provided is insufficient to make a full assessment of the quality of geological materials to be disturbed, the potential impacts that may arise from their disturbance and how the impacts will be monitored, audited and managed.

#### *Assessment—Potential acid forming material*

The submitted EIS relies largely on experience elsewhere at the Moornvale and Coppabella mines to justify the paucity of sampling for PAF material. The assumption is that because other mines in the northern Bowen Basin have not had problems with acid generation then the Vermont project will not experience them. There are inherent risks in that assumption and the EIS does not propose any mechanism to test the assumption in any way. If the assumption is wrong then the first indication could be environmental harm from acidic leachate.

The EIS notes that pyrite occurrence is patchy, but 15 samples from only seven bore holes were analysed for sulfide and net acid generating potential. The EPA considers that is not a statistically significant number of samples for a project of this size. It is possible that such a small number of bores have by chance missed significant pockets of pyrite.

For comparison, the Moorvale project, cited by the proponent in the Supplementary Report as justification for the low numbers of samples, undertook sampling for PAF material at a relative sampling density (i.e. samples per tonne of material to be disturbed) approximately four times that undertaken in the Vermont EIS. Furthermore, the Clermont project in the northern Bowen Basin, which at the time of writing is undergoing an EIS, has undertaken sampling for PAF material at a relative sampling density approximately 15 times greater than the Vermont EIS and has included kinetic testing of materials in addition to the static tests of the type undertaken in the Vermont EIS.

The proponent ignored the advice not only from the EPA but also of their own report (Appendix 7) that additional sampling should be undertaken. The report in Appendix 7 stated (page 21):

The investigation has been carried out on a limited number of samples supplied to indicate where problem areas may or may not occur and some additional analysis on a broader range of samples should be undertaken to confirm the initial conclusions drawn.

The relatively low amount of sampling could have been mitigated by the proponent providing a plan to monitor for PAF during mining, but that was not done.

The Supplementary Report (page 24) recognises the potential for pyrite to be present and states:

...if PAF materials are identified during mining, standard best practice procedures will be adopted which will involve burying the materials in spoil. The excess acid neutralizing capacity of surrounding overburden will eliminate acid generation and escape of metals from the mined land.

However, the submitted EIS does not propose any method for identifying PAF or the acid neutralising capacity of other spoil material as it is extracted; nor does it propose any method for ensuring that PAF material is adequately placed with high acid neutralising capacity material; nor does it propose any monitoring of leachate to test the assumption that PAF material will not be a problem.

The management and placement of potentially acid generating rock materials and coal process wastes are inadequately described in the draft EIS and the draft EM Plan. The sequencing of waste disposal of problematic materials has not been described and the draft EIS does not demonstrate that excess acid neutralising material exists or would be available when required, namely at the time when oxidation would occur or in the same location. The net acid producing potential (NAPP) equation in the draft EIS is based on the simplistic maximum acid producing potential (MAPP) minus acid neutralising capability (ANC) to equal net acid producing potential (NAPP). While MAPP can overestimate the acid producing potential due to the assumption that all sulfur is available for oxidation, it also assumes that all of the neutralising ability is available, that it will be available at the same rate as acid is produced and that the neutralising material is homogeneously mixed with the acid producing material. Appendix 7 stated that some materials analysed have much higher ANC levels than others. Consequently, there is the potential that the oxidation of PAF materials may occur in areas that do not contain sufficient self-neutralising capacity and result in the mobilisation of metals and acid leachate to the receiving environment. That potential for impact could be mitigated by the development of management measures that would ensure PAF material was adequately placed with material of a sufficient high ANC to ensure no acidic leachate would leave the spoil dump.

#### *Assessment—salinity and sodicity*

As noted above, with regard to the management of the bulk spoil the EIS proposes only to cover it with topsoil and encourage it to leach. This ignores the advice of the consultant who prepared Appendix 7 that some material should not be placed on the surface and that further sampling should be undertaken of materials to be selected for surface placement.

Encouraging spoil with elevated salinity and sodicity to leach and mobilise the salts is not considered by the EPA to be best practice. The EIS has not assessed the potential impacts on shallow groundwater or surface water from dissolved salts leached from the spoil.

The EM Plan should propose a program that would rebury below ground level as much saline spoil as possible and manage spoil placed above ground in a manner that would minimise impacts from leachate.

#### *Conclusion*

In conclusion, the submitted EIS does not demonstrate that BBC has an adequate knowledge of the physical and chemical properties of surface and sub-surface materials of the geological structures within the proposed areas of disturbance nor how quantitative standards and indicators may be achieved, monitored, audited and managed. Consequently, the proponent should as a minimum requirement develop protocols for assessing spoil for PAF potential, ANC, salinity and sodicity as mining progresses. The proponent should also develop management protocols for the placement of spoil that minimise the potential for impacts due to either acidic or saline leachate from spoil dumps. It would be preferable, and is the primary recommendation, that the proponent undertake additional analysis of core samples before mining starts to provide additional information to assist the development of management protocols.

**Recommendations:**

- 16) It is recommended that the EA contain a condition that requires the development of a monitoring program that includes the following items:**
- a) a method of investigation of the physical and chemical properties of surface and sub-surface materials in the geological structures within the proposed areas of disturbance using the sampling regime and testing methodology detailed in recognised guidelines such as those issued by Environment Australia (1997)<sup>2</sup> or the USEPA (1994)<sup>3</sup> to demonstrate confidence in characterisation data for each geological unit;**
  - b) current “best practise” methods in predicting the acid forming potential of the waste materials over time;**
  - c) details of the proposed management protocols for the handling, storage and placement of any waste rock materials with PAF potential and/or high salinity or sodicity, and any PAF coal process wastes in accordance with “best practise” methods; and**
  - d) how BBC will ensure the reburial below ground level of as much saline spoil as possible and management of spoil placed above ground in a manner that would minimise impacts from leachate.**
- 17) It is recommended that the EA contain a condition that requires a detailed proposal for the monitoring program (outlined in recommendation 16) to be submitted to the administering authority at least 28 days prior to the commencement of the program.**
- 18) It is recommended that the EA include a condition that if the administering authority gives to the holder of the authority any comment on the monitoring program (outlined in recommendation 16) within 21 days of receiving the documents, the holder of the authority must have due regard to those comments when undertaking the program.**
- 19) It is recommended that the EA include a condition requiring that the Plan of Operations is consistent with the protocols developed for recommendation 16 and comments (outlined in recommendation 18) provided by the administering authority.**

**3.2.2 Resource sterilization**

The TOR (sections 5.1.1.4 & 5.1.1.5) required the EIS to provide details of studies and surveys undertaken to identify the coal resources within the Project area (including any areas underlying related infrastructure), a description of any part of the resource not to be mined and any part of the resource that may be sterilised by the proposed mining operations or infrastructure. The TOR also required that the EIS demonstrate that the mining proposal will ‘best develop’ the coal resources within the Project area, minimise resource wastage and avoid any unnecessary sterilisation of these or any other of the State’s coal, mineral, and petroleum resources that may be impacted upon or sterilised by the mining activities or related infrastructure.

The submitted EIS provided a review of the available geological and coal quality data demonstrating potentially economic resources within and surrounding the project area; and coupled with further drilling, geophysics and

<sup>2</sup> Environment Australia 1997. *Managing Sulphidic Mine Wastes and Acid Drainage Best Practice Environmental Management in Mining*

<sup>3</sup> US Environmental Protection Agency 1994. *Acid Mine Drainage Prediction, Technical Document*

testing, this information was used to generate a resource model for the VCP primary mining lease. This showed, from BBC's perspective that only the Leichhardt Seam, the Vermont Seam, and its splits are considered to be of commercial thickness and quality. The Phillips Seam and its splits, which overlie the Leichhardt Seam, are considered too thin and/or too dirty to have any commercial potential. Furthermore, that deep resources of PCI coal may occur below the proposed Vermont open cut mine, but these have yet to be evaluated and may never have prospects for eventual economic extraction. The submitted EIS stated that the mine has been designed to optimise utilisation of coal resources within the Vermont Coal Project area and that mine facilities, clean water and process water dams and the out-of-pit spoil will be located west of the crop of the Vermont Seam, above sediments of the non-commercial thickness or quality.

The requirements of the TOR have been adequately addressed by the submitted EIS.

NR&M advised the EPA during assessment of the draft EIS that BBC had provided a comprehensive overview of the geology units within the mine pit area and is considered to satisfactorily deal with resource utilisation aspects of the proposed open-cut coal mining project planned within ML70331. However, NR&M also advised that:

- (i) inadequate information had been provided in the draft EIS on the coal resources potentially affected by the rail spur and the water pipeline from the offstream flood-harvesting dam;
- (ii) further geological investigations within the area of the proposed rail spur was appropriate to ensure minimal impact on any potential coal resources within the area; and
- (iii) information was required on how BBC would respond to any future proposal to mine the coal resources under the pipeline once constructed.

#### Rail spur

The Supplementary Report identified that the proposed rail spur must cross potential open cut and underground resources of the Moranbah Coal Measures (MCM) held under ML 1782 by BMA and potential underground resources of the MCM held under EPC 837 by New Hope Coal. However, BBC were of the view that the rail spur would not sterilise underground resources as coal under the rail spur could be mined by longwall methods if deemed viable and if subsidence at the surface could not be managed the relocation of the rail spur was an option that would avoid resource sterilisation.

NR&M refuted the comments in the Supplementary Report regarding the sterilisation of underground resources by the rail spur. NR&M has advised that an electrified heavy haulage railway line of the nature proposed for the VCP *"most certainly does seriously encumber and potentially sterilise any resource that either underlies or lies adjacent to it, if only on the basis of what could generally be termed as 'economic grounds'"* and that the rectification example quoted supports the need to undertake investigative work prior to construction of any such railway line. These comments have been conveyed by NR&M verbally to BBC. A copy of NR&M's final response, which details why BBC's comments are refuted, is to be provided separately to BBC.

NR&M also advised the EPA that the response provided in the Supplementary Report to address the potential for the rail spur to sterilise coal resources was unacceptable, as it did not:

- (i) present the details of any existing relevant geological data, relevant facts and/or constraints regarding the route chosen; or
- (ii) provide any undertaking to acquire new geological data in order to address the issues raised by NR&M in order that an informed decision may be made regarding the nature and potential existence of coal resources.

However, the Response Supplement by BBC has now satisfied NR&M that BBC has very limited options for the rail route other than that proposed. As a consequence, NR&M considers that the proponent has examined all practical options available to them to determine a proposed rail route that best fits all of the existing on-ground constraints and is unable to avoid potentially encumbering and possibly sterilising potential resources of coal underlying and adjacent to the rail spur. Notwithstanding this, NR&M has advised that:

- (i) it is yet to determine whether the State and/or another third party should incur any consequential contingent liability regarding possible rectification and/or relocation works to this line; and
- (ii) this issue at the time of writing remains unresolved and is one of the infrastructure related matters which NR&M must further consider in respect of this project and discuss with the proponent as part of the *Mineral Resources Act 1989* approvals process.

NR&M has advised that further discussions will be held with BBC as part of the regulatory approvals process associated with the *Mineral Resources Act 1989* in regard to these matters and in addition to the potential for consequential contingent liability arising from possible rectification and/or relocation works of the proposed railway loop.

#### Water infrastructure

The Supplementary Report stated that BBC believed the water pipeline from the offstream flood-harvesting dam would not sterilise resources, as the pipeline could be relocated easily should Macarthur Exploration Pty Ltd decide to mine the shallow coal resources. BBC has advised that an agreement has been reached with Macarthur Exploration on a protocol for managing relocating the pipeline and that Macarthur Exploration Pty Ltd has agreed to the location of the flood-harvesting infrastructure.

NR&M advised the EPA that the response provided in the Supplementary Report to address the potential for this infrastructure to sterilise coal resources was also unacceptable as it did not:

- (iii) present the details of any existing relevant geological data, relevant facts and/or constraints regarding the route chosen; or
- (iv) provide any undertaking to acquire new geological data in order to address the issues raised by NR&M in order that an informed decision may be made regarding the nature and potential existence of coal resources.

NR&M advised the EPA that the Response Supplement has now satisfied their requirements, for the purposes of the EIS process, regarding the potential resource utilisation/sterilisation aspects of the project for this infrastructure. However, two outstanding issues that are outside the scope of the EIS process have been identified by NR&M regarding the proposed water infrastructure and need to be raised for the benefit of BBC. These issues are:

- (i) NR&M is not aware of the nature or terms and conditions of the commercial agreement between BBC and Macarthur Exploration Pty Ltd relating to the possible relocation of the pipeline should it be required in order to develop any underlying coal resources. NR&M questions the long term effectiveness and application of the commercial agreement reached with Macarthur Exploration Pty Ltd in terms of its long-term validity and application given the expected life of this project; and
- (ii) the potential separation of possible future projects to the north and south of the VCP as a result of the water pipeline being proposed on a mining lease. NR&M indicate that there is potential for this type of tenure to create severance and logistical/access issues for other possible future mine developments in this part of the Bowen Basin in the longer term.

#### *Conclusion*

NR&M have advised that further discussions will be held with BBC as part of the regulatory approvals process associated with the *Mineral Resources Act 1989* in regard to the outstanding matters listed above and in addition to the potential for consequential contingent liability arising from possible rectification and/or relocation works of the proposed railway loop.

#### **3.2.3 Pest management**

The TOR (section 5.7.2) required weed control strategies aimed at containing existing weed species and ensuring no new invasive weeds are introduced to the area to be developed for each stage of construction and operation of the project.

The draft EIS provided details of declared weed species found within the proposed mining leases. It was specifically noted that *Eriocerius martini* was recorded in most remnant and regrowth brigalow patches within and adjacent to, the proposed pit, and *Parthenium hysterophorus* was recorded as dense infestations in areas within and adjacent to the proposed pit. Vehicle wash-down facilities were proposed to prevent the spread of declared weeds combined with weed spraying as recommended by DPI&F to control invasion and regeneration of weeds.

The Supplementary Report expanded on pest management stating that a detailed pest management plan would be prepared prior to the commencement of mining operations.

#### *Assessment*

The requirements of the TOR have been adequately addressed by the submitted EIS.

Disturbances on site (including the mine access road, rail spur and flood-harvesting infrastructure) have the potential to transport pest species (such as *Parthenium hysterophorus*) around not only the VCP site but also offsite if the PMP is developed after construction of the mining infrastructure commences. Consequently, the PMP should be developed and implemented prior to any disturbances occurring in any of the VCP areas.

The EM Plan does not provide any advice on the development of the PMP and this deficiency should be rectified.

## Recommendations

**20) It is recommended that the EA contain a condition that requires a pest management plan be prepared (to the satisfaction of NR&M) and implemented prior to the commencement of any construction activities.**

**21) It is recommended that the EA include a condition requiring that the Plan of Operations is consistent with the pest management plan outlined in recommendations 20.**

## 3.3 Waste management

### 3.3.1 Hazardous dams

The TOR (section 5.3.2.1) required the EIS to detail the need or otherwise for licensing of any dams (including wastewater dams, previously called referable dams) under the *Water Act 2000* and the *Environmental Protection Act 1994*.

#### Assessment

The requirements of the TOR have been adequately addressed by the submitted EIS in providing sufficient information to assess the need for licensing of any dams at the VCP. However, the conclusions stated in the submitted EIS are incorrect as they were based on the ANCOLD hazard categories rather than the *Code of Environmental Compliance for Environmental Authorities for High Hazard Dams containing Hazardous waste* (the Code).

Basing conclusions on the ANCOLD assessment procedures, the draft EIS stated that none of the co-disposal, sedimentation, clean water or environmental dams required licensing under the *Water Act 2000* and only the proposed co-disposal dams required licensing under the EP Act as they were considered low hazardous dams.

The use of ANCOLD assessment procedures was inappropriate, as the ANCOLD hazard categories do not set the trigger criteria for regulating dams containing hazardous waste. They are used by engineers in selecting appropriate design criteria for dams and are different from the hazard categories used in the Code for regulating dams containing hazardous waste.

Review by the EPA of the wastewater collection system outlined in the draft EIS indicates that the co-disposal dams and the environmental dam will be 'high hazard dams containing hazardous waste'. The co-disposal dam will be a high hazard dam because it takes the coal rejects that will be the main sources of pyritic PAF material. The environmental dam will be a high hazard dam because it would receive overflow during major storm events and leakage from the co-disposal dams, and runoff from what the EIS describes as the dirty water catchment.

High hazard dams must be designed, constructed, operated and monitored in accordance with EPA requirements for 'hazardous dams' as described in the Code. The area containing the co-disposal cells must be recognised as a single high hazard dam within the EA as the network of co-disposal cells constitutes containment structures holding flowable substances and is therefore a dam. This network of cells must therefore also comply with the Code.

The design specifications stated in the submitted EIS for the VCP's environmental dam do not comply with the Code because the dam will be too small to hold the runoff volume required by the Code. The *Technical Guidelines for Environmental Management of Exploration and Mining in Queensland January 1995* (published by the then DME and available on the EPA website), provides the design requirement for high hazard dams as containing the total runoff for a full wet season for a nominated average recurrence interval (ARI). The dam specifications for the environmental dam must be for a 3 month wet season rainfall for better than a 1 in 10 ARI wet season.

The submitted EIS also states that water may be pumped from the environmental dam to the clean water dam or the sedimentation dams (p5.50 draft EIS). This practice would be unacceptable, because the clean water dam and sedimentation dams would also become high hazard dams in those circumstances.

Requirements of the Code include mandatory reporting to the EPA to determine if a controlled discharge may occur in the event that rainfall will exceed the design specification. If discharges are required, such discharges are assessed on a case-by-case basis and it would be preferable (based on the information to date) that the waters flow to the pit for temporary storage. Section 3.4 provides more detail on this issue.

The containment embankments around the cells of the co-disposal dam need to be engineered to ensure that they are fit for their intended purpose, and the construction materials will need to be geotechnically assessed to determine if they will be suitable. It is noted that the submitted EIS proposed that co-disposal material is to be used as a construction material for the containment embankments around the cells of the co-disposal dam. Experience elsewhere with such structures suggests that significant seepage may occur. It is appropriate in this case to use the ANCOLD guidelines in setting engineering standards for the design, construction, and operation and decommissioning of the dams (including internal containments) on the VCP.

The co-disposal materials are likely to be acid producing when they are leached, as coarse rejects contain pyritic material from within the coal measures. Consequently, the seepage from the co-disposal cells may be acidic. Good management practice requires that leaching be prevented as soon as possible once the materials are deposited. Common industry practise is that lime will be used in the wash plant producing a supernatant that is slightly alkaline. However, EPA experience shows that once the alkalinity is leached or otherwise consumed, the residues may further oxidise and produce acid. Consequently, progressive decommissioning, rehabilitation or other preventative actions to minimise the potential for environmental harm should be instigated.

The method of rehabilitation proposed in section 4.8 of the EIS for the co-disposal mounds is not likely to achieve the purpose of containment of potentially acid forming material. Current best practice for these structures is to install a multi-layer cap over the co-disposal areas to ensure that the flux of moisture and oxygen into the co-disposal material is minimized. Such a cap should contain a layer of low permeability material to effectively isolate the co-disposed material. The recognized conventional system of capping consists of:

- a capillary break layer (~150mm) for the suppression of osmotic movement of salts upwards; and
- a moisture barrier (~600mm) of low permeability material to prevent downward percolation of moisture; and
- an erosion resistant growth medium (~300mm for grass cover, thicker for woody weeds) for capture (but not transport) of a water store for sustenance of ground cover vegetation, or alternatively, in the case of no vegetation cover, an armour medium to prevent soil erosion.

The capping and rehabilitation of the co-disposal dam and the environment dam should be consistent with current best practise management techniques as outlined above.

#### **Recommendations:**

- 22) It is recommended that the EA contain the streamlined level 1 conditions C1-4 to C1-7 regarding hazardous dams and that these conditions refer to the final co-disposal dam network and the environmental dam listed in the submitted EIS as high hazard dams.**
- 23) It is recommended that the EA contain a condition requiring the VCP's environmental dam be designed and operated to contain the total runoff for a full wet season based on the highest consecutive 3 month rainfall with a 1 in 10 year ARI.**
- 24) It is recommended that the EA contain a condition requiring all high hazard dams to be designed and constructed under the supervision of a registered professional engineer Queensland (RPEQ).**

**25) It is recommended that the EA include a condition requiring the capping and rehabilitation of the co-disposal dam and the environment dam component of the Plan of Operations to be consistent with best practice management techniques and agreed rehabilitation objectives.**

### 3.4 Water resources

#### 3.4.1 Water management

The requirements of the TOR have been adequately addressed by the submitted EIS. However, the EPA does not concur with all the discharge locations, trigger events or discharge water quality criteria proposed in the draft EIS and detailed in the draft EM Plan.

The submitted EIS proposes that the environment dam would discharge to sedimentation dam 1 between Year 1 and Year 5 of mining operations for greater than 20 year ARI 24hr rainfall events. After Year 5, the environmental dam would either discharge to the clean water dam, or pit or spoil stockpiles. The submitted EIS also proposes that the Sedimentation Dams will discharge to the receiving environment during greater than 10 year ARI 24hr rainfall events.

The proposed quality criteria for discharge waters from the sedimentation and environmental dams are 5000mg/L total suspended solids (TSS), pH 6-8.5, and 5000mg/L total dissolved solids (TDS). A water monitoring program involving the establishment of monitoring points upstream of the project, on all watercourses (or ephemeral drainage lines) downstream of the project, in the clean water, environmental and both sedimentation dams was proposed to ensure that the target criteria were met.

#### Assessment

The EPA accepts that the sedimentation dams may release to the environment after greater than 10 ARI 24hr rainfall events. However, the EPA does not accept all the water discharge criteria proposed in the EIS.

The proposal to discharge water with a pH between 6 and 8.5 is acceptable, but the 5000mg/L limits for both TSS and TDS are not acceptable.

The EIS states that the discharges will meet beef cattle drinking water standards in the ANZECC 2000<sup>4</sup> guidelines. However, ANZECC 2000 states that TDS at concentrations of 5000mg/L can reduce the productivity of livestock and cause a decline in animal condition. There is no standard or trigger level recommended in ANZECC 2000 for TSS. In determining discharge criteria, it is appropriate to set TDS at a level below 5000mg/L in order to protect animal health and base both the TDS and TSS criteria on local environmental conditions and current practice in the mining industry.

Data on water quality in the Isaac River provided in the submitted EIS, and represented in Table 1 below, shows that the proposed maximum discharge criteria for TDS and TSS are considerably higher than the local average conditions and even higher than the maximum recorded values at the nearest gauging station at Deverill. Consequently, the proposed discharge criteria are inappropriate for protection of the receiving environment.

**Table 1. Water quality summary of the Isaac River**

Water quality Parameter	Isaac River		
	Min	Mean	Max
Conductivity (µS/cm)	79	311	1470
Total Dissolved Solids (mg/L)	47	186	842
Total Suspended Solids (mg/L)	5	637	3605

Note: conductivity can be used as a surrogate measure for salinity.

It is appropriate that the TSS release limits reflect the conditions of the Isaac River and the TDS limit at levels applying to other operations in the Bowen Basin. The EPA recommends a condition requiring the following discharge criteria should be entered in the draft EA:

<sup>4</sup> Australian and New Zealand Environment and Conservation Council, and the Agriculture and Resource Management Council of Australia and New Zealand – Australian and New Zealand Guidelines For Fresh And Marine Water Quality 2000

- (i) TDS (measured as conductivity) level of discharges is set at a maximum of 3000 $\mu$ S/cm based on the ANZECC guidelines and current practice in local mining activities; and
- (ii) TSS level of discharges is set at a maximum of 700mg/L based on the mean Isaac River TSS value plus 10%.

Given the nature of the spoil to be extracted from the mine, there is the potential for saline and colloidal runoff from spoil dumps. Therefore, BBC should develop spoil placement protocols to minimise such runoff to the sedimentation dams. The protocols should be included in the EM Plan. All sediment control structures (including the sedimentation dams) should be constructed to specifications in the “Soil Erosion and Sediment Control – Engineering Guidelines for Queensland Construction Sites” 1996 published by the Institution of Engineers, Australia, as committed to in the submitted EIS.

As stated in section 3.3.1, the discharge of waters from the environment dam to either the sedimentation dams or the clean water dam is unacceptable, as these dams would then also become high hazard dams. The environment dam must be designed to contain a 3 month wet season rainfall for greater than a 1 in 10 ARI wet season. The draft EA should include a condition requiring mandatory reporting to the EPA of a pending discharge from the environment dam. The EPA will then determine permissible discharge limits and locations appropriate to the conditions at that time. The draft EA should include a condition forbidding discharge from the environment dam without the determining of permissible discharge limits and locations by the EPA.

#### **Water management recommendations**

- 26) It is recommended that the EA include a condition for additional background surface water quality sampling in the Isaac River, prior to commencement of mining activities.**
- 27) It is recommended that the EA include a condition for ongoing water quality monitoring within the Isaac River up stream and immediately downstream of the Isaac River confluences with the ephemeral drainage lines which may be affected by mining operations.**
- 28) It is recommended that the EA include a condition requiring the mandatory reporting to the administering authority of the pending discharge of water from the environment dam.**
- 29) It is recommended that the EA include a condition requiring that discharge from the environment dam may only occur after determination of appropriate discharge limits and locations by the administering authority.**
- 30) It is recommended that the proposed EA condition C1-2 in the EM Plan be amended to require monitoring:**
  - a) within the environmental dam**
    - i) at quarterly intervals; and**
    - ii) prior to the commencement of any release; and**
    - iii) at intervals of 24 to 72 hours during the release period; and**
  - b) of the Isaac River at two points upstream and two points downstream of where runoff from the mine would enter the Isaac River**
    - i) prior to the commencement of any release from the environmental dam; and**
    - ii) at intervals of 24 to 72 hours during the release period; and**
    - iii) at intervals of 24 to 72 hours following cessation of the release period.**
- 31) It is recommended that the EA contain a condition stating discharges from the sediment dams may only occur after rainfall events of greater than 10 year ARI 24hr.**

- 32) It is recommended that the proposed EA condition C1-2 in the EM Plan be amended to contain the following end-of-pipe release limits for waters discharged from the sediment dams:
- a) Conductivity – 3000 $\mu$ S/cm;
  - b) Total Suspended Solids – 700mg/L; and
  - c) pH – Range of 6 to 8.5.
- 33) It is recommended that the EA contain a condition that requires that the design of sediment control structures is consistent with “Soil Erosion and Sediment Control – Engineering Guidelines for Queensland Construction Sites” 1996, published by the Institution of Engineers, Australia.
- 34) It is recommended that the EA contain a condition requiring all sedimentation dams to be designed and constructed under the supervision of a registered professional engineer Queensland (RPEQ).
- 35) It is recommended that the EA contain a condition that requires the upper surface of all out-of-pit spoil be internally drained with the construction of an array of ponds.
- 36) It is recommended that the EA contain a condition that requires the environmental dam to capture all runoff from the industrial area, including the CHPP and coal stockpiles.
- 37) It is recommended that the EA contain a condition that requires the construction of appropriate bunds and spill containment structures around all bulk reagent tanks and fuel tanks in accordance with AS 1940.
- 38) It is recommended that the EA contain a condition that requires removal of rainwater from bunded areas through the installation of drain valves and pipe work and that these waters are directed to the co-disposal sumps.

### 3.5 Air

The TOR (section 5.4.2) required a description of the existing air environment in the context of environmental values as defined by the *Environmental Protection Act 1994* and Environmental Protection Policies and the proposed levels of emissions during construction and operational conditions.

The requirements of the TOR have been adequately addressed by the submitted EIS.

The submitted EIS provided the objectives and practical measures for protecting or enhancing environmental values to air, how nominated quantitative standards and indicators would be achieved, and how the achievement of the objectives would be monitored, audited and managed.

The primary air contaminant from the VCP will be dust from general mining excavations and coal handling will be dust. The measures for avoiding nuisance from dust proposed in the submitted EIS are adequate.

However, the commitments of the submitted EIS have not been fully carried through to the EM Plan and the performance requirements stated in the submitted EIS are slightly less stringent than the EPA’s streamlined level 1 condition requirements. No justification has been provided for a variation from the streamlined level 1 condition requirements, and consequently the EPA does not accept any variation from the streamlined level 1 conditions in this instance.

#### Recommendations

- 39) It is recommended that the EA contain the streamlined level 1 conditions (B1-1) to (B1-4) and (B2-1) to (B2-3) requiring the company to maintain acceptable air quality.

### 3.6 Nature conservation

#### 3.6.1 Terrestrial flora

The TOR (section 5.7.1) required a description of the vegetative environmental values of nature conservation for the affected area in terms of the integrity of ecological processes, conservation of resources, biological diversity

of terrestrial floral ecosystems. Section 5.7.2 of the TOR also required that the EIS describe practical measures for protecting or enhancing nature conservation environmental values, and any mitigation measures to be proposed for adverse impacts.

The proposed mining lease and adjacent lands have been subjected to a history of vegetation clearing; pasture improvement, agricultural cropping and cattle grazing. However, the VCP site still supports areas of both “regrowth” and “remnant” vegetation defined as endangered under the *Vegetation Management Act 1999* (VM Act) that have substantial environmental value.

The submitted EIS adequately addressed the TOR in its description of the floral values of the mine site and the impacts on them, but was inadequate in other parts. In particular, the submitted EIS has not adequately addressed the requirements of the TOR for the following items:

- flora studies did not examine the area potentially impacted by the flood-harvesting infrastructure;
- adequate mitigation measures and/or offsets were not proposed for adverse impacts at either the mine site or flood-harvesting infrastructure; and
- the departure from no-net-loss of ecological values was not described.

The following sections address impacts on vegetation in the mine site and areas that would be affected by the flood-harvesting infrastructure. Impacts on vegetation by the proposed rail spur have been addressed in Section 3.2.1.

#### *Mine site*

Four regional ecosystems listed under the VM Act comprising 146ha of remnant vegetation were identified within the proposed pit’s mining lease by the submitted EIS. Three of these REs are listed as Endangered and the other REs is listed as Of Concern under the VM Act. 646 hectares of regrowth REs were also identified within this mining lease.

Remnant and regrowth brigalow communities were located both within and adjoining the proposed pit’s mining lease and the submitted EIS stated that these communities were in various states of decline. The vegetative mapping of this mining lease indicates direct losses of at least 10.4ha in total of the following remnant brigalow communities (each listed as Endangered) will occur due to their presence within the proposed pit boundaries:

- 11.4.8 – *Eucalyptus cambageana* woodland to open forest with *Acacia harpophylla* or *A. argyrodendron* on Cainozoic clay plains; and
- 11.4.9 – *Acacia harpophylla* shrubby open forest to woodland with *Terminalia oblongata* on Cainozoic clay plains.

Other areas within the proposed pit’s mining lease support the Endangered ecosystem 11.4.13 – *Eucalyptus orgadophila* open-woodland on Cainozoic clay plains, which is associated with ephemeral drainage lines in the south of the VCP site. The areas supporting 11.4.8, 11.4.9 and 11.4.13 are listed as of State Significance under the EPA’s Biodiversity Assessment and Mapping Methodology (BAMM) 2002.

The draft EIS states that both remnant and regrowth vegetation communities not disturbed by mining activities could recover ecological values with specific management programs and that BBC would investigate the inclusion of these communities in a Nature Conservation Agreement.

Both EREs 11.4.8 and 11.4.9 that are within the proposed pit boundaries also fall into the ‘brigalow community’ (*Acacia harpophylla* dominant and co-dominant) listed as a threatened (endangered) ecological community under the EPBC Act. The project has not been referred to the Commonwealth Department of Environment and Heritage.

In addition to these direct losses of EREs from the proposed pit area and that discussed in section 3.1.2 of this report, there is the likelihood that other areas of these and other remnant REs in areas that will not be directly disturbed by mining could nevertheless be indirectly impacted by edge effects from VCP activities within the proposed mining leases.

#### *Flood-harvesting infrastructure*

The flora studies of the submitted EIS did not examine the mining lease for the flood-harvesting infrastructure except as part of the aquatic ecology study which noted that REs were likely to be present along the Isaac River.

The regional ecosystem database indicates that the flood-harvesting water pipeline will impinge on the following remnant ecosystems:

- *Eucalyptus populnea* and/or *E. melanophloia* and/or *Corymbia clarksoniana* on Cainozoic sand plains/remnant surfaces (11.5.3, Not of concern);
- *Eucalyptus coolabah* fringing woodland on alluvial plains (11.3.37, Not of concern); and
- *Acacia harpophylla* and/or *Casuarina cristata* open forest on alluvial plains (11.3.1, Endangered).

Before submitting the revised EM Plan the proponent should undertake studies to confirm what vegetation would be impacted by the flood-harvesting infrastructure. If those studies indicate that vegetation with significant values will be impacted, the revised EM Plan should propose measures to mitigate those impacts, preferably by avoidance.

#### *Mitigation of impacts*

The draft EIS proposes that “native vegetation, including regrowth and remnant communities, disturbed by the mining activities will be rehabilitated with species compatible with the vegetation communities and land zones of the study site and that native rehabilitation focus on the retention and enhancement of corridors across the study site” (p5.89). However, the draft EIS provided limited information on the proposed species and methods of revegetation, and rehabilitation success criteria in both the draft EIS and draft EM Plan were vague. BBC was requested to provide the missing information in the Supplementary Report but declined.

The clearing of native vegetation in Queensland is regulated under the VM Act through the Integrated Development Approval System (IDAS) unless it is exempt development. All aspects of development for a mining activity to which an environmental authority (mining activities) under the *Environmental Protection Act 1994* applies is exempt development under Schedule 9 of the *Integrated Planning Act 1997*. On mining tenements, the determination of allowable impacts to native vegetation communities associated with mining projects is based on the recognised environmental values of the communities and the measures proposed to mitigate impacts on them.

The TOR (p28) stated, “Mitigation measures and/or offsets should be proposed for adverse impacts. Any departure from no-net-loss of ecological values should be described”. In the EIS, BBC raised the possibility of entering into a Nature Conservation Agreement over those areas not to be disturbed by mining activities. However, this was not carried through into the draft EM Plan, nor was any other form of mitigation proposed.

The EPA supports the proposal for BBC to enter into a Nature Conservation Agreement over those areas not to be disturbed by mining activities and considers that would adequately address the potential impacts on those areas. With regard to the loss of endangered regional ecosystems, the EPA considers that the proponent has not done enough to propose offsets for the loss of that habitat. The EPA would accept as adequate mitigation the establishment of an area at least equal to that of cleared EREs in which *Acacia harpophylla* and *Casuarina cristata* are planted together with other suitable endemic native plants. That area of regrowth should be established as part of the progressive rehabilitation of the mine site. Rehabilitation of the VCP post mining is discussed further in Section 3.10.2 of this report.

#### **Recommendations:**

**40) It is recommended that the EA include a condition requiring a terrestrial flora impact mitigation plan be provided to the administering authority within two years of the commencement of mining activities. The plan must include the following items:**

- a) adequate mitigation measures and/or offsets proposed for adverse impacts, including Nature Conservation Agreement(s) for undisturbed areas and plantation(s) representative of the existing Brigalow communities;**
- b) a description of how the objectives will be monitored, audited and managed; and**
- c) a description of any departure from no-net-loss of ecological values for the VCP.**

**41) It is recommended that the EA include a condition that if the administering authority gives to the holder of the authority any comment on the mitigation plan (outlined in recommendation 40) within 21 days of receiving the documents, the holder of the authority must have due regard to those comments when undertaking the program.**

- 42) It is recommended that the EA include a condition requiring that the Plan of Operations is consistent with the terrestrial flora impact mitigation plan outlined in recommendations 40 and comments (outlined in recommendation 41) provided by the administering authority.
- 43) The EM Plan should be amended to address the necessary requirements (outlined above) associated with mitigating impacts on vegetation.

### 3.6.2 Terrestrial fauna

The TOR (section 5.7) required a description the faunal environmental values of nature conservation for the affected area in terms of the integrity of ecological processes, conservation of resources, biological diversity of terrestrial fauna.

#### *The Submitted EIS*

The submitted EIS stated that the fauna habitats of the proposed mining leases have been subjected to repeated and extensive disturbance over many decades and that the combination of vegetation clearing, pasture improvement, introduction of introduced plants and animals, and cattle grazing have resulted in a mosaic of highly modified and simplified habitats for terrestrial vertebrate fauna.

The fauna surveys undertaken at the mining leases consisted of a literature search combined with 32 generalised ground searches within the main habitat types and approximately 40km of transects over a three-day period. The recorded faunal assemblage at the mining leases was considered relatively sparse in terms of species richness and diversity because the work was done during a drought and therefore the number of species detected could be low.

An assessment of the aquatic fauna in the Isaac River was limited to a desktop study as no flows were occurring in the area of the instream flood-harvesting infrastructure at the time the draft EIS was being produced.

#### *Assessment*

The requirements of the TOR have not been adequately addressed by the submitted EIS because fauna surveys were not undertaken along the proposed rail spur, flood-harvesting infrastructure mining lease or supplementary water supply corridors. Further deficiencies were that: key fauna indicators for future ongoing monitoring were not identified; and measures to mitigate environmental harm to habitat or the inhibition of normal movement, propagation, or feeding patterns of fauna were not described.

These deficiencies may have been avoided if the consultant had complied with the final TOR, which specifically stated “*the EPA should be consulted on the scope of any biological studies before they are undertaken*” (p26). However, no consultation was undertaken with the EPA regarding the appropriateness or acceptability of proposed fauna surveys prior to their undertaking at the VCP.

As a result of the deficiencies in the EIS, the draft EM Plan is also deficient because it does not make any commitment to undertake ongoing monitoring of key fauna indicators during operation of the VCP or during decommissioning.

#### *Conclusion*

The submitted EIS does not demonstrate that BBC has an adequate knowledge of the faunal environmental values for the areas affected by the VCP nor how impacts to these values may be monitored, mitigated and managed.

#### **Recommendations:**

- 44) It is recommended that the EA contain a condition requiring a follow-up survey (in a manner to be agreed with by the EPA) be undertaken during more productive times to identify key fauna indicators in all areas to be disturbed as part of the VCP; and
- 45) It is recommended that the EA contain a condition requiring ongoing monitoring program (in a manner to be agreed with by the EPA) during construction, operational and decommissioning phases of the project of key fauna indicators that were identified through the follow-up survey outlined in recommendation 44.

**46) The EM Plan should be amended to address the requirements associated with mitigating impacts on fauna, particularly where mining activities will impact on existing corridors for faunal movement.**

### **3.7 Cultural heritage**

The TOR required the EIS to provide a cultural heritage study that described indigenous and non-indigenous cultural heritage sites and places, and their values. Furthermore, a cultural heritage management plan (CHMP) is required to be developed specifically for the project to address any environmental harm to cultural heritage values near the project.

An indigenous cultural heritage study for the project site was conducted for VCP in November 2003. Discussions between the BBC and the Barada Barna Kabelbara Yetimarala people (BBKY) resulted in a negotiated Cultural Heritage Management Plan that was signed by both parties on 5 March 2004. The CHMP has been lodged with NR&M. The conclusions of the indigenous cultural heritage study were provided as a separate confidential report.

A study of the post-contact European historical literature study of the central Queensland region was undertaken and no significant items of European heritage or structures or historical interest were identified within the project site.

The requirements of the TOR have been adequately addressed by the submitted EIS, subject to the implementation of the cultural heritage management plan.

### **3.8 Social**

The TOR (section 5.9.2) required an assessment of the impacts from both construction and operational workforces and associated contractors on housing demand and the capability of the existing housing stock, including rental accommodation, to meet any additional demands in Dysart and surrounding towns because of the project.

The requirements of the TOR have been adequately addressed by the submitted EIS.

With regard to potential impacts, the submitted EIS provided details of the expected numbers and status of employees involved in both the construction and operation phases of the project. The submitted EIS also indicated that there is limited opportunity for the private purchase or rental of houses in the Dysart area but that housing in an existing single persons “accommodation centre” may be available. However, it is BBC’s intention that accommodation will primarily be the responsibility of the contractor and if accommodation is not available in the existing “accommodation centre”, the alternative is to establish another accommodation centre.

Assessment of the information provided in the submitted EIS indicates that social impacts could arise from the project due to a shortfall in accommodation. However, it is understood that the Broomsound Shire Council has agreed to address matters associated with housing, accommodation and land availability in the Dysart township with BBC and other commercial stakeholders outside of the EIS process.

Consequently, the EPA has no recommendations regarding the management of social impacts.

### **3.9 Hazard and risk**

The TOR (section 5.13.2) required details of the potential impacts of both natural and induced emergency situations and counter disaster and rescue procedures as a result of the proposal, an inventory for each class of substances listed in the Australian Dangerous Goods Codes to be held on-site and an integrated risk management plan for the whole of the life of the project including construction, operation and decommissioning phases.

#### *The Submitted EIS*

The submitted EIS provided an environmental risk assessment with reference made to the Australian/New Zealand Standard on Environmental management systems – General guidelines on principles, systems and supporting techniques (AS/NZS ISO 14004:1996). However, very limited information was provided on the proposed management techniques. The Supplementary Report made the commitment to develop an Emergency Response Plan prior to significant mining or construction activity at the site but after the mine lease is granted and the principal contractor has been engaged by BBC.

No commitment to provide the outstanding information or emergency response plan has been carried through to the EM Plan.

#### Assessment

The requirements of the TOR have not been adequately addressed by the submitted EIS as the information provided in the submitted EIS is insufficient make an assessment of the potential impacts, the quantitative standards and indicators that are to be achieved for hazard and risk management, and how the achievement of the objectives will be monitored, audited and managed.

The submitted EIS was deficient in the following areas:

- an inventory for each class of substances listed in the Australian Dangerous Goods Codes to be held on-site;
- safeguards proposed on the transport, storage, use, handling and on-site movement of the materials to be stored on-site;
- the capacity and standard of bunds to be provided around the storage tanks for classified dangerous goods and other goods likely to adversely impact upon the environment in the event of an accident; and
- the procedures to prevent spillages, and the emergency plans to manage hazardous situations.
- an integrated risk management plan for the whole of the life of the project including construction, operation and decommissioning phases.

The submitted EIS provided limited information on chemicals and other matters of each class of substances listed in the Australian Dangerous Goods Codes to be held on-site stating that “*relevant information on all substances used in the industry including chemical composition, handling precautions, specific and general hazards and emergency response details is on the public record and responsible manufacturers routinely update information*” (p5.117 draft EIS). It was acknowledged that potentially hazardous substances to be used on the site include diesel fuel, explosives and related materials, flotation and other reagents used in the CHPP and substances used for maintenance and support activities. However, no details of which substances would/could be stored on site were provided except for references throughout the submitted EIS that substances would be similar to other coal mines in the Bowen Basin area and emergency services personnel would have access to this information.

The EIS justified not providing this information by stating: “*the proposed mining and coal processing activities for this project are the same as those commonly used within the Bowen Basin coal mining industry. Proven management techniques that are applied elsewhere within the industry will be applied to this project*” and “*as BBCL will be ultimately responsible for the operation and their activities, contractors will be subject to company directives and policies. It will be in the interests of both BBCL and contractors to ensure that best practice management is applied to the storage, handling and use of such substances*” (p5.116 draft EIS). The EPA acknowledges that a definitive listing of all chemicals/reagents that will be used/stored at the site may not be possible due to the potential changes in practices between when the EIS is produced and commencement of construction and mining operations. However, where specific substances are required with the methodologies being proposed for the VCP, then these substances and their quantities to be stored on site can and should be detailed in the EIS. Reference such as “those substances that are commonly used in the mining industry” is not considered acceptable as the EIS is intended to be a stand-alone document (EPA 2003)<sup>5</sup> with all known environment risks being detail so that appropriate decisions and recommendations can be made by the proponent, affected groups and regulatory agencies.

#### Conclusion

BBC has not appropriately addressed the management of hazards and risk at the proposed VCP or how these issues are to be audited and mitigated.

#### Recommendations:

**47) It is recommended that the EA contain a condition that requires an emergency Response plan be prepared (to the satisfaction of the Department of Emergency Services) and implemented prior to the commencement of any construction activities.**

<sup>5</sup> EPA Guideline – Preparing terms of reference and environmental impact statements, 2003

48) It is recommended that the EA include a condition requiring that the Plan of Operations to be consistent with the Emergency Response Plan outlined in recommendation 47.

### 3.10 Rehabilitation and decommissioning

#### 3.10.1 Final voids

The requirements of the TOR have been adequately addressed by the submitted EIS.

Although the draft EIS contained minimal discussion on the final voids, the issue was addressed more fully in the draft EM Plan. Contaminants in the void water are expected to preclude its use for rural purposes and final levels will depend on the exposed surface area of the water body and pit inflows. It was proposed that a void hydrology study would be undertaken to assess the long term water balance once all the variables are known.

#### Recommendations:

49) It is recommended that the EA contain the following modified streamlined level 1 condition C3-4:

***(F2-2) Complete an investigation into residual voids and submit a report to the Administering Authority proposing acceptance criteria to meet the outcomes in (F2-1) and landform design criteria in Schedule F – Table 3 within 5 years from first coal rail out.***

#### 3.10.2 Post-mine land use

The TOR (sections 4.8 and 5.1.2) required that the EIS provide the strategies and methods for progressive and final rehabilitation of the environment disturbed by the proposal. Furthermore, this included the requirements that:

- progressive and final rehabilitation of disturbed areas should demonstrate compliance with the objectives of the *1991 Environmental Management Policy for Mining in Queensland* (or updates as they become available);
- disturbed land should be rehabilitated to a condition which is self-sustaining, or to a condition where the maintenance requirements are consistent with an agreed post mining land use, and
- details on the consolidation, revegetation, and monitoring proposed during decommissioning. Consideration should be given to the use of threatened plant species during any landscaping and revegetation.

The requirements of the TOR have not been adequately addressed by the submitted EIS as the information provided is insufficient make an assessment of the quantitative standards and indicators that are to be achieved for the VCP during decommissioning and rehabilitation.

The deficiencies of the submitted EIS were:

- the rehabilitation outcomes for vegetative communities have not been clearly outlined and those described are not representative of best practice;
- insufficient information has been provided to demonstrate landform stability can be achieved for the proposed post-mining land use.

The submitted EIS provided the expected final topography of excavations, waste areas and industrial sites within the proposed pit's mining lease. The topographical design parameters include a maximum vertical height of 50m for the elevated landform but no final depth of the residual voids was reported.

The submitted EIS also stated those areas significantly disturbed by mining operations would be "rehabilitated to establish a permanent, stable, self sustaining vegetation complex based on pasture species complementing a cattle grazing post mining land use, and where the immature landform may require additional protection from erosion a nature conservation ecosystem based on native species will be established".

Limited information was provided on the proposed revegetation methodology, including species selection. The draft EIS did however acknowledge the need for establishment trials and ongoing management to achieve a self-regenerating ecosystem.

No strategies were proposed for the management of the various qualities of spoil (with regard to salinity, erosion potential, etc.) in ways that would maximise the success of rehabilitation.

Comments from the EPA on the draft EIS stated that the objective and values of the nominated post-mining landscape were not clearly defined in the draft EIS. Furthermore, the re-establishment of representative regional ecosystems (not just “native species”) and functioning habitat and that specific revegetation performance descriptors should have been formulated and implemented.

The Supplementary Report rejected EPA’s comments, instead stating that the draft EIS and draft EM Plan describe rehabilitation best practice as it applies to the VCP and that details on the objectives, standards and criteria to be achieved by the rehabilitation and decommissioning programs during and at the end of the mine life are adequate.

The VCP currently includes the destruction of remnant endangered regional ecosystems (as stated in section 3.6.1 of this report) without providing any commitment to the re-establishment or protection of similar ecosystems within or externally to the proposed mining leases through their rehabilitation program.

The post-mining landscapes have not been clearly defined, as the nominated standards have been restricted to “70% coverage of native/pasture species”. Specific revegetation performance descriptors should have been formulated and commitments made to re-establishing representative regional ecosystems and functioning habitat. For example, an acceptable commitment would have been “rehabilitated areas are to display characteristics of the pre-mining vegetation and have similar habitat value”. Furthermore, the post mining land use essentially ignores reference to fauna habitat values of premining remnant vegetation.

BBC responded to the EPA comments on the draft EIS stating that although there should be a demonstrated high probability that within 20 years rehabilitated areas will display characteristics of a functioning ecosystem with significant habitat values, it is not possible to restore the same regional ecosystem on mined land to what existed prior to mining. The BBC also stated that NR&M’s acknowledgement that there would be a downgrading of land suitability for grazing and cropping could be extrapolated to a downgrading of other landscape and ecological parameters on the post-mining landform. The EPA acknowledges that an identical ecosystem cannot be restored. However, a similar ecosystem can be restored over time so that it provides similar habitats suitable to endemic species that use the ecosystems to be disturbed. This is acknowledged by the best practice aspects such as restoring functional nominated ecosystems using native seed material of local provenance. The EREs to be disturbed by the mining activities are predominately brigalow communities that are known to grow well on suitable soil types. Consequently, the EPA does not accept BBC’s position.

NR&M raised concerns that the proposed final landforms are not in accordance with the Queensland Mining Guidelines<sup>6</sup> which state “*Mine rehabilitation should generally seek to return disturbed areas to at least the same status*”. Both the EPA and NR&M acknowledge that it is impossible to completely achieve this objective. However, as much of the disturbed land as possible should be rehabilitated to enable productive or beneficial post mine land use which will minimise the permanent loss of productive agricultural land, natural areas and enable long term land maintenance costs to be minimised. This has not been demonstrated by the submitted EIS nor committed to in the draft EM Plan.

The stability of the final landform at the end of mining operations is critical to the successful rehabilitation of the site. Industry best practice involves achieving landform stability and final cover performance over extended time scales. However, the proponent does not commit to any such design timeframe and no information (such as modelling and comparison with other sites with similar material properties) has been provided that demonstrates how the proposed nominated standards for the final landform (including final voids) will contribute to landform stability.

Long-term geotechnical stability should be maintained within the standards of the EA, dependent on the geomorphology of the surrounding landform and the proposed post-mining land use. The design and safety of the final landform should be suitable for the end land use. However, the submitted EIS has not provided any supporting information for the nominated standards and hence, no assessment of their appropriateness can be made at this time.

The draft EM Plan details the majority of rehabilitation and decommissioning commitments to the nominated standards made by BBC. However, the following commitments detailed in the submitted EIS have not been carried through to the draft EM Plan:

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<sup>6</sup> *Environmental Management Policy for Mining in Queensland 1991*

- the progression of a Nature Conservation Agreement proposed by BBC over areas of the ML not being disturbed by mining activities;
- development of appropriate rehabilitation and revegetation approaches for remnant vegetation to be disturbed by mining activities; and
- establishment of appropriate rehabilitation and revegetation trials and an ongoing maintenance program until the rehabilitated ecosystems becomes self-regenerating

Consequently, rehabilitation outcomes for post mine landform stability have not been clearly specified in the EM Plan and do not encompass best practice.

#### **Recommendations:**

- 50) It is recommended that the EA contain a condition that requires a geotechnical and erosivity assessment of the proposed final landforms (including final voids) is undertaken to demonstrate long-term landform stability by a registered professional engineer of Queensland (RPEQ). Reference should be made to the Queensland Mining Guidelines.**
- 51) It is recommended that the EA include a condition requiring that the EM Plan and Plan of Operations to be consistent with the geotechnical and erosivity assessment outlined in recommendation 50.**
- 52) It is recommended that the EA include a condition requiring that the Plan of Operations is consistent with the objectives of the 1991 *Environmental Management Policy for Mining in Queensland* for progressive and final rehabilitation of disturbed areas.**
- 53) It is recommended that the EA include a condition requiring an investigation into rehabilitation of disturbed areas be completed and a report submitted to the administering authority proposing acceptance criteria within 5 years of commencement of mining. This investigation must consider the re-establishment of representative regional ecosystems and functioning habitat of areas equal to or greater than areas to be cleared. Specific revegetation performance descriptors (e.g. rehabilitated areas are to display characteristics of the existing (pre-mining) regional ecosystems) should be included.**

#### **4. Adequacy of the EM Plan for the project**

A draft EM Plan was included with the draft EIS that was released for public notification. A number of submissions on the draft EIS raised issues that required amendments to the draft EM Plan and many of these amendments were agreed to by BBC in the Supplementary Report. The EPA has reviewed the amendments to the draft EM Plan agreed to by BBC but considers that the recommendations outlined in this EIS Assessment Report should also be fully integrated into the EM Plan before the document would be acceptable. In its present form the EM Plan is not considered to be adequate.

#### **5. Suitability of the project**

Project issues and recommendations were outlined in Section 3 above. The EPA has considered the final TOR, the submitted EIS, all submissions on the submitted EIS, and the standard criteria. Despite the large number of areas where the TOR were inadequately addressed, the submitted EIS and supplementary information have not identified impacts of sufficient magnitude to prevent the project from proceeding. However, the recommendations of this EIS Assessment Report should be fully implemented.

**Disclaimer:**

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

**6. Approved by**

Signed by G O'Connor

Signature

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27 January 2005

Date

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