

Assessment Report under the
Environmental Protection Act 1994

on the

Environmental Impact Statement

for the

Poitrel Coal Mine Project

proposed by

BHP Mitsui Coal Pty Ltd

November 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 Poitrel Coal Mine Project proposed by BHP Mitsui 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 to:

- (a) summarise key issues associated with the potential adverse and beneficial environmental, economic and social impacts of the Poitrel Coal Mine 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.

Section 58 of the EP Act lists the criteria that the EPA must consider when preparing an EIS assessment report, while section 59 of the Act states what the content must be. 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 provides a summary and assessment of the key issues identified through the EIS process, and discusses in greater detail those issues of particular concern that were either not resolved or required specific

conditions for the project to proceed. With regard to conditions, the EPA has developed a basic set that would typically apply to a level 1 non-code compliant mining lease. Those are referred to in this report as the streamlined level 1 conditions. Those conditions will be applied to the draft environmental authority (mining activities) (EA) for the Poitrel Coal Mine 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

BHP Mitsui Coal Pty Ltd (BMC) is the proponent for a new coal mine project known as the Poitrel Coal Mine Project (Poitrel Project).

The proposed Poitrel Project would be located 35km east south-east of the township of Moranbah, largely within Nebo Shire, partially within Broadsound Shire and directly north of Belyando Shire in central Queensland. Moranbah is a small town with a population of around 8,000 located approximately 25km west north-west of Coppabella and approximately 115km south-west of Mackay.

BMC proposes to manage the Poitrel Project as a contractor operated open cut mine producing up to 5Mt per annum (Mtpa) of ROM coal, processing an average of 3400 tonnes per hour (tph) at the Millennium CPP to provide up to 3.4Mtpa of product coal for export for at least 20 years.

The Poitrel Project deposit consists of a 79 million tonne (Mt) resource within the Leichhardt and Vermont seams of the Rangal coal measures in the Bowen Basin coal province. The deeper Fort Cooper coal measures are not considered commercially viable for the Poitrel Project. The proposed project layout is shown in the EIS (Figure 2.1). The mining component of the Poitrel Project is located on the granted Poitrel mining lease, ML4749 covering approximately 3960ha of land. The granted Red Mountain mining lease, ML70116, covering approximately 750ha of land, will be used to construct associated infrastructure including haul roads, workshop and administration buildings and a back up process residue waste storage facility. The EIS assessed in this report was required for amendment of the existing environmental authorities for ML4749 and ML70116 to allow the proposed mining activities.

Mine pit overburden will be drilled and blasted and removed by an excavator and truck strip mining operation. There is potential to introduce a dragline later in the mining schedule. A final void covering an area of 120ha and up to 80m deep will remain at the conclusion of mining the Poitrel Project coal resource.

Run of mine (ROM) coal will be transported to the Millennium Coal Project's mining industrial area on ML70312 and processed at the Millennium coal processing plant (CPP) under a joint venture agreement with the Millennium Coal Project operators. The regulation of the CCP on ML70312 is being assessed under a separate evaluation process and is not addressed in this EIS assessment report. A back up process residue waste storage facility will be constructed on ML70116 for use during wet weather to temporarily store co-disposed tailings and course reject material from washing coal from the Poitrel Project, until it can be transported to the Poitrel Project pit and waste dumps and covered with overburden. Any supernatant wastewater from this back up facility will be used for dust suppression or reused in the Millennium CPP.

Product coal from the Poitrel Project will be loaded onto trains using existing Millennium rail loop and loadout facilities and transported by rail a distance of 150km to ship loading facilities at the Hay Point services terminal or Dalrymple Bay Coal Terminal located 38km south of Mackay. Trains will be loaded at a rate of 4500tph and require approximately 350 train movements per annum.

A 3.5km diversion of New Chum Creek is proposed in the vicinity of the eastern ex-pit waste rock dump. A 12km long levee bank is also proposed along the south-western and southern boundaries of the project to protect mining operations from flooding up to the 1-in-100-year flood event, plus 1m of freeboard. An 8km portion of the levee will run parallel to the New Chum Creek diversion to the east and the remaining 4km of the diversion will run parallel to the Isaac River to the south.

The initial workforce during project commissioning will consist of approximately 200 staff and this will reduce to approximately 150 fulltime permanent staff during project operations.

The water balance model for the project indicates that approximately 1,207 megalitres per annum (ML/a) of water will be required for project operations. The water will be obtained from site runoff supplemented by bore water. Runoff from disturbed areas will be captured in sediment dams and used for dust suppression or

process water in the Millennium CPP. BMC has an allocation from the Braeside borefields that will be piped to the site as required to supplement water demand for the project.

1.2 Approvals

The following approvals are required for the Poitrel Project:

| Approval | Legislation (Administering Authority) |
|---|--|
| Environmental authority (mining activities) | <i>Environmental Protection Act 1994</i> (EPA) |
| Water Licences (Diverting New Chum Creek which interferes with the flow of water in a watercourse and pit dewatering which interferes with the flow of water in an aquifer) | <i>Water Act 2000</i> (Natural Resources and Mines) |
| Approval to undertake action that may impact on a matter of national environmental significance (Nationally listed threatened species and ecological communities) | <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth Department of Environment and Heritage) |
| Development approval (DA) for works to be undertaken off the mining lease (constructing the 12km buried water pipeline connecting to the Braeside water pipeline off mining lease areas). | <i>Integrated Planning Act 1999</i> (local government approval) |
| The DA should include approval for clearing native vegetation for the water pipeline. | <i>Vegetation Management Act 1999</i> (Natural Resources and Mines) |

1.3 Impact assessment process

1.3.1 The EIS process

The environmental impact statement (EIS) for the Poitrel Project 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 BMC on 6 October 2004 by application to the EPA to prepare a voluntary EIS, including the Initial Advice Statement (IAS) and draft Terms of Reference (TOR) for the Poitrel Project under section 70 of the EP Act. The EPA approved the application to undertake a Voluntary EIS on 12 October 2004. The EPA approved the draft TOR and issued a notice of publication of draft TOR to BMC on 14 October 2004.

The draft TOR were available for public comment from 18 October to 26 November 2004 with the EPA placing a public notice on the EPA's website on 15 October 2004 and in The Courier-Mail and Mackay Daily Mercury on 16 October 2004. BMC issued copies of the public notice to affected and interested persons.

Fifteen submissions were received by the EPA on the draft TOR within the public comment period. Submissions were received from one Commonwealth department, nine State government departments and agencies, one local government authority and four non-government organisations. These submissions, together with one from the EPA, were forwarded to BMC on 10 December 2004 to which BMC responded on 6 January 2005. The EPA considered all submissions received on the draft TOR and BMC's responses prior to issuing the final TOR to BMC on 4 February 2005.

BMC submitted the draft EIS on 18 April 2005 to the EPA for review prior to public notification. The EPA compared the draft EIS to the final TOR and advised BMC on 1 June 2005 that the EPA considered that the draft EIS sufficiently addressed the TOR to proceed to public notification. The public notification and submission period was set at 20 business days.

The draft EIS was available for public comment from 14 June to 11 July 2005. The EPA placed a public notice on the EPA's website on 10 June 2005 and BMC placed a public notice in The Courier-Mail and Mackay Daily Mercury on 11 June 2005. BMC also issued copies of the public notice to affected and interested persons.

Twelve submissions were received by the EPA on the draft EIS within the submission period. Submissions were received from one Commonwealth department, eight State government departments and agencies, one local government authority, and two non-government organisations. These submissions, together with one from the EPA, were forwarded to BMC for consideration and response on 25 July 2005. BMC submitted a response to submissions (Supplementary Report) to the EPA on 20 September 2005.

On 21 September 2005, copies of the Supplementary Report were issued to members of the advisory body who requested additional information. These advisory body members were requested to consider the Supplementary EIS and provide comments by 7 October 2005.

Eight submissions were received on the Supplementary EIS. Six submissions were received from State Government and two from non-government organisations.

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).

1.3.2 Consultation program

Public consultation

In addition to the statutory requirements for public notification of the TOR and draft EIS, BMC included a community consultation program during the development of the draft TOR and draft EIS. This program included a community survey, newsletters, community notice board information. There were also face to face discussions and public information sessions with the following groups:

- local landholders on, adjacent to and neighbouring the project area;
- representatives of Belyando, Broadsound, Emerald and Nebo Shire Councils; and
- community services, local interest groups, local businesses and residents in Moranbah, Nebo, Coppabella and Mackay townships.

Advisory Body

The EPA invited the following organisations to assist in the assessment of the TOR and EIS by participating as members of the advisory body for the Poitrel Project:

- Belyando Shire Council;
- Birds Observers Australia;
- Broadsound Shire Council;
- Capricorn Conservation Council.
- Department of Communities;
- Department of Education and the Arts;
- Department of Emergency Services;
- Department of Environment and Heritage (Commonwealth);
- Department of Housing;
- Department of Local Government, Planning, Sport and Recreation;
- Department of Main Roads;
- Department of Natural Resources and Mines;
- Department of Primary Industries;
- Department of State Development and Innovation;
- Fitzroy Basin Association;
- Mackay Conservation Group;
- Nebo Shire Council;
- Queensland Health;
- Queensland Police Service;
- Queensland Transport; and

- Sunwater.

Advisory body briefings were held in Brisbane and in central Queensland during the draft TOR and draft EIS stages of the EIS process.

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 and draft EIS for review and public comment as stated in Section 1.3.1 above. In addition, notices advising 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 District Office, Emerald;
- Belyando Shire Council;
- Moranbah Public Library; and
- Sinclair Knight Merz, Brisbane (copies of the draft EIS could also be purchased from BMC).

Site visit

A site visit was proposed for the advisory body on 29 June 2005 during the public notification period for the draft EIS. It was intended that BMC would show members of the advisory body key features of the project site including the Isaac River, New Chum Creek, the levee bank location and the proposed mining area. However, the site visit was cancelled due to unsuitable weather conditions. Subsequently, BMC made alternative site visit arrangements with individual advisory body members.

1.3.3 Environment Protection and Biodiversity Conservation Act 1999

The Poitrel Project was referred (EPBC 2004/1770) under section 68 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) to the Commonwealth Department of Environment and Heritage (DEH) on 9 September 2004 and was declared a controlled action under section 75 of the EPBC Act on 23 September 2004. The controlling provisions for the action are sections 18 and 18A (Listed threatened species and ecological communities) of the (EPBC Act). The listed threatened species is the Squatter Pigeon and the listed ecological community is Brigalow woodland. The decision on assessment approach under section 87 of the EPBC Act was made on 14 October 2004 and DEH determined that assessment would be by accreditation of the State EIS process under the Bilateral Agreement between the Queensland and Australian governments. DEH was included as an advisory body for the Poitrel Project and commented on the draft TOR and draft EIS.

In accordance with Section 130(1B) of the EPBC Act, a notice will need to be given to DEH, stating that matters not covered by the controlling provisions have been assessed to the greatest extent practicable, before the Commonwealth Minister for Environment and Heritage can decide the action. Matters of national environmental significance are discussed further in section 3.6 of this EIS assessment report. The State's assessment of proposed management and mitigation measures to protect species and communities of conservation significance (including the Squatter Pigeon and Brigalow woodland communities) is outlined in section 3.3 of this EIS assessment report.

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 4 February 2005, was considered when preparing this EIS assessment report. While the TOR were written to include all the major issues associated with the project that were required to be addressed in the EIS, 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 (e.g. 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 outside of those listed in the final TOR were addressed in the EIS, those matters have been considered when preparing this EIS assessment report.

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 14 June 2005; and
- (ii) the submissions response report (Supplementary Report) received by the EPA on 20 September 2005 that was provided to relevant advisory body members;

2.3 Properly made submissions

Twelve submissions were received by the EPA on the submitted EIS. Eight submissions were received by the EPA on the submitted Supplementary 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. With regard to criterion (l), there was no other matter prescribed under a regulation that required consideration.

3. Adequacy of the EIS in addressing the TOR

The submitted EIS adequately addressed most components of the TOR. These sections are generally not discussed in this assessment report except where they were of particular importance in the assessment of the project, such as requiring modification of, or addition to, the streamlined conditions.

However, a number of sections in the TOR were inadequately addressed by the submitted EIS and/or EM plan including issues relating to:

- rehabilitation acceptance criteria;
- design objectives for the New Chum Creek diversion;
- mine site water discharge commitments;
- water quality monitoring frequencies;
- water quality monitoring and adaptive waterway management program methodologies;
- riverine protection permit conditions for creek crossings;
- groundwater monitoring and management;
- suitable procedures and methodologies for implementing nature conservation commitments;
- suitable conditions for air quality monitoring and management;
- suitable commitments for road infrastructure and road safety;

and these sections have been discussed below.

3.1 Land

3.1.1 Rehabilitation acceptance criteria

What the TOR required

Amongst other things, the TOR (section 3.8) required the EIS to provide options, strategies and methods for progressive and final rehabilitation of the environment disturbed by the proposal, including the restoration of threatened plant species during revegetation, with the goal of achieving a nil loss of conservation value.

Adequacy of this section of the EIS and EM plan

Generally the requirements of the TOR regarding progressive and final rehabilitation of areas disturbed by mining have been adequately addressed in the submitted EIS. However, with regard to rehabilitation acceptance criteria, BMC proposes in the EIS (section 3.8.7) to develop site-specific criteria based on future rehabilitation trials and the monitoring of progressive rehabilitation. It is considered necessary that the EM plan should contain initial acceptance criteria that could be refined later when additional data becomes available.

BMC has indicated in the EIS (section 3.8.3) that BMC and its parent and subsidiary companies have experience with rehabilitating other mines in the Bowen Basin. Therefore, it should be feasible for BMC to draw upon this experience, and existing information in relevant reports (see below), to develop initial completion criteria that support the proposed strategies discussed in the EIS for progressive and final rehabilitation of areas disturbed by mining. Those initial acceptance criteria should be included in the EM plan (section 16.3.5.6).

Assessment

Acceptance criteria should be developed to measure rehabilitation success in achieving landform stability and a self-sustaining vegetation cover in the context of the proposed post-mining land use. The key objective for landform stability is for the rehabilitated landform to be geotechnically and hydrologically stable (particularly with respect to drainage and erosion control), and to support a self-sustaining vegetation cover. Slope profiles (including lengths and gradients) and soil profile design, prescribing respread topsoil and growth media depth to maintain geotechnical stability, erosion control and desired vegetation cover for the post-mining land use are discussed in the EIS. However, acceptance criteria should take account of the desirable soil profile physical and chemical property limits required to support the desired self-sustaining vegetation cover and desired level of

post-mining land use. Acceptance criteria should also include quantitative measures to indicate when a self-sustaining vegetation cover has been achieved. These would include indicators for species composition, cover percent, diversity and distribution, and ecosystem functionality characteristics such as nutrient cycling, key species recruitment, habitat complexity and a successional change towards the defined vegetation community. Initial acceptance criteria are important at the beginning of a rehabilitation program to provide a reference for rehabilitation trials and evaluate the initial success of progressive rehabilitation. Those initial acceptance criteria can be further refined based on the outcomes of ongoing rehabilitation trials, monitoring and research programs. The development of indicators and their application as acceptance criteria are comprehensively discussed in the ¹Australian Coal Association Research Program (ACARP) Project C12045 and the ²Australian Centre for Mining Environmental Research Publication – Indicators of Ecosystem Rehabilitation Success.

Information on the rehabilitation of the New Chum Creek diversion and rehabilitation off-sets for the loss of habitat and biodiversity from mining activities is discussed in detail in section 3.3 below.

Recommendations:

- 1. It is recommended that the EM plan (section 16.3.5.6 - Rehabilitation) be amended to include initial acceptance criteria for measuring the success of rehabilitation on spoil areas at achieving a stable landform and a self-sustaining vegetation cover in the context of the proposed post-mining land use. The acceptance criteria should include indicators for: geotechnical and hydrological landform stability; physical and chemical soil profile development; species composition, cover, diversity and distribution; and ecosystem functionality characteristics such as key species recruitment, nutrient cycling, habitat complexity and successional change based on local reference site/s.**

3.2 Water

3.2.1 New Chum Creek Diversion

What the TOR required

Amongst other things, the TOR (section 4.3.1.1) required an assessment of the pre-mine geomorphic condition of watercourses likely to be affected by disturbance such as stream diversions. The TOR (sections 4.3.1.1 and 4.3.2) also required that the results of the assessment be used to form the basis for future monitoring programs designed to evaluate changes in the physical integrity and geomorphic processes [of New Chum Creek] associated with stream diversions.

Adequacy of this section of the EIS

The requirements of the TOR have been adequately addressed by the submitted EIS. Significant information has been presented in the EIS on the existing morphology of New Chum Creek and the existing fluvial and hydrological processes impacting on the Creek. A suitable methodology for the design of the New Chum Creek diversion has been presented in the EIS. Flood modelling has also been presented on the likely velocities and flood heights in the Creek diversion. This information is essential for designing a stable, self-sustaining creek diversion and will be used to further refine the form of the diversion during the design stage.

Current best practice methodologies for creek diversion/restoration activities based on soil types and channel characteristics including the ³Central West Water Management and Use Regional Guideline should be thoroughly researched and suitable techniques applied when designing the New Chum Creek diversion.

Adequacy of this section of the EM plan

The design objectives of the diversion outlined in the EIS (section 4.2.3) have not been included in the EM plan. The key water management objectives stated in the TOR required that any stream diversion should, as far as is practicable, replicate the form and geomorphic condition of the watercourse it replaces. Therefore, the design

¹ O.G. Nichols (May 2004). ACARP Project C12045 Final Report – Development of Rehabilitation Completion Criteria for Native Ecosystem Establishment on Coal Mines in the Bowen Basin.

² Australian Centre for Mining Environmental Research (ACMER) (July 2003). Indicators of Ecosystem Rehabilitation Success, Stage 2 – Verification of EFA Indicators – Final Report.

³ Natural Resources and Mines. (Undated). Central West Water Management and Use Regional Guideline: Watercourse Diversions – Central Queensland Mining Industry.

objectives of the diversion are important performance criteria that can be used as a basis for developing monitoring parameters to assess whether the design of the diversion has been successful. Those objectives should be added to the EM plan.

The existing conditions in the EM plan (section 16.3.5.6) regarding monitoring the New Chum Creek diversion should also include a condition specifying the design requirements of the New Chum Creek diversion.

The EM plan (section 16.3.5.6) proposes conditions regarding monitoring and evaluation of the success of the Creek diversion. However, there is no proposed condition for incorporating a feedback mechanism for the implementation of corrective actions should they be needed. The existing conditions in the EM plan (section 16.3.5.6) regarding monitoring the New Chum Creek diversion should also include a condition for a mechanism for implementing corrective actions.

Recommendations:

2. **It is recommended that the draft EA include a condition requiring the New Chum Creek diversion to be designed and constructed considering the Central West Water Management and Use Regional Guideline and other current best practice diversion methodologies to meet the following requirements:**
 - (a) nil afflux upstream of the diversion;
 - (b) no change to flow velocities in New Chum Creek downstream of the diversion;
 - (c) a stable, tree lined channel; and
 - (d) substantially similar geomorphic condition including similar bed length, width, sinuosity and longitudinal slope to the original channel.
3. **It is recommended that the EA include a condition that upon completion of the construction phase of the proposed diversion a quantitative monitoring and evaluation program must be implemented to ensure that the diversion is working as required by condition two above.**
4. **It is recommended that the EA include a condition that the quantitative monitoring and evaluation program must be consistent with the principles and procedures outlined in the ⁴ACARP Project - Monitoring and Evaluation Program for Bowen Basin River Diversions.**
5. **It is recommended that the EA include a condition that the results of the monitoring and evaluation program are to be made available for inspection upon request by the administering authority.**
6. **It is recommended that the EA include a condition that the monitoring and evaluation program shall include remedial actions that will be implemented should the results of conditions three and four above indicate the diversion is not working as required by condition two above.**

3.2.2 Mine water management system

What the TOR required

Amongst other things, the TOR (section 4.3.2.1) required information on the anticipated flows of water to and from the project site in relation to water supply and usage, and wastewater disposal.

BMC proposes a water management system (WMS) involving a network of dams and reservoirs providing both on-site storage around the Poitrel Project site and off-site storage within the process water dam and back-up process residue dam at the Millennium mining industrial area on ML70312. Mine site water would be pumped to and from the Poitrel Project site as required to meet demand for dust suppression and other uses. The main objective of the WMS is to maintain mine water storage capacity for flood events up to the 1-in-100-year, 24-hour flood event.

Adequacy of this section of the EIS and EM plan

The requirements of the TOR with regard to site water management to ensure the maintenance of environmental values of receiving waters have been adequately addressed by the submitted EIS. However, the

⁴ F. Stewart, ID&A, Earth Technology, K. White & R. Hardie. (July 2002). ACARP Project C8030/C9068 Monitoring and Evaluation Program for Bowen Basin Diversions (Stages 1, 2 & 3).

commitment made in the EIS to maintain over the life of the project a nil mine water discharge from flood events up to the 1-in-100-year, 24-hour storm has not been included in the EM plan (section 16.3.3.7) as a proposed condition of the EA. This deficiency should be rectified.

Recommendations:

- 7. It is recommended that the EA include a condition requiring that the mine water storage component (e.g. sediment dams, environmental dam, diversion drains and mining pits) of the Poitrel Project WMS be designed to contain all mine water run-off from the 1-in-100-year average recurrence interval, 24-hour storm, without off-site discharge from any part of the mine water storage component of the WMS.**

3.2.3 Surface water quality monitoring

What the TOR required

Amongst other things, the TOR (section 4.3.1.1) required information on the existing water quality in surface waters including New Chum Creek and the Isaac River. The TOR (section 4.3.2) also required information on monitoring programs to assess the effectiveness of management strategies for protecting water quality. Monitoring programs were to be designed to evaluate changes in the physical integrity and geomorphic processes associated with stream diversions and levee bank construction.

Adequacy of this section of the EIS

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

Adequacy of this section of the EM plan

Generally the requirements of the TOR have been adequately addressed by the submitted EM plan. However, the submitted EM plan requires amendment with regard to the following matters:

1. The statement made in the EM plan (section 16.3.3.3) regarding nil mine water discharge for flow events up to the 1-in-100-year, 24-hour flood has not been reflected in the proposed design of sediment dams for the water management system in section 16.3.3.5 (Commitments – Sediment and Erosion Controls).
2. The sampling frequencies proposed in Schedule C – Tables 1 and 3 of the EM plan are unlikely to be sufficient to detect a statistically significant difference between upstream and downstream water quality;
3. The reporting mechanism has not been specified for the data collected during monitoring proposed in Schedule C – Table 4; and
4. The EM plan (section 16.3.3.5 Commitments – Impacts from New Chum Creek diversion channel and levees) requires expansion to clearly define a procedure for the commitment to undertake a monitoring program and subsequent adaptive waterway management program.

Assessment

The EM plan (section 16.3.3.5) commits to designing sediment dams to retain the flow from a 1-in-10-year storm event to allow enough time to settle coarse silt particles, prior to discharge from the site. However, in section 16.3.3.3 of the EM plan mine water is proposed to be contained on-site with no off-site discharge from all rainfall events up to the 1-in-100-year, 24-hour flood. This inconsistency should be rectified by either removing the reference in section 16.3.3.5 stating that sediment dams will be designed to retain the flow from a 1-in-10-year storm event, or expanding section 16.3.3.5 to clarify where on the site discharge from the sediment dams will be retained for a storm greater than a 1-in-10-year event, but less than a 1-in-100-year, 24-hour storm event.

Given the inherent variability of water quality in ephemeral streams, the upstream sampling frequency (weekly during flow events) on the Isaac River and New Chum Creek proposed in the EM plan (Schedule C – Table 3) appears to be low. Furthermore, downstream sampling on the Isaac River (Schedule C – Table 1) and New Chum Creek (Schedule C – Table 3) is only proposed in the event of discharges and not during flow events that may indicate potential water quality impacts from the New Chum Creek diversion and the levee bank. It is unlikely the data set obtained for key parameters at this sampling frequency would be sufficient to detect a statistically significant difference between upstream and downstream water quality. Flow data for the Isaac

River collected from the Deverill gauging station located 21km downstream of the Poitrel Project site indicates that on average the Isaac River breaks its banks 12 days per year. Therefore, to monitor the impacts of the levee bank, as a minimum, upstream and downstream sampling on the Isaac River should occur daily during flow events in excess of bankfull conditions and more frequent if deemed necessary based on the results from the ongoing water quality monitoring program. No long-term flow data is available for New Chum Creek. Therefore, as a minimum, upstream and downstream sampling should occur daily during flow events and more frequent if deemed necessary based on the results from the ongoing water quality monitoring program.

The EM plan (section 16.3.3.7: Schedule C – Table 4) proposes monitoring releases from the environment dam for a number of parameters, including heavy metals. However, no details have been provided on how this data will be reported to the administering authority. Therefore, it is recommended that the EM plan be amended to include a proposed condition of the EA requiring this water quality data to be provided to the EPA upon request.

The EM plan (section 16.3.3.5 – Impacts from New Chum Creek diversion channel and levees) refers to implementing an adaptive waterway management program for the New Chum Creek diversion undertaken in response to the results of a monitoring program. However, no details have been provided on either the monitoring program or the subsequent adaptive waterway management program. Given that the diversion will be constructed early in the mine’s development, the EM plan should now include, as a minimum, a methodology for the program of adaptive waterway management, particularly its monitoring program. It seems appropriate for the monitoring program to include management objectives based on evaluating changes between upstream and downstream water quality and changes to the physical integrity (e.g. riparian vegetation condition) and geomorphic processes (e.g. stream bed morphology) associated with stream diversions and levee bank construction, as required by the TOR.

Recommendations:

8. It is recommended that the EM plan (section 16.3.3.5 – Sediment and Erosion Controls) be amended to show consistency with the statement of maintaining nil mine water discharge for rainfall events up to the 1-in-100-year, 24-hour flood.
9. It is recommended that the EM plan (section 16.3.3.7: Schedule C – Table 1; and Schedule C – Table 3) be amended to include sampling frequencies capable of detecting a statistically significant difference between upstream and downstream water quality. A suggested sampling frequency for each proposed monitoring point is provided below:

Schedule C – Table 1 (Receiving waters - monitoring locations and frequencies)

| <i>Monitoring point</i> | <i>Latitude (GDA 94)</i> | <i>Longitude (GDA 94)</i> | <i>Sampling frequency</i> |
|--|------------------------------|-------------------------------|--|
| Isaac River downstream of New Chum Creek | -22° 06' 29" | 148° 16' 13" | Daily in the event of discharges from the site and daily during flow events greater than bankfull conditions |

Schedule C – Table 3 (Other water monitoring locations and frequency)

| <i>Monitoring point</i> | <i>Latitude (GDA 94)</i> | <i>Longitude (GDA 94)</i> | <i>Sampling frequency</i> |
|--|------------------------------|-------------------------------|---|
| Release Point from the Environment Dam | -22° 05' 01" | 148° 16' 08" | Daily during discharges |
| New Chum Creek – Upstream of the diversion | -22° 03' 23" | 148° 15' 52" | Daily during flow events |
| New Chum Creek – Downstream of the diversion | -22° 07' 10" | 148° 16' 37" | Daily in the event of discharges from the project site and daily during flow events |
| Isaac River upstream – Just downstream of Cherwell Creek | -22° 05' 19" | 148° 14' 03" | Daily during flow events greater than bankfull conditions |

10. It is recommended that the EA include a condition requiring the holder of the EA to provide the results of the water quality monitoring proposed in Schedule C – Table 4 to be made available for inspection upon request by the administering authority.
11. It is recommended that the EA include a condition requiring that at least 28 days prior to project commissioning, BMC must submit to the administering authority a methodology for a New Chum Creek monitoring program and subsequent program of adaptive waterway management to assist the chief executive in drafting EA conditions.

3.2.4 Water licence and riverine protection permit

What the TOR required

The TOR (section 1.6.1) required the EIS to explain the legislation and policies controlling the approvals process, including reference to the requirements under the *Water Act 2000* (Water Act).

Adequacy of this section of the EIS

The requirements of the TOR have been adequately addressed by the submitted EIS. The draft EIS identified that diverting New Chum Creek would require BMC to apply to the Department of Natural Resources and Mines (NR&M) for a water licence under the Water Act for interfering with the flow of water in a watercourse. The requirement for this licence has been identified in Section 1.2 above. Application for a water licence triggers a public consultation process and any interested party, including landowners that could be affected, may make submissions on the application. The *Water Act* requires the chief executive to consider these submissions when deciding whether to grant the water licence.

Furthermore, a riverine protection permit would be required for destroying vegetation and excavating and/or placing fill in a watercourse associated with the construction of crossings over New Chum Creek (e.g. dragline or vehicle crossings). Sections 49, 50 and 51 of the *Water Regulation 2002* permits the destruction of vegetation, excavation and placing of fill in a watercourse respectively, if these works are conditioned by an EA under the EP Act. Accordingly, a condition should be included in the EA defining suitable methods of vegetation destruction, and excavation and placing of fill in a watercourse associated with crossings over New Chum Creek.

Adequacy of this section of the EM plan

The draft EM plan requires amendment to include draft EA conditions relating to the management and mitigation of impacts associated with constructing crossings over New Chum Creek. The EM plan relates to all mining activities on the proposed mining leases and this includes crossings over New Chum Creek necessary to undertake the mining operations. No EA conditions have been proposed in the EM plan (section 16.3.4.7) to manage and/or mitigate the potential impacts of destroying vegetation and excavating and/or placing fill in New Chum Creek associated with creek crossing construction work.

The following conditions have been developed in consultation with NR&M. They are intended to substitute the requirement for a riverine protection permit for creek crossing works normally required under the Water Act. It is recommended that these conditions be included in the EA.

Recommendations:

12. The EA should include a condition that states the clearing of vegetation, excavating or placing fill in a watercourse, lake or spring is permitted in the area covered by this authority provided the following requirements are met:
 - (a) Clearing within the watercourse is to be confined to those areas necessary for construction.
 - (b) Where possible work is to be conducted when beds are without flowing water.
 - (c) Works must be undertaken in accordance with the Soil Erosion and Sediment Control Guidelines published in 1996 by the Institute of Engineers, Australia, Qld Division.

- (d) The dimensions of any constructed low flow channel, pipe or culvert are to be such that low flow velocities are maintained to allow for fish passage in accordance with Cotterell E (1998) *Fish Passage in Streams - Fisheries guidelines for design of stream crossings*. Queensland Fisheries Service - Department of Primary Industries Fish Habitat Guideline FHG 001.
- (e) Any works that are constructed within the high banks of the watercourse must not impound or significantly interfere with the flow within the watercourse.
- (f) All machinery used in the construction of the diversion and any creek crossings across the watercourse are to be inspected by an authorised person under the *Land Protection (Pest and Stock Route Management) Act 2002* and assessed as free of any reproductive material of a declared plant prior to entering the site, and are to be stored, refuelled and maintained outside the high banks of the watercourse.
- (g) All vegetation destroyed within the watercourse must be removed from the watercourse and stockpiled or otherwise lawfully disposed of.
- (h) Upon completion of activities associated with works located within the watercourse any fill that has been placed within the watercourse must be removed and the bed and banks of the watercourse restored and revegetated to a similar state that existed prior to the establishment of the creek crossing.
- (i) The EA holder shall provide NR&M (Rockhampton) with the details of any proposed activity (including, but not limited to creek crossings) in, or adjoining a watercourse that will result in the destruction of vegetation, placing of fill or excavation within the watercourse.
- (j) The EA holder shall provide NR&M (Rockhampton) with the details of any change to the stream morphology of the watercourse (including, but not limited to stream sediment deposition or erosion) as a result of activities that involve the destruction of vegetation, placing of fill or excavation within, or adjoining the watercourse, including proposed remedial works.

3.2.5 Groundwater drawdown associated with pit dewatering

What the TOR required

Amongst other things, the TOR (Section 4.3.2.3) required the EIS to provide information on the significance of the proposal to groundwater depletion or recharge, and proposed management options available to monitor and mitigate these effects.

Adequacy of this section of the EIS

The requirements of the TOR have been adequately addressed by the submitted EIS with regard to outlining the significance of the proposal to groundwater depletion or recharge.

Pit dewatering associated with the Poitrel Project will result in groundwater drawdown in the surrounding area. Two distinct groundwater aquifers have been identified in the proximity of the project area – these being the 20m thick Quaternary age alluvium unit associated with the Isaac River courses and the Permian age fractured rock unit to a depth of 100m. For the first 16 years of mine life only the Permian age fractured rock unit will be dewatered causing groundwater level drawdown. During years 16 and 17 both the Permian and Quaternary age alluvium units will incur dewatering and groundwater level drawdown. Groundwater inflow into the mining pits will require continual pump put. The EIS conservatively predicted that boreholes linked to Permian age aquifer units within 7km from the mine site will incur drawdowns of greater than 2m over the life of the mining operation. BMC has committed in the EM plan (section 16.3.3.3) to providing alternative supplies at no cost to the affected neighbouring groundwater users, prior to any identifiable adverse affect, during the life of the mining operation.

The draft EIS identified that pit dewatering would be necessary and carrying out this activity would require application to NR&M for a water licence under the Water Act for interfering with the flow of water in an aquifer. Application for a water licence triggers a public consultation process and any interested party, including landowners that could be affected, may make submissions on the application. The Chief Executive under the Water Act must consider these submissions, in deciding whether to grant the water licence.

Dewatering and groundwater level drawdown predictions of between 0.1m-0.3m of the Quaternary age alluvium units during years 16 and 17 could potentially impact on water availability for riparian vegetation and other stands of groundwater dependant vegetation on the Isaac River at the southern end of the mining pit. Therefore, groundwater monitoring will be required to determine actual drawdown effects along the Isaac River.

Adequacy of this section of the EM plan

The submitted EM plan (section 16.3.3.7 – Groundwater) requires minor modification before it adequately addresses the TOR with regard to the monitoring and mitigation measures proposed for inclusion as EA conditions. The EM plan proposes an EA condition for the holder of the EA to develop and implement a groundwater monitoring program to detect significant changes to groundwater quality and submit this monitoring program to the EPA at least 28 days prior to mine dewatering. However, this recommendation does not propose monitoring changes to groundwater levels. Furthermore, the EPA's streamlined level 1 conditions for groundwater provides a suitable framework for a groundwater monitoring program to detect changes in groundwater quality and level. Therefore, to rectify this deficiency, the EM plan (section 16.3.3.7) should be amended to replace the proposed groundwater conditions with the EPA's streamlined level 1 conditions for groundwater, including information on groundwater monitoring locations and frequency and groundwater contaminant trigger levels.

Recommendations:

- 13. It is recommended that the EA include the streamlined level one conditions (C4-1) to (C4-5) for groundwater monitoring and management.**

3.3 Nature Conservation

3.3.1 Flora and Fauna

What the TOR required

Amongst other things, the TOR (section 4.4.1) required the flora and fauna communities to be described that are rare or threatened, or in environmentally sensitive localities including waterways, riparian zones and habitat corridors. The TOR (section 4.4.2) also required information on practical measures for protecting or enhancing nature conservation environmental values and a description of how nominated quantitative standards and indicators may be achieved for nature conservation management, and how the achievement of the objectives will be monitored, audited and managed. The TOR (section 3.8) also required information on the options, strategies and methods for progressive and final rehabilitation including the use of threatened plant species during revegetation with the goal of achieving a nil loss of conservation value.

Adequacy of this section of the EIS

The requirements of the TOR have been adequately addressed by the submitted EIS. However, the commitments proposed to protect and enhance the nature conservation values of the site should be expanded to clearly define their implementation.

The EIS (sections 5.5 and 5.9) identified on-site a number of regional ecosystem (RE) vegetation communities and fauna species of State conservation significance listed under the *Vegetation Management Act 1999* (VMA) and the *Nature Conservation (Wildlife) Regulation 1994* (NCR) respectively, including:

- Brigalow (*Acacia harpophylla*) and Yellowwood (*Terminalia oblongata*) woodland community (RE11.4.9) listed as endangered under the VMA;
- Poplar box (*Eucalyptus populnea*) woodland community (RE11.3.2) listed as of concern under the VMA;
- Squatter Pigeon (*Geophaps scripta*), Collet's Snake (*Pseudechis colletti*), Ground Cuckoo-shrike (*Coracina maxima*), Little Pied Bat (*Chalinolobus picatus*) and Black-chinned Honeyeater (*Melithreptis gularis*) all listed as rare under the NCR.

The likely impacts of the Poitrel Project on these species and communities are discussed in sections 5.5 and 5.9 of the EIS and include:

- Clearing 156ha (of a total area of 616ha on-site) of RE11.4.9 from along New Chum Creek to the east, adjoining the Isaac River to the south and for the mining pit at the northern end of the Poitrel Project site;
- Clearing 72ha (of a total area of 296ha on-site) of RE11.3.2 from along New Chum Creek to the east and adjoining the Isaac River to the south;
- Removing a 3.5km length of New Chum Creek, including riparian and woodland areas noted above and diverting this reach of New Chum Creek to a new location east of the current creek alignment; and
- Removing riparian and adjoining woodland areas noted above containing suitable habitat for the Squatter Pigeon, Collet's Snake, Ground Cuckoo-shrike, Little Pied Bat and Black-chinned Honeyeater.

The mitigation measures to manage and off-set the above impacts are discussed in the Assessment section below.

The EIS (section 5) provided adequate information on the presence, or likely presence, on-site of State listed rare or threatened flora and fauna species and communities based on the results of two comprehensive flora and fauna studies. Furthermore, the EIS outlined measures for protecting and enhancing the nature conservation values of the site, including the values of listed vegetation communities and habitat for listed fauna species. The EIS also outlined suitable commitments aimed at achieving a nil loss of conservation value. Therefore, these requirements of the TOR have been adequately addressed by the submitted EIS. However, the commitments proposed to protect and enhance the nature conservation values of the site require expansion to explain how they will be implemented to achieve a nil loss of conservation value. These issues are discussed in the section below.

Adequacy of this section of the EM plan

The submitted EM plan requires amendment with regard to the following matters:

1. A number of the measures for protecting and enhancing the nature conservation values of the site and for achieving a nil loss of conservation value proposed in the EIS were not included as commitments in the EM plan; and
2. Insufficient information was provided on management objectives, standards and indicators for achieving the commitments, and how the commitments would be monitored, audited and suitably managed, including the implementation of corrective actions.

Assessment

With regard to the first deficiency the EIS (section 5.11.3) proposed numerous commitments for rehabilitating key areas of the site to compensate the expected loss of rare and threatened flora and fauna species and communities. The proponent made a number of commitments in the EIS that were not included as commitments in the EM plan. The missing commitments included the following:

- The Isaac River riparian buffer area will be enhanced to compensate for the loss of vegetation and habitat on the Project site. Restoration of the riparian zone will assist to protect water quality and wildlife habitat;
- The conservation value of the previously disturbed or cleared areas of the Project site which are outside of the proposed mining footprint will be enhanced to reduce fragmentation of vegetation and assist in reducing noise and lighting impacts from the Project; and
- Previously degraded areas of New Chum Creek will be densely revegetated with native sedges and grasses to create potential habitat for frogs and other wetland species.

These are important commitments necessary to enhance the remaining nature conservation values of the area and should be included as commitments in section 16.3.6.5 of the EM plan.

Recommendation:

- 14. It is recommended that the EM plan (section 16.3.6.5 - Rehabilitation) be amended to include all the commitments made in section 5.11.3 (Habitat Rehabilitation) of the EIS.**

Similarly, while a commitment to undertake a weed management plan has been included in the EM plan (section 16.3.6.5), a specific weed management commitment made in section 5.11.3 of the EIS has not been carried through to the EM plan. The details of this commitment were:

- several areas of former brigalow woodland that are currently in a state of young regrowth and are not proposed to be cleared for the Poitrel Project will be allowed to naturally rehabilitate with the aid of a weed management plan.

Section 16.3.6.5 of the EM plan dealing with weed management should be amended to specifically include the above commitment.

Recommendation:

- 15. It is recommended that the EM plan (section 16.3.6.5 – Weed Management) be amended to include the commitment made in the EIS (section 5.11.3 – Habitat Rehabilitation) to apply weed management measures to the areas of former brigalow woodland currently in a state of young regrowth.**

With regard to the second deficiency noted above, the recommended structure for addressing each element of the EM plan defined by the ⁵EPA Guideline – Preparing Environmental Management Plans has not been followed when stating commitments and proposing EA conditions. The commitments for rehabilitation listed in the EM plan (Section 16.3.6.5) and EIS (section 5.11.3) mainly consist of general concept statements about how the site-specific issues are proposed to be managed, such as the following:

1. Where areas of native woodland are cleared to establish infrastructure (such as roads) these areas will be rehabilitated to native woodland;
2. The creek corridor located between the Poitrel lease areas will be conserved and rehabilitated to off-set the loss of connectivity expected along New Chum Creek;
3. The Isaac River riparian buffer area will be enhanced to compensate for the loss of vegetation and habitat on the Project site. Restoration of the riparian zone will assist to protect water quality and wildlife habitat;
4. The conservation value of the previously disturbed or cleared areas of the Project site which are outside of the proposed mining footprint will be enhanced to reduce fragmentation of vegetation and assist in reducing noise and lighting impacts from the Project;
5. Previously degraded areas of New Chum Creek will be densely revegetated with native sedges and grasses to create potential habitat for frogs and other wetland species.
6. The proponent will implement supplementary planting strategies over part of ML4749 for the unavoidable loss of 156ha or RE11.4.9 (Brigalow woodland) and 72ha or RE11.3.2 (Poplar box woodland).
7. Rehabilitation strategies for the floodplain of the New Chum Creek diversion would include the establishment of open woodland with a grassy understorey; and
8. The revegetation of the diversion on New Chum Creek will aim to reinstate a north-south wildlife corridor.

The commitments for rehabilitation and revegetation to off-set the potential impacts on species and communities of State significance listed above are considered appropriate. However, greater detail regarding the implementation of these conservation strategies is necessary. For example, there are no management objectives defining the proposed vegetation communities to be rehabilitated on the New Chum Creek diversion. No performance criteria are proposed to measure the success of achieving the rehabilitation management objectives. There are no strategies or action programs proposed to be implemented to achieve the performance criteria for these commitments. Furthermore, there is no information defining how these commitments will be monitored to demonstrate performance, audited to demonstrate implementation of a management strategy and compliance with agreed performance criteria, and by who and when the results will be reported to the administering authority. Lastly, there are no corrective actions proposed to be implemented if monitoring identifies that a performance requirement has not been achieved.

⁵ EPA (March 2003). *Environmental Impact Assessment Guideline – Preparing environmental management plans.*

The above commitments for protecting nature conservation values of the site should be incorporated into an Environmental Rehabilitation Management Plan. The main objectives of this plan should be to improve and/or restore connectivity of surrounding vegetation, including riparian vegetation, and to enhance local biodiversity values.

Initial acceptance criteria should be developed to measure the success of all rehabilitation at achieving a self-sustaining vegetative cover compared with local reference site/s and should be later refined based on the outcomes of ongoing rehabilitation trials, monitoring and research programs. The development of indicators and their application as acceptance criteria are comprehensively discussed in the ACARP Project C12045 and the Australian Centre for Mining Environmental Research Publication *Indicators of Ecosystem Rehabilitation Success*.

Dot point seven above states that the rehabilitation objective for the New Chum Creek diversion is to establish open woodland with a grassy understorey. However, this definition does not reflect the existing riparian community. It would be more appropriate to specify the objective as the riparian community presently existing in this reach of New Chum Creek (e.g. *Eucalyptus populnea*/*Acacia harpophylla* woodland with a native grassy understorey). This requirement could be incorporated with dot point eight to include the revegetation of the New Chum Creek diversion to establish *E. populnea*/*A. harpophylla* woodland with a native grassy understorey with the rehabilitation objective of re-instating a north-south wildlife corridor. This commitment should be incorporated into a rehabilitation management plan for the New Chum Creek diversion.

Recommendations:

16. It is recommended that the EA include a condition requiring that at least 28 days prior to project commissioning, BMC submit to the administering authority an Environmental Rehabilitation Management Plan. When developing the plan BMC should address the following matters:
 - a) The plan should address the progressive revegetation of a surface area covering no less than the surface area of REs proposed to be cleared. The plan should also identify local areas that are appropriate to rehabilitate and that would achieve the key objectives of enhancing corridor connectivity and promoting long-term local biodiversity. The locations should include riparian areas of New Chum Creek and the Isaac River, existing stands of RE11.4.9 and RE11.3.2 and other disturbed areas within the Poitrel Project site;
 - b) In addition, the plan should address the stabilisation and revegetation of the area disturbed by the construction of the New Chum Creek diversion. Revegetation of the area should use *E. populnea*/*A. harpophylla* woodland with a native grassy understorey with the objective of re-instating a north-south wildlife corridor;
 - c) The plan should include specific rehabilitation acceptance criteria for native RE communities including indicators of soil profile development, floristic characteristics such as species composition, cover percent, diversity and distribution, and ecosystem functionality characteristics such as key species recruitment, nutrient cycling, successional change and habitat complexity;
 - d) The plan should include a rehabilitation monitoring program designed to demonstrate progression of rehabilitated communities towards self-sustaining vegetation communities based on local reference site/s;
 - e) An auditing and reporting mechanism should be included that would be capable of identifying, in a timely manner, when rehabilitation is not achieving the required outcomes; and
 - f) The plan should also propose remedial actions for rehabilitation areas not achieving the required outcomes.

3.4 Air Quality

Adequacy of this section of the EIS

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

Adequacy of this section of the EM plan

The EM plan (section 16.3.2.6) does not include a complaint based monitoring procedure for particulate matter less than 10 micrometre (μm) (PM10). It appears that BMC has adapted the proposed EA conditions for air listed in the EM plan (section 16.3.2.6) from the EPA's streamlined level 1 conditions. However, a key component of the streamlined conditions relating to PM10 complaints based monitoring has been omitted. PM10 measurements are an important aspect of air quality monitoring relating to potential impacts on human health and should be included. Therefore, the proposed conditions (B2) and (B3) in the EM plan (section 16.3.2.6) should be replaced with the EPA's streamlined level 1 conditions (B1-2) and (B1-3) to rectify this deficiency.

Recommendation:

17. It is recommended that the EA include the streamlined level 1 conditions (B1-2) and (B1-3) for air quality monitoring and management.

3.5 Road Infrastructure

Adequacy of this section of the EIS

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

Adequacy of this section of the EM plan

The submitted EM plan requires amendment to include a number of the commitments made in the EIS that have not been included as commitments in the EM plan.

The EIS (section 11.4.1.1) identifies the Millennium Coal Project access road as the permanent access to the Poitrel Project site. The current design of the Millennium access road includes an auxiliary right turn layout (AUR) and an auxiliary left turn lane (AUL). However, the Department of Main Roads (DMR) identified in the Supplementary EIS that for the Millennium access road to accommodate traffic efficiency and road safety requirements for both the Millennium and Poitrel mines it must be upgraded to a channelised right turn (CHR) intersection with lighting designed in accordance with the DMR Road Planning and Design Manual. Therefore, the EM plan should be amended to commit to the above requirement.

The EIS (section 11.5.1.4) indicated that product coal will be transported solely by train to the coal terminal for export. However, BMC also indicated in the EIS (section 2.1) their intention to investigate opportunities for selling coal to the domestic market. Therefore, BMC made a commitment in the Supplementary EIS to advise Department of Main Roads (DMR) if significant volumes of coal (greater than 50,000 tonnes per annum) are proposed to be hauled using State-controlled roads. However, depending on the route taken, there may also be significant impacts on State-controlled roads with smaller volumes of coal haulage. The assessment trigger for significant road impacts, under the DMR's *Guidelines for Assessing Road Impacts from Development Proposals*, is any 5 percent increase in Annual Average Daily Traffic (AADT) or Equivalent Standard Axles (ESAs). Consequently, to ensure that project and public safety requirements are met, and any changed road or community impacts are effectively managed, the EM plan should be amended to include a commitment to notify DMR of any 5% increase in traffic.

The EIS (section 13.2.2) identified that the preferred permanent housing location for the majority of the workforce would be in large regional centres, particularly on the coast, due to the type of shifts offered by employers (4 days on and 5 days off). DMR raised concerns about long-term road safety of the workforce (both BMC employees and contractors) who choose to live some distance away, for example in Mackay, and commute with several hours driving time after shifts. BMC included a commitment in the EM plan to establish an employee bus service linking the project site and proposed accommodation. However, this would not cater for employees living further abroad in coastal areas at private residences. Therefore, it is important for BMC to consider extending any proposed bus service to more distant locations of residence, even in conjunction with other mine operators. DMR recommends that the EM plan (section 16.3.10.4) should be amended to include a commitment to investigate bus service options to the coast.

With regard to road safety aspects at the mine access intersection, BMC proposed in the Supplementary EIS that information would be provided to road traffic authorities so that adequate lighting and signage can be placed at the intersection and along the Peak Downs Highway as appropriate. However, it is the responsibility of BMC to arrange for appropriate lighting and signage to be installed through its contractual arrangements with

the Millennium coal mine operators. The EM plan (section 16.3.10.4) should be amended to include this commitment.

Recommendations:

- 18. It is recommended that the EM plan include a commitment for BMC, in consultation with DMR, to upgrade the Millennium access road intersection to a CHR intersection with lighting, in accordance with the DMR's *Road Planning and Design Manual* to accommodate the additional traffic from the Poitrel Project.**
- 19. It is recommended that BMC should advise DMR in Mackay of any volumes of coal haulage by road that constitutes an increase of 5 percent of existing traffic or ESAs that has the potential to significantly impact on roads.**
- 20. It is recommended that the EM plan (section 16.3.10.4) be amended to include a commitment requiring BMC to investigate options for a coastal bus service for BMC workforce employees and contractors.**
- 21. It is recommended that the EM plan (section 16.3.10.4) be amended to include a commitment requiring BMC to ensure that appropriate road safety lighting and signage is installed at the Poitrel mine access road intersection and along the Peak Downs Highway.**

3.6 Matters of national environmental significance

The Poitrel Project is a controlled action and the State EIS process has been accredited under the Bilateral Agreement between the Queensland and Australian governments developed under the provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The controlling provisions were sections 18 & 18A (Listed threatened species and ecological communities).

What the TOR required

The TOR (section 1.7) required information on the threatened species and communities listed under the EPBC Act located on the Poitrel Project site. Section 1.7 also required information on the management and mitigation measures to off-set any potential impacts.

Adequacy of this section of the EIS

The Commonwealth Department of Environment and Heritage (DEH) has indicated that the requirements of the TOR have been adequately addressed by the submitted EIS.

The EIS identified the following threatened species and ecological communities listed under the EPBC Act as either occurring, or likely to occur on the Poitrel Project site:

- RE11.4.9 – Brigalow (*Acacia harpophylla*) and Yellowwood (*Terminalia oblongata*) woodland listed as endangered under the EPBC Act of which 156ha (of 616ha on the project site) will be cleared for the Poitrel Project; and
- Squatter Pigeon (*Geophaps scripta*) listed as vulnerable under the EPBC Act of which some potential habitat will be impacted upon during the 3.5km long diversion of New Chum Creek and encroachment of mining activities into the northern floodplain of the Isaac River.

The significance of the potential impacts on the above species and communities was discussed in the EIS (section 5.10.6) and this discussion indicated that the potential impacts on the Squatter Pigeon and Brigalow woodland communities would not be significant, and any long-term impact would be off-set by revegetation and rehabilitation strategies within and surrounding the Poitrel Project site. Proposed management and mitigation measures were outlined in section 5.11 of the EIS and included:

- A high priority for the protection, rehabilitation and restoration of the Isaac River margin, including a riparian buffer of 150m on the northern side of the Isaac River to preserve habitat for threatened species.
- The retention of 100ha of good quality Brigalow woodland located on the eastern side of the rail line on the Daunia and Red Mountain mining leases to compensate the loss of Brigalow during the mining operation.

- The New Chum Creek corridor in between the Poitrel lease areas, north of the proposed diversion will be conserved and rehabilitated to off-set the short-term loss of connectivity expected along New Chum Creek.
- The New Chum Creek diversion will be revegetated to re-instate a north-south wildlife corridor.
- The diversion works and revegetation of the New Chum Creek diversion will be undertaken during the initial stages of project development to allow maximum time for vegetation to establish before the diversion is connected to New Chum Creek. Existing vegetation within the diverted waterway will be retained until clearing for mining is required.
- Previously degraded areas of New Chum Creek will be densely revegetated with native sedges and grasses to create potential habitat for frogs and other wetland species.
- Vegetation loss will be minimised by restricting the removal of vegetation to the minimum amount necessary and, where possible, areas already disturbed will be cleared in preference to clearing native vegetation.
- Significant stands of vegetation (e.g. endangered, of concern etc.) that are to be retained will have protective fencing and/or signage erected to restrict access to these areas.
- Implementation of a weed monitoring program in conjunction with a weed management plan consistent with the requirements of local government authorities.
- Previously disturbed or cleared areas outside of the mining footprint will be enhanced to reduce fragmentation of vegetation.
- Areas of former Brigalow woodland currently in a state of young regrowth will be allowed to naturally rehabilitate – with the aid of a weed management plan.
- Freshwater sediment dams on the Poitrel Project site will be designed with shallow perimeters containing rocks or logs near the edges and planted with native aquatic vegetation (rushes, reeds) to provide habitat for frogs and waterbirds.
- Rehabilitation success will be monitored and the distribution and extent of the Squatter Pigeon population will undergo seasonal monitoring.

The State's assessment of proposed management and mitigation measures to protect species and communities of State conservation significance, including the Squatter Pigeon and Brigalow woodland communities is outlined in section 3.3 of this EIS assessment report.

DEH are satisfied that the information presented in the EIS provided a suitable assessment of the significance of the potential impacts of the Poitrel Project on matters of national environmental significance: specifically the listed threatened species and ecological community outlined above.

The Bilateral Agreement only covers Part 8 (Assessment Stage) of the EPBC Act process and this EIS assessment report concludes the assessment stage. DEH retain separate approval powers under Part 9 (Approval stage) of the EPBC Act. DEH will develop conditions to be applied to their approval during the following stage of their process.

In accordance with Section 130(1B) of the EPBC Act, a notice will need to be given to DEH, stating that matters not covered by the controlling provisions have been assessed to the greatest extent practicable, before the Commonwealth Minister for Environment and Heritage can decide the action.

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 BMC in the Supplementary Report. The EPA has reviewed the amendments to the draft EM plan agreed to by BMC 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 some areas where the TOR were not fully 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

Signature

Dean Ellwood
Director, Integrated Assessment Branch
Environmental Operations
Environmental Protection Agency

Date

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