

# Curragh North Coal Project

## Bowen Basin

## Central Queensland

January 2004

## Table of Contents

<b>1. INTRODUCTION</b>	<b>4</b>
<b>1.1 PROJECT DETAILS</b>	<b>4</b>
<b>1.2 APPROVALS</b>	<b>4</b>
<b>1.3 IMPACT ASSESSMENT PROCESS</b>	<b>5</b>
<b>1.3.1 The EIS Process</b>	<b>5</b>
<b>1.3.2 Consultation Program</b>	<b>5</b>
Public Consultation	5
Advisory Body	5
Public Notification	6
Site Visit	6
<b>1.3.3 Environment Protection and Biodiversity Conservation Act 1999</b>	<b>7</b>
<b>2. MATTERS CONSIDERED IN THE PREPARATION OF THIS EIS ASSESSMENT REPORT</b>	<b>7</b>
<b>2.1 THE FINAL TOR</b>	<b>7</b>
<b>2.2 THE SUBMITTED EIS</b>	<b>7</b>
<b>2.2.1 Land Resources</b>	<b>7</b>
Land Suitability	7
Topsoil Management	7
Resource Sterilisation	8
Post-Mine Land Use	8
Flood Protection Levee Bank	9
Monitoring Success of Rehabilitation	10
Land Resource Recommendations	10
<b>2.2.2 Hydrology and Water Quality</b>	<b>11</b>
Water Values of the Site	11
Surface Water Quality	11
Water Management System	11
Groundwater	12
Voids	12
Raw Water Demand	12
Hydrology and Water Quality Recommendations	12
<b>2.2.3 Terrestrial Flora and Fauna</b>	<b>13</b>
Terrestrial Flora	13
Terrestrial Fauna	14
Assessment of the Transportation Corridor under the EPBC Act	14
Terrestrial Flora and Fauna Recommendations	14
<b>2.2.4 Aquatic Flora and Fauna</b>	<b>14</b>
Aquatic Flora and Fauna Recommendation	15
<b>2.2.5 Cultural Heritage</b>	<b>15</b>
Cultural Heritage Recommendation	15
<b>2.2.6 Air Quality</b>	<b>15</b>
Dust management	15
Air Quality Recommendations	16
<b>2.2.7 Greenhouse Gas</b>	<b>16</b>
Greenhouse Gas Emissions	16
<b>2.2.8 Noise and Vibration</b>	<b>16</b>
Noise and Vibration Recommendation	16
<b>2.3 PROPERLY MADE SUBMISSIONS</b>	<b>17</b>
<b>2.4 THE STANDARD CRITERIA</b>	<b>17</b>
<b>2.5 ANOTHER MATTER PRESCRIBED UNDER A REGULATION</b>	<b>17</b>
<b>3. ADEQUACY OF THE EIS IN ADDRESSING THE TOR</b>	<b>17</b>
<b>4. ADEQUACY OF THE EMOS FOR THE PROJECT</b>	<b>17</b>
<b>5. SUITABILITY OF THE PROJECT</b>	<b>18</b>
<b>6. RECOMMENDATIONS</b>	<b>18</b>
<b>6.1 RECOMMENDED CONDITIONS FOR THE DRAFT ENVIRONMENTAL AUTHORITY</b>	<b>18</b>



<b>6.2</b>	<b>EMOS</b>	<b>19</b>
<b>6.3</b>	<b>PLAN OF OPERATIONS</b>	<b>19</b>
<b>6.4</b>	<b>RECOMMENDED ACTIONS TO BE UNDERTAKEN BY THE EPA</b>	<b>19</b>

## 1. Introduction

This Environmental Impact Statement (EIS) Assessment Report completes the EIS process under Chapter 3 of the *Environmental Protection Act 1994* (EP Act). All requirements of Chapter 3 have been met.

### 1.1 Project Details

The Curragh North Coal Project is located on the eastern floodplain of the Mackenzie River, 170km west of Rockhampton, 30km north of the township of Blackwater, in the Duaringa Shire, within the Bowen Basin in Central Queensland. The Curragh North Coal Project is an open-cut coal mine producing 7Mtpa of coal for up to 40years. The mining area is contained within 4859ha on ML80110, of which 2259ha will be disturbed. Three pits will initially be mined by truck and shovel operations in preparation for draglines to remove overburden. Coal will be screened and sized on site, however, no washing of coal will take place on site. The coal will be transported 7km via a transportation corridor to the existing Curragh mine by overland conveyer and truck haulage for processing through the existing coal handling and preparation plant. A 21km long flood protection earthen levee bank is proposed around most of the mining area that will also contain all runoff on site. Additional non-infrastructure mining leases (ML80111 and ML70318) have also been applied for so flood mitigation devices can be constructed if required as a result of additional afflux caused by the construction of the proposed levee bank.

The proponent for the Curragh North Coal Project is Wesfarmers Curragh Pty Ltd which holds the full equity interest in Curragh Queensland Mining Pty Ltd and Curragh Coal Sales Co Pty Ltd. The objective of the Curragh North Coal Project is to mine low-ash hard coking coal for export to Asian and European markets and steaming coal to supply the Stanwell Power Station until at least the year 2025.

Exploration drilling and resource modelling studies indicate that the total reserve of run of mine (ROM) coal is 149Mt and is primarily made up of four economically viable seams starting at a depth of 18m and dipping approximately 3° to 5° to the east (away from the Mackenzie River). The main economic seam in the deposit is the Pisces Seam that varies in thickness from 4.5m in the south of the mining lease area to more than 10m in the north of the mining lease area. Economic reserves also include the thinner Aries and Castor seams to the north and the merged Aries and Castor seams to the south.

Initial capital for the development of the Curragh North Coal Project is approximately \$160 million. Mining infrastructure will include three mine pits, two out-of-pit spoil dumps, heavy vehicle access roads, administration building, a small vehicle workshop, fuel and lube bay, vehicle washdown bay, ROM stockpiles, feeder breaker, coal stockpiles, water retention dams, sedimentation ponds and flood protection devices including a 21km long levee bank, a 7km long transport corridor to the existing Curragh mine including a haul road, overland conveyer, water transfer pipeline, water management structures and a high voltage aerial feeder.

Three of the properties underlying the mining lease area (Lot 17 on SP141317, Lot 2 on SP127282 and Lot 6 on LR94) are zoned Rural 'A' under the Duaringa Shire Town Planning Scheme. Lot 2 on Ht606 held by Wesfarmers Curragh Pty Ltd is zoned industrial (coal mining), grazing farming and associated purposes.

Construction of infrastructure is expected to begin in mid 2004 followed by boxcut excavation along the western fringe of the Mackenzie River. Coal is expected to be extracted in mid 2005, approximately nine to 12 months after commencement of construction.

The main townships in the Duaringa Shire include Duaringa, Blackwater, Bluff and Dingo. Blackwater is the closest town to Curragh North Coal Project site, located 30km to the south. Other shires that are likely to experience direct or indirect employment and economic benefits due to the Curragh North Coal Project are Emerald Shire and Broadsound Shire. The Curragh North Coal Project will provide coal supply to the Stanwell Power Station for the long-term future. The Curragh North Coal Project will ensure the long-term viability of the existing Curragh mine up until 2016 and provide employment for up to an additional 28 years. Employees will be housed in Blackwater.

### 1.2 Approvals

The following approvals are required for the Curragh North Coal Project:

Environmental Authority (mining activities)	<i>Environmental Protection Act 1994</i> (EPA)
Mining Leases	<i>Mineral Resources Act 1989</i> (Department of Natural Resources and Mines)

## 1.3 Impact Assessment Process

### 1.3.1 The EIS Process

The Environmental Impact Statement (EIS) process under Chapter 3 of the EP Act was followed for the Curragh North Coal Project.

The EIS process was initiated by Stanwell Corporation Limited (SCL) on 27 March 2001 by application to the Environmental Protection Agency (EPA) to prepare a voluntary EIS under section 70 of the EP Act for the Pisces Coal Project. The EPA requested additional supporting information for the application on 11 April 2001 and issued SCL a notice of decision regarding preparation of a voluntary EIS on 28 May 2001 after receiving the additional information. The EPA requested additional information for the draft Terms of Reference (TOR) on 14 June 2001 and issued to SCL a notice of publication of draft TOR on 3 July 2001 after receiving an amended draft TOR. The draft TOR was advertised for public comment from 9 July 2001 to 20 August 2001. However, at the request of the SCL the draft TOR was readvertised for public comment from 30 July 2001 to 21 September 2001. SCL responded to comments on the draft TOR, and the TOR was finalised by the EPA and issued to SCL on 21 November 2001.

The Pisces Coal Project was then dormant until 2002, when SCL called tenders to develop the Pisces Coal Project, with Wesfarmers Curragh (the Proponent) being the successful bidder. The Proponent decided to integrate the Pisces Coal Project into the Curragh mine operations and subsequently renamed it the Curragh North Coal Project (the Project). The Proponent held discussions with the EPA in early 2003, at which time the EPA determined that the TOR developed for the former Pisces Coal Project was appropriate to be used by the Proponent to write the draft EIS for the Project.

The draft EIS was submitted to the EPA on 8 September 2003. The EPA compared the EIS to the final TOR and issued to the Proponent the decision notice to proceed with EIS on 15 September 2003. The public notification period for the draft EIS began on 22 September 2003 and closed on Wednesday 22 October 2003. However, by agreement with the EPA, the draft EIS was readvertised from 24 October 2003 to 21 November 2003 to clarify the inclusion of various named and unnamed roads on the operational land.

A total of 21 submissions (including 1 from the EPA) were received as listed below.

State government departments	9 submissions
Affected landholders	10 submissions
Interest groups	2 submissions

The Proponent submitted a Supplementary Report for the EIS (Supplementary EIS) to the EPA on 3 December 2003, in response to the submissions.

This EIS Assessment Report completes the EIS process under the EP Act. In accordance with section 58 of the EP Act, it considers the final TOR for the Project, the submitted EIS, all submissions received, the Supplementary EIS and the standard criteria of the EP Act.

### 1.3.2 Consultation Program

#### **Public Consultation**

In addition to the statutory requirements for public notification of the TOR and EIS, the Proponent has progressed the public consultation program initiated by SCL in January 2001 during the development of the draft TOR. This program has included one-on-one discussions and meetings with the following groups:

- local landholders on, adjacent to and neighbouring the Project area;
- representatives of State agencies and Duaringa and Broadsound shire councils; and
- local community/interest groups.

#### **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 Project:

- Department of Natural Resources and Mines;
- Department of Local Government and Planning;
- Department of Families;
- Department of State Development;

- Treasury;
- Department of Emergency Services;
- Department of Primary Industries;
- Queensland Health;
- Education Queensland;
- Queensland Police Service;
- Department of Main Roads;
- Sunwater;
- Department of Aboriginal and Torres Strait Islander Policy;
- Duaringa Shire Council;
- Gurang Land Council;
- Fitzroy Basin Association;
- Duaringa-Dingo Landcare Group;
- CHRRUP;
- Mackenzie River Bigbend Landcare Group;
- Capricorn Conservation Council; and
- Agforce.

### **Public Notification**

In accordance with the statutory requirements, advertisements were placed in The Courier-Mail, Rockhampton Morning Bulletin and Blackwater Herald to notify the availability of the draft TOR for review and public comment. Advertisements were placed in The Courier-Mail, The Morning Bulletin and the Central Queensland News 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, AustralAsian Resource Consultants (AARC) website (draft TOR); and the Proponent's website (draft EIS).

The draft TOR were on public display in Brisbane at the Naturally Queensland Information Centre; at the EPA and Department of Natural Resources and Mines offices in Rockhampton; and the Duaringa Shire Council. However, no public comments were received. Finalised TOR will be available on the EPA website, together with this EIS Assessment Report, until December 2004.

The submitted EIS was placed on public display at the following locations:

- Emerald District Office – EPA, Emerald;
- Naturally Queensland Information Centre – EPA, Brisbane;
- Blackwater Public Library – Blackwater;
- Duaringa Library – Duaringa; and
- St Lawrence Shire Library – St Lawrence

Copies of the EIS could also be downloaded from the Proponent's website or purchased from AARC.

### **Site Visit**

A site visit was undertaken for the Advisory Body and "affected persons" on 1 October 2003, during the public notification period for the EIS. It was attended by a number of representatives from the Advisory Body and landowners for the site and from surrounding properties. The Proponent used the site visit as an opportunity to show members of the Advisory Body and the "affected persons" their existing Curragh operations, including rehabilitation work, as well as to point out the key areas of the Project site, such as the proposed transport corridor and the location of the proposed levee bank adjacent to the Mackenzie River. The Advisory Body and "affected persons" used the site visit as an opportunity to ask the Proponent questions about the Project and clarify any issues of interest or concern.

### 1.3.3 Environment Protection and Biodiversity Conservation Act 1999

The Project was referred as a 'not disputed' referral to the Commonwealth Department of Environment and Heritage (DEH) on 12 June 2003 and was declared a 'controlled action' on 25 June 2003. The controlling provisions for the action are sections 18 and 18A (Listed threatened species and communities) of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). These species include Brigalow woodland community, ornamental snake, brigalow scaly-foot snake, and squatter pigeon. The decision on assessment approach was made on 18 September 2003 and DEH determined that assessment would be by preliminary documentation. Public notification of the preliminary documentation ran in parallel with the State's notification period and concluded on 22 October 2003. In accordance with Section 130(1B) of the EPBC Act, a notice (including this EIS Assessment Report and the draft Environmental Authority (EA) conditions) will be given to DEH, prior to the Commonwealth Minister for Environment and Heritage deciding the action.

## 2. Matters considered in the preparation of this 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 sections.

### 2.1 The Final TOR

The final TOR document, issued on 21 November 2001, was considered when preparing this EIS Assessment Report. Section 2.2 outlines matters found to be relevant to the consideration of the final TOR when assessing the submitted EIS, while Section 3 provides a statement of the adequacy of the EIS in addressing the final TOR.

### 2.2 The submitted EIS

The submitted EIS was considered when preparing this EIS assessment report. The EIS comprised the draft EIS released on 8 September 2003 and the Supplementary EIS provided to the EPA on 3 December 2003. The following subsections outline particular issues that were found to be pertinent in assessing the adequacy of the EIS in addressing the final TOR and the development of conditions to be included in the draft environmental authority.

#### 2.2.1 Land Resources

##### **Land Suitability**

A land suitability assessment was undertaken on the Project site and suitability classes were allocated for each land use. Based on this assessment about 70 percent of the mining lease area was identified as being suitable for cropping and grazing with negligible to moderate limitations (classes 2 and 3 for cropping and classes 1 and 2 for grazing).

A number of public submissions raised concerns about the confusion caused by using both land suitability and land capability classification systems to rate agricultural potential. The Proponent clarified in the Supplementary EIS that only land suitability would be used to rate agricultural potential.

The requirements of the TOR for Land Suitability have been met, subject to the implementation of the Land Resources recommendations outlined below.

##### **Topsoil Management**

An investigation was undertaken during the feasibility study that included sampling and logging of the topsoil profile. This information will be used for planning level estimates of the depth(s) of topsoil that should be stripped prior to mining, and stockpiled for later spreading on the reshaped landform. Based on these investigations a number of topsoil management strategies have been identified including an average stripping depth of 0.3m, and to provide workable volumes for re-spreading during rehabilitation.



A target has been set in the revised EMOS within the rehabilitation success criteria for soil loss following rehabilitation of less than 40 tonnes/ha/year. However, no method of quantitatively measuring soil loss has been proposed. An appropriate method should be outlined in the Plan of Operations.

A number of public submissions, including that from the Department of Natural Resources and Mines (NR&M) raised issues with the adequacy of soil characterisation undertaken on the Project site. NR&M recommended that additional soil characterisation be undertaken and a commitment be made to more appropriate stripping depths. The Proponent has undertaken further soil characterisation, the results of which will be used to develop the cover material (including topsoil) utilisation management plan. The Proponent has also committed to stripping all available topsoil and replacing to a depth of 30cm on all rehabilitated areas, following re-profiling.

The requirements of the TOR for Geology and Soils have been met, subject to the implementation of the Land Resource recommendations outlined below.

### **Resource Sterilisation**

Since the Pisces Seam extends up-dip under the Mackenzie River to subcrop on the western side, the allowance for the riparian buffer and the flood protection levee bank that overlie part of the resource will result in some of the reserves being sterilised. To the east, there is an economic limit, beyond which coal cannot profitably be extracted by open-cut methods. However, out of pit dumps and mine infrastructure has been located to allow the decision for further mining development to the east to be made. Approximately 24Mt of coal reserves will be sterilised as a result the above constraints.

NR&M requested clarification on the criteria used in estimating the tonnages of sterilised coal and a breakdown of sterilised coal on a seam-by-seam basis. The Proponent clarified that the sterilised coal occurs only in the Pisces Seam and the tonnages were calculated by Runge Pty Ltd using Minescape software.

NR&M requested information on the estimates of coal available in the minor coal seams. The Proponent clarified in the Supplementary EIS that the Pollux and Pisces Lower Seams had both been identified during exploration and the Proponent is currently evaluating the potential for mining up to 8Mt of coal from the Pisces Lower Seam. However, any decision to mine this additional coal resource will not significantly increase the overall production rate of 7Mtpa of coal.

The requirements of the TOR for Resources have been met.

### **Post-Mine Land Use**

In the EIS the Proponent has committed to rehabilitating all disturbed land on the Project site to grazing and native habitat. All undisturbed land will remain available for grazing and other agricultural purposes. The Proponent has made a commitment in the EMOS to conduct a grazing trial over areas of the mining lease area that have been identified as being most suitable for grazing post-mining.

The EPA requested clarification by the Proponent about how the site will be rehabilitated to native habitat, particularly final voids, given the steep and unstable nature of such features left by mining and the prevalence of exotic species in the area that generally have a more rapid rate of establishment than native species. The Proponent addressed these issues in the Supplementary EIS by redefining the rehabilitation outcome to "wooded grassland" and also clarifying the nature of the final void landform, which will have a graded slope of 27 percent, suitable for revegetation with grassland and intermittent trees. Topsoil will only be replaced after the native tree species are well established. Based on a post-mine land suitability assessment, the post-mine land uses that have been identified, include, in order of priority, wooded grassland, grazing, wooded grassland/water storage (in the reshaped final voids) and native habitat (regional ecosystems).

A number of public submissions raised concerns about the outcomes of the progressive rehabilitation strategy and reductions in post-mine agricultural productivity of the site. The Proponent proposes to rehabilitate the balance of the land to wooded grassland and this will be compatible with grazing. The Proponent clarified in the Supplementary EIS that after rehabilitation, 30cm of topsoil will be replaced in disturbed areas, which will improve land suitability in areas of the site that currently have as little as 10cm of topsoil. If any landowner is concerned that the value of their land will be less post-mining, due to the preclusion of certain agricultural uses, this will be an issue for compensation under the *Mineral Resources Act 1989*.

The EPA also requested clarification on long-term post-mining management responsibilities for the site. The Proponent intends the long-term management responsibility post-mining to be returned to the underlying tenure holder. However, the rehabilitation goal is the establishment of self-sustaining habitats that will require minimal management intervention.



The TOR requirements for Post-Mining Land Use have been met, subject to the implementation of the Land Resource recommendations outlined below.

### **Flood Protection Levee Bank**

Staged construction of a 21km long flood protection levee bank from compacted clays selected from the overburden is proposed around the north, central and southern pits to provide protection of mining activities for flood events up to the 1000-year average recurrence interval (ARI) event. The levee design of a 5m crest width, with 1 in 3 side slopes, will produce an average footprint width of 35m and each stage will be topsoiled and grassed immediately after construction. The levee is expected to be stable during flooding, however, rock armouring will be placed along the levee should localised scour occur.

Both eastern and western floodplains of the Mackenzie River in the vicinity of the Project are subject to flooding for events in excess of a 10-year ARI event. Under those circumstances the levee would alter flow patterns and change flood levels. In a 100-year ARI event, the average depth of inundation for existing conditions on the western floodplain typically ranges from 3m-5m. Following construction of the levee, the increase in flood level would range from 0m-1.1m west of the Project.

Due to the considerable catchment size of the Project area (46,947km<sup>2</sup>), flood levels are slow to rise and fall (e.g. the February 1978 flood, which was close to a 50-year ARI event, lasted about three weeks, took one week to rise to its peak, and maintained its peak flow for more than a day). During large flood events, the volumes of water are so large (2,000,000ML to 9,000,000ML) that the effects of flood storage volumes in the overbank areas become quite small. Therefore, reductions of flood storage volumes as a result of the mine and levee bank are not expected to significantly affect the flood characteristics, and duration of floodplain inundation should effectively remain unchanged.

In any flood event, modelling suggests that there will be no flood level change at the furthest north-eastern point of the levee and there will be no downstream flood impacts.

The levee bank will raise flood levels on the Jellinbah Station, Barnett, Cooroorah and Bedford properties on the western bank of the river. The afflux on Jellinbah Station is less than 300mm for a 100-year ARI event. The homestead and sheds on Barnett are sited above the 1000-year ARI event flood levels under levee bank conditions and will not be impacted by the afflux. The afflux at the Cooroorah homestead and Bedford flood harvesting pumps is predicted to be between 50mm-100mm. The homestead on the Bedford property is above the 1000-year ARI event, and is not influenced by the afflux. The Bedford property also has a series of water storages, irrigation drains, bunds and diesel powered pumps servicing cultivated fields. Modelling indicates that two diesel pumps that are currently above the 1000-year ARI flood level will be at the 1000-year ARI flood level after construction of the levee bank.

These impacts have been assessed in detail by the Proponent and the outcomes indicate the impacts are manageable. Minor engineering works at Bedford Weir will eliminate the impacts on the irrigated cultivation areas. The impact on grazing areas will not effectively change the day-to-day management of the properties even in flood events, as cattle would be moved from flood prone areas when the Mackenzie River reaches flood conditions.

NR&M, CHRRUP and a number of other public submissions raised concerns about the positioning of the levee in relation to the riparian vegetation along the Mackenzie River. On Thursday 27 and Friday 28 November 2003, an EPA staff member visited the site with the Proponent and marked out the exact location of the outer toe of the levee bank to define the extent of any activity adjacent to the riparian area.

A number of public submissions raised concerns about the potential for levee bank erosion during flood conditions in the Mackenzie River. As outlined in the Supplementary EIS, these increases in flood levels would create more flow area, which in turn would offset the flow area blocked by the levee, thus increasing velocities only slightly. Based on the water modelling results provided in the Supplementary EIS, during a 100-year ARI event, maximum velocity at the levee bank will be 2.6 metres per second (m/s). As described in the Queensland Urban Drainage Manual, permissible velocity for erosion resistant soils (like the compacted clays proposed to be used for constructing the levee bank) with 100 percent stable vegetation cover is 2.8m/s, and reduces to 1.6m/s for 50 percent vegetation cover. Therefore, it is evident that during flood conditions flow velocities at the levee bank will be below the threshold level likely to cause soil erosion.

A number of public submissions raised concerns about the potential erosion due to increased flow velocities on the western floodplain caused by the levee bank redirecting flood water from the eastern floodplain. In the Supplementary EIS the Proponent clarified that Q100 flooding conditions on the western floodplain would

increase from 0.6m/s (+/-0.3m/s) to 0.8m/s (+/-0.4m/s). These velocities are still relatively low and well below the velocity likely to cause significant soil erosion.

A number of public submissions raised concerns about the potential reduction of recharge water to floodplain lagoons as a result of constructing the levee bank. The Proponent clarified in the Supplementary EIS that during flood conditions, flows are predicted to return to the river anabranch downstream of the Project. It is predicted that the catchment area of Five Mile Lagoon will be reduced by approximately 35% percent after the introduction of the levee bank. However, it is estimated that the reliability of water supply from Five Mile Lagoon available to landholders would be reduced by 2.3 percent by the introduction of the levee bank. Consequently, Five Mile Lagoon is predicted to be flushed by similar flow volumes and at similar frequencies during mine operations as experienced prior to mining.

A number of public submissions raised concerns about the responsibility for maintaining the levee bank post-mining and a contingency plan to protect downstream water quality in the event of flood waters breaching the levee and mixing with contaminated void water. The Proponent clarified this issue in the Supplementary EIS by outlining the option of increasing the size of the levee bank at the northern and southern ends of the mining area to reduce the probability of the levee from overtopping.

The requirements of the TOR for Flood Protection Infrastructure have been met, subject to the implementation of the Land Resource recommendations outlined below.

#### **Monitoring Success of Rehabilitation**

The use of analogue (e.g. control) sites were identified in the EIS as a suitable method for monitoring the success of rehabilitation. However, no analogue sites were identified in the EIS and discussion on their establishment was limited to flora indicators.

The EPA requested a methodology for selecting analogue sites and an indication of how fauna monitoring will be incorporated. The Proponent identified in the Supplementary EIS a range of analogue sites and outlined the parameters intended to be used to monitor fauna species.

The requirements of the TOR for the Rehabilitation Program have been met, subject to the implementation of the Land Resource recommendations outlined below.

#### **Land Resource Recommendations**

1. It is recommended that the EMOS include a requirement for a cover material (including topsoil) utilisation management plan (including the results of the soil characterisation) to be developed to the satisfaction of the EPA. This plan must also include a revised assessment of the pre and post-mine land suitability for both cropping and grazing.
2. It is recommended that the management strategies developed for the cover material utilisation management plan be implemented through the Plan of Operations.
3. It is recommended that the method proposed to quantitatively measure the rate of soil loss during the grazing trial and other site rehabilitation be described in the Plan of Operations.
4. It is recommended that the EA contain a condition requiring a grazing trial to commence as soon as a suitable area of the post-mining landform has been sufficiently rehabilitated.
5. It is recommended that the EA include a condition requiring the results of a grazing trial to be used to adjust the rehabilitation methods, including the use of cover material, as appropriate.
6. It is recommended that the EA contain a condition requiring a map indicating, and table listing, the GPS co-ordinates for the location of the outer toe of the levee bank. These co-ordinates must correlate to the marker pegs placed on site in agreement with the EPA on 27 and 28 November 2003. The map must then be included in the EMOS and Plan of Operations.
7. It is recommended that the EA contain a condition requiring that the levee bank must be positioned no closer to the Mackenzie River than the boundary indicated by the marker pegs placed on site in agreement with the EPA on 27 and 28 November 2003.
8. It is recommended that the EA contain a condition requiring the levee bank to be designed and constructed under the supervision of a Registered Professional Engineer Queensland (RPEQ).
9. It is recommended that the EA contain a condition requiring the integrity of the levee bank to be assessed by the operator within one week of any storm of duration and intensity and by an RPEQ at

least once per year and a report to be prepared and submitted to the mine operator on whether repairs are required.

10. It is recommended that the EA include a requirement for corrective action to be taken as soon as practicable if the RPEQ's annual report finds that repairs to the levee are required.
11. It is recommended that the EA contain a condition that the Proponent should ensure cover material is placed upon and grass seed applied (where topsoil is used as cover) to the outer wall of the levee within three months of the levee's construction.

## 2.2.2 Hydrology and Water Quality

### ***Water Values of the Site***

The Project is located on the eastern alluvial plain of the Mackenzie River, 10km downstream from Bedford Weir and 49km upstream of the Bingegang Weir. Blackwater Creek flows into the Mackenzie River about 1km upstream of the Project site. Cooroorah Creek flows into the Mackenzie River from the west (opposite the Project site) and Scrub Creek flows into the Mackenzie River from the west (downstream of the Project site). The three open-cut pits on the Project site are located directly adjacent to a 13km stretch of the Mackenzie River. The transportation corridor traverses Blackwater Creek.

### ***Surface Water Quality***

All water will be contained on site apart from controlled discharges to the Mackenzie River at selected locations along the levee under extreme rainfall events.

A study of background water quality was undertaken for the Project. However, most of the water quality data presented in the EIS were from locations 10km or more away from the Project site. Limited site-specific background water quality data is available. Grab samples were collected from two water sampling sites upstream and downstream in the Mackenzie River in the vicinity of the Project site by AARC in May 2002 and May 2003. No water quality data was reported for Blackwater Creek.

The EPA requested additional surface water quality data to be collected upstream and downstream in the Mackenzie River and in Blackwater Creek, prior to commencement of project operations. This information is necessary to enable background water quality conditions to be defined and allow the water quality limits set in the EA to be amended if necessary. The EPA also requested ongoing monitoring to be included as an additional management strategy in the EMOS.

The Proponent provided additional water quality monitoring data for the Mackenzie River as well as existing data collected between 1985 and 2001 for Blackwater Creek in the Supplementary EIS. Currently, there are no flows in Blackwater Creek. However, should a flow occur, the Proponent has committed to sampling Blackwater Creek on a daily basis, upstream and downstream of the proposed transport corridor, until ten samples have been taken, prior to the commencement of the Project.

NR&M noted that the receiving water quality limits defined in the EMOS are not adequate to measure contaminants leaving the site and requested a full suite of suitable parameters. The Proponent provided a suite of release limits in the Supplementary EIS based on the release criteria for the existing Curragh mine. These release limits may be amended depending on the outcome of the background water quality monitoring still to be conducted along the Mackenzie River and Blackwater Creek. The Proponent made a commitment in the Supplementary EIS to conduct ongoing water quality monitoring during the mining operations.

### ***Water Management System***

The objective of the water management system (WMS) is to contain as much runoff as possible within the levee system during mine life. Six water management dams and water supply dams will be located within the mine site, having a total storage capacity of 3414ML. The water retention dams will be sized to contain a 10-year ARI event. Separate sedimentation dams with a storage capacity of 218ML will be constructed to capture runoff from the haul road. Water will be directed to these structures via a network of open drains and high wall bunds that will also provide additional storage to contain runoff from large rainfall events.

Water retention dams will be connected to the main water supply dam via pipelines with a capacity of 100 litres/second. These pipelines will be designed so that water can be transferred from any water retention dam to the main water supply dam and vice versa. Water accumulating in the pits from stormwater runoff and groundwater seepage will be pumped to a water retention dam or the main water supply dam for use on site. In addition, the main water supply dam will be connected by pipeline to the WMS at the existing Curragh mine for recycling of water to the washplant. The voids at the existing Curragh mine will act as buffer storages for water

from the Project site and excess water will be returned to the Project site should there be a site water deficit. During extreme rainfall events, water is proposed to be released off site.

The requirements of the TOR for Surface Waters have been met, subject to the implementation of the Hydrology and Water Quality recommendations outlined below.

### **Groundwater**

The EIS considers registered groundwater users when assessing the potential impact of the Project on groundwater availability. The closest registered groundwater bore is 5km from the Project boundary and is outside the reach of impact of the Project on this groundwater recharge area.

NR&M requested a description of existing groundwater usage, based on consultation with landholders. Additional information based on consultation with landowners was provided in the Supplementary EIS and no operational bores were identified on the groundwater recharge area within the reach of impact of the Project.

The requirements of the TOR for Groundwater have been met, subject to the implementation of the Hydrology and Water Quality recommendations outlined below.

### **Voids**

Voids are proposed post-mining. Seepage to or from groundwater may occur depending on water levels and there is potential for saline water runoff from spoil dumps entering the pit to generate high concentrations of contaminants. No hydraulic modelling of water quality in the voids was presented in the EIS.

A number of public submissions raised concerns about the potential for poor water quality in the voids and associated contamination of groundwater and the Mackenzie River. In the Supplementary EIS the Proponent clarified that the water level in the voids will be below the base of alluvium in most areas, hence, the risk of void water permeating into the groundwater is low.

The EPA requested a detailed assessment of alternative management, design and backfill options for the voids. Limited information on the management options for the voids and the economic assessment of those options was provided in the Supplementary EIS. This outstanding issue will be addressed by the implementation of the Hydrology and Water Quality recommendation for voids outlined below.

### **Raw Water Demand**

Raw water demand has been estimated at 909ML/a for the operations on the Project site. The estimated long-term water supply available for the Project is 1020 – 1370ML/a.

The EPA requested additional information on the water consumed off site through the coal preparation plant located at the existing Curragh mine. Information in the Supplementary EIS clarified that while production at the Project will increase, production at the existing Curragh mine will decrease, resulting in no increase in net water usage.

The requirements of the TOR for Water Supply and Wastewater have been met.

### **Hydrology and Water Quality Recommendations**

1. It is recommended that the EA include a condition for additional background surface water quality sampling in Blackwater Creek, prior to commencement of mining activities.
2. It is also recommended that the EA include a condition for ongoing water quality monitoring along the Mackenzie River and Blackwater Creek within and adjacent to the site during the mining operations.
3. It is recommended that the EA contain a condition defining the end-of-pipe release limits for water contaminated by mining activities.
4. It is recommended that the EA contain a condition outlining the location of suitable site water discharge points and flow conditions in the Mackenzie River that are suitable for discharge to occur (i.e. during flood flows only).
5. It is recommended that the EA include a condition requiring a void options study. This study must include options for minimising void areas and volumes and consider void wall stability, void water quality, hydrogeological behaviour of the voids and long-term levee bank stability. This study should also consider options for levee bank and void management and maintenance post-mining.

## 2.2.3 Terrestrial Flora and Fauna

### Terrestrial Flora

A complete analysis of flora and fauna is contained in Appendix J of the EIS. Flora studies on the Project site were undertaken in November 1998, February 2001 and May 2003.

The six vegetation communities identified on the Project site are listed in Table 1 below. The *Vegetation Management Act 1999* (VM Act) does not apply to activities on mining leases, and the Proponent has no obligation to apply for a permit under the VM Act to clear these communities.

**Table 1 – Conservation status of Regional Ecosystems on the Project site**

RE Code	Description	VM Act (1999) Status*	EPBC Act Status
11.3.25	Fringing River Red Gum ( <i>Eucalyptus camaldulensis</i> ) woodland on alluvial plains	Not Of Concern	Not listed
11.3.3	Open Coolabah ( <i>E. coolabah</i> ) woodland with a predominantly grassy understorey	Of Concern	Not listed
11.3.1	Brigalow ( <i>Acacia harpophylla</i> ) woodland with Yellowwood ( <i>Terminalia oblongata</i> )	Endangered	Endangered
11.4.2	Poplar Box ( <i>E. populnea</i> ) and Dalachy's Gum ( <i>Corymbia dallachiana</i> ) open woodland	Of Concern	Not listed
11.10.1	Lemon Scented Gum ( <i>Corymbia citriodora</i> ) woodland with Rosewood ( <i>Acacia rhodoxylon</i> )	Not Of Concern	Not Listed
N/A	Open grassland with scattered <i>Acacia victoriae</i> , <i>E. populnea</i> , <i>E. coolabah</i> and <i>A. salicina</i> trees	N/A	N/A

The potential impacts on flora including the area of each vegetation community that is likely to be cleared as a result of the Project are identified in Table 2.

**Table 2 – Vegetation communities lost or disturbed as a result of the Project**

Vegetation Community	Disturbance Area (approximate ha)					
	Transport Corridor	Levee Bank	Pit	Spoil Dumps	General Mining	Total
River Red Gum Tall Open Woodland on Alluvial Plains (RE 11.3.25)	2.1	11.0	0.7	0	2.1	15.9
Open Coolabah Woodland with a Predominantly Grassy Understorey (RE 11.3.3)	0	14.5	11.2	0	21.5	47.2
Brigalow Woodland with Yellowwood (RE 11.3.2)	16.2	4.0	4.7	0	4.8	29.7
Poplar Box and Dallachy's Gum Open Woodland (RE 11.4.2)	0	7.5	0	0	11.5	19.0
Lemon-scented Gum Woodland with Rosewood (RE 11.10.1)	0	0	0	0	0	0

These impacts will be managed by implementing the flora management strategies outlined in the EIS.

A Riverine Protection Permit is usually required from NR&M when crossing a watercourse (e.g. the transportation corridor crossing over Blackwater Creek). However, provisions in the *Water Regulation 2002* enable the EPA to incorporate this requirement into the EA under the EP Act.

NR&M requested additional information on the actual location of the flood protection levee bank in relation to riparian vegetation and endangered regional ecosystems. To satisfy this requirement, an EPA staff member accompanied the Proponent on site and marked the outer toe of the levee bank with survey pegs and the Proponent has committed to providing a map showing the location of the levee bank (including GPS coordinates) in the EA.

CHRRUP raised the issue of improving the connectivity of Endangered Regional Ecosystems (EREs) on site with those outside the mining lease area. The Proponent has committed to consulting with stakeholders (as part



of the ongoing Stakeholder Consultation Plan) on the potential for improving habitat corridor connectivity by rehabilitating EREs beyond the mining lease area boundary.

### **Terrestrial Fauna**

Fauna surveys were conducted in 1998, 2002 and 2003. A total of 198 fauna species were recorded on site including 14 butterflies; 15 amphibians; 22 reptiles; 120 birds; and 27 mammals. The following species of significance were identified on the Project site:

- *Paradelma orientalis* (brigalow scaly-foot snake) was observed along Blackwater Creek where the proposed transport corridor is located. This species is listed as Vulnerable under the EPBC Act, the *Nature Conservation Wildlife Regulation 1994* (NCWR) and the Action Plan for Australian Reptiles (APAR);
- *Denisonia maculata* (ornamental snake) was observed on Blackwater Creek along the proposed transport corridor. This species is listed as Vulnerable under the EPBC Act, the NCWR and the APAR;
- *Geophaps scripta scripta* (squatter pigeon) is listed as Vulnerable under the EPBC Act and NCWR and is listed as Near Threatened under the Action Plan for Australian Birds (APAB);
- 41 migratory species of birds listed under the EPBC Act have been observed on the Project site. These include four species listed under the China and Australian Migratory Bird Agreement (CAMBA) and the Japan and Australian Migratory Bird Agreement (JAMBA). These four species are *Ardea ibis* (cattle egret), *Haliaeetus leucogaster* (white-breasted sea-eagle); *Calidris acuminata* (sharp-tailed sandpiper) and *Gallinago hardwickii* (Latham's snipe);
- *Chalinolobus picatus* (little pied bat) was recorded along Blackwater Creek and is listed as Rare under the NCWR.

A fauna protection plan will be implemented for clearing activities and relocation of any species of conservation significance is proposed to reduce the immediate impact on these species. In addition, cane toad management strategies will be implemented to protect the frog species on the Project site that form a significant food source for snake species in the area. More detailed fauna management strategies are outlined in the EIS.

The requirements of the TOR for Terrestrial Flora and Fauna have been met, subject to the implementation of the Terrestrial Flora and Fauna recommendations outlined below.

### **Assessment of the Transportation Corridor under the EPBC Act**

One of the proposed actions of the Project involves clearing of a 150m wide transportation corridor through the brigalow woodland community listed as Endangered under the EPBC Act. The brigalow scaly-foot snake, ornamental snake and the squatter pigeon have also been identified along the transportation corridor and are all listed under the EPBC Act. This action is currently being assessed by DEH. At the completion of the State EIS process, the Commonwealth Minister for the Environment and Heritage will make a determination on whether or not this action should proceed.

### **Terrestrial Flora and Fauna Recommendations**

1. It is recommended that the progressive rehabilitation strategy excludes cattle from regenerating brigalow and riparian areas.
2. It is recommended that the EA include ongoing maintenance and end of mining rehabilitation conditions that address the impacts of crossing Blackwater Creek.

### **2.2.4 Aquatic Flora and Fauna**

Aquatic flora data for the Mackenzie River in the vicinity of the Project site is presented in the EIS based on the analysis of two grab samples collected by AARC in May 2002 and May 2003. Data on aquatic fauna has also been presented upstream and downstream, but only from locations well outside of the Project site.

Limited aquatic flora and fauna data was reported for the Mackenzie River and no data was reported for Blackwater Creek in the vicinity of the Project. The EPA requested additional baseline aquatic flora and fauna studies in Blackwater Creek and in the Mackenzie River. The Proponent made a commitment in the Supplementary EIS to undertake additional baseline aquatic flora and fauna surveys in the Mackenzie River and Blackwater Creek.

The requirements of the TOR for Aquatic Flora and Fauna have been met, subject to the implementation of the Aquatic Flora and Fauna recommendation outlined below.



### ***Aquatic Flora and Fauna Recommendation***

1. It is recommended that the EA include a condition for additional background aquatic flora and fauna samples to be collected (in a manner to be agreed with the EPA) from the Mackenzie River adjacent to the mine site, and in Blackwater Creek near the transportation corridor, prior to commencement of mining activities.

### **2.2.5 Cultural Heritage**

A cultural heritage survey for the Project site was conducted for SCL in 1999. Discussions between the Proponent and the relevant indigenous groups (Nghally Ghungalu Thoonieda Aboriginal Corporation and the Ghungalou Aboriginal Corporation) resulted in a decision to undertake supplementary cultural heritage investigations. A Cultural Heritage Investigation and Management Agreement (Appendix M of the EIS) has been negotiated and agreement on a Cultural Heritage Management Plan (CHMP) has been reached with the indigenous groups subject to legal review. It is anticipated that the CHMP will be signed in the last week of January 2004.

A European and Indigenous history study of the Central Queensland Region was undertaken in June 2002. No significant items of European heritage or structures or historical interest were identified within the Project site.

The requirements of the TOR for Cultural Heritage have been met, subject to the implementation of the Cultural Heritage recommendation outlined below.

### ***Cultural Heritage Recommendation***

1. The CHMP implemented for the Project must be acceptable to the EPA and the relevant Traditional Owner representatives.

### **2.2.6 Air Quality**

#### ***Dust management***

Dust will be the most relevant air pollutant generated by the Project activities including land clearing; topsoil and overburden removal, transportation and dumping; wind erosion of stockpiles; coal extraction, loading and haulage; rubber tyred mobile plant and overland conveyer; and blasting. The wind direction is predominately easterly. The nearest sensitive locations are as follows:

- Barnett homestead – 2.7km west of the central pit boundary and 9.6km from the transportation corridor;
- Minnie Plains homestead – 3.9km west of transportation corridor and 6.8km from south pit boundary;
- Jellinbah homestead – 4.1km north of the north pit boundary;
- Bedford homestead – 4.6km south-west of south pit boundary and 4.9km from transportation corridor; and
- Bedford property – irrigated fields, including cotton within 600m west of the central and southern pits.

Management strategies will be implemented to minimise dust impact, including no burning of cleared vegetation when winds blow towards sensitive receptors; revegetation of overburden and topsoil stockpiles; forward planning to determine appropriate stockpile locations and to minimise soil handling and drop heights; and regular watering of haul roads and disturbed areas with the potential to generate dust.

The EPA requested that monitoring of the impacts of dust on near field vegetation be included in the EMOS. The Proponent defined the additional monitoring locations along the western bank of the Mackenzie River and along the eastern boundary of the mining lease area and committed to additional monitoring in these areas in the Supplementary EIS.

One public submission raised concerns about the impact of dust on cotton growth, development and yield on the Bedford property to the west of the coal mine. However, these issues have since been addressed through a compensation agreement reached between the Proponent and the landowner of the Bedford property. The EPA has received confirmation from the landholder of this agreement.

One public submission raised concerns about ongoing dust nuisance problems at their property and the potential for the additional coal processing at the existing Curragh mine to compound this problem. The property in question is more than 20km south-west of the Project site and 9km west of the existing Curragh mine. Air modelling conducted by the Proponent and presented in the EIS suggests that it is highly unlikely that mining operations at the Project site will impact on this property due to the significant buffer distances. Furthermore, the

amount of coal from the Project to be processed at the existing Curragh coal handling and preparation plant will be offset by reducing the amount of coal mined and processed from the existing Curragh mine (i.e. net coal processing at the existing Curragh mine will not increase). Dust monitoring at the property in question, conducted by both the EPA and the Proponent, found dust deposition levels to be below the allowable limit set out in the Environmental Protection (Air) Policy (EPP for Air). The EPP for Air is currently under public review and if the landholder in question is not satisfied with this limit, they may wish to make a submission on this policy.

The requirements of the TOR for Air Quality have been met, subject to the implementation of the Air Quality recommendations outlined below.

### **Air Quality Recommendations**

1. It is recommended that the EA include a condition requiring ongoing dust deposition monitoring to be undertaken at near field vegetation to monitor for potential impacts.
2. It is recommended that the environmental authority for the Project include a requirement for a complaints management system.

### **2.2.7 Greenhouse Gas**

#### **Greenhouse Gas Emissions**

The Proponent is a signatory to the Australian Greenhouse Office (AGO) Greenhouse Challenge. As a signatory, the Proponent is required to produce an annual progress report to be submitted to the AGO. Potential greenhouse gas emissions include release of methane gas during mining of coal; spontaneous combustion of coal; exhaust emissions; electricity usage; and burning of vegetation.

The EPA requested additional information on minimisation strategies with consideration to relevant protocols, agreements and strategies. Minimisation strategies based on the Proponent's requirements as a signatory to the AGO's Greenhouse Challenge were outlined in the Supplementary EIS.

No other greenhouse gas issues were raised in the public submissions and the requirements of the TOR for Greenhouse Gas have been met.

### **2.2.8 Noise and Vibration**

Ambient noise levels including day, evening and night-time long-term background noise levels were measured in 1998. The Noise and Impact Study Report is presented in Appendix N of the EIS. Existing noise is related to agricultural and grazing activities, as well as normal homestead activities. The nearest sensitive locations are listed in section 1.4.6 above. Noise monitoring was conducted 250m south-east of the proposed south pit because this is an area where existing homesteads would be represented. The results from the environmental noise logging are summarised in Table 3 below.

**Table 3 – Background Noise Monitoring Results**

Time of Day	L <sub>A10</sub> dB(A)	L <sub>A90</sub> dB(A)	L <sub>min</sub> dB(A)	L <sub>max</sub> dB(A)
Day (0600-1800)	51.8	29.6	27.1	65.4
Evening (1600-2200)	59.2	37.4	31.8	66.2
Night (2200-0600)	47.0	36.1	30.8	57.8

The EIS discusses noise impacts of construction and mining, operation and transportation from a "worst case" scenario and these potential impacts, as well as mitigation and management measures have been adequately discussed in the EIS.

Noise issues have been adequately addressed during the EIS process and the requirements of the TOR for Noise and Vibration have been met, subject to the implementation of the Noise recommendation outlined below.

#### **Noise and Vibration Recommendation**

1. It is recommended that management strategies developed to minimise noise impacts, as outlined in the EIS, be implemented through the Plan of Operations for the Project site.

## 2.3 Properly made submissions

Twenty-one submissions were received by the EPA. 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.*

Appendix D of the draft EIS presents a consideration of the standard criteria by the Proponent. The conclusions drawn are generally adequate.

The EPA has considered the standard criteria when assessing the Project, and has found that all impacts identified in the EIS could be sufficiently mitigated through measures to be required by conditions on the necessary approvals.

## 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

Most of the TOR were adequately addressed in the draft EIS and Supplementary EIS. The outstanding sections of the TOR have been discussed in Section 2.2 of this EIS Assessment Report, and subject to the implementation of the various recommendations outlined in Section 2.2, the TOR finalised by the EPA on 21 November 2001 have been adequately addressed.

## 4. Adequacy of the EMOS for the Project

A draft EMOS was included with the draft EIS that was released for public notification. A number of public submissions on the EIS raised issues that triggered amendments to the draft EMOS. These amendments were provided in the Supplementary EIS submitted by the Proponent. The EPA has reviewed the amendments to the EMOS and considers this document adequate to prepare the draft EA for the Project, provided the recommendations outlined in this EIS Assessment Report are implemented. An EMOS Assessment Report will be prepared separately.



## 5. Suitability of the Project

Project issues and recommendations were outlined in Section 2.2 above. The EPA has considered the final TOR, the draft EIS, all submissions on the EIS, the Supplementary EIS, and the standard criteria and has determined that the Project as described is suitable to proceed, provided the recommendations of this EIS Assessment Report are implemented.

## 6. Recommendations

Recommendations for conditions to be included in the draft environmental authority are provided in section 6.1 below. Recommendations for inclusions in the EMOS are provided in section 6.2, while recommendations for inclusions in the Plan of Operations are provided in section 6.3. Recommendations for further actions to be undertaken by the EPA are provided in section 6.4.

### 6.1 Recommended conditions for the draft environmental authority

1. Include a requirement in the EA for a grazing trial to commence as soon as a suitable area of the post-mining landform has been rehabilitated to a standard detailed in other conditions in the EA.
1. Include a requirement in the EA for the results of a grazing trial to be used to adjust the rehabilitation methods, including the use of cover material, as appropriate.
2. Include a requirement in the EA for a map indicating, and table listing, the GPS co-ordinates defining the location of the outer toe of the flood protection levee bank. The GPS co-ordinates must be of the marker pegs placed in agreement with the EPA on 27 and 28 November 2003. The map must then be included in the EMOS and Plan of Operations.
3. Include a requirement in the EA for the levee bank to be positioned no closer to the Mackenzie River than the boundary indicated by the marker pegs placed on site in agreement with the EPA on 27 and 28 November 2003.
4. Include a requirement in the EA for the levee bank to be designed and constructed under the supervision of a Registered Professional Engineer Queensland (RPEQ)
2. The condition of the levee must be assessed:
  - a. by the operator within one week of any storm of duration and intensity as defined in the EA; and
  - b. by an RPEQ at least once per year.A report to the operator of the mine on whether repairs are required is to be prepared following either (a) or (b) inspections.
5. Include a requirement in the EA for corrective action to be taken as soon as practicable if the RPEQ's annual report finds that repairs to the levee are required.
6. Include a requirement in the EA that the Proponent should ensure cover material is placed upon and grass seed is applied (if topsoil used as cover) to the outer wall of the levee within three months of the levee's construction.
7. Include a requirement in the EA for additional background surface water quality sampling in Blackwater Creek (flow conditions permitting), prior to commencement of mining activities. However, if a suitable flow in Blackwater Creek has not occurred prior to the commencement of mining activities, water sampling in Blackwater Creek should be undertaken as soon as practicable thereafter.
8. Include a requirement in the EA for ongoing water quality monitoring during the mining operations in the Mackenzie River, adjacent to the north, central and southern pits, and in Blackwater Creek, adjacent to the transportation corridor.
9. Include a requirement in the EA for a void options study to be undertaken during the life of the mine. This study must include options for minimising void areas and volumes and consider void wall stability, void water quality, hydrogeological behaviour of the voids and long-term levee bank stability. The study must also consider options for levee bank and void management and maintenance post-mining.
10. Include a requirement in the EA for a progressive rehabilitation strategy including the exclusion of cattle from regenerating Regional Ecosystems and riparian areas.



11. Include a requirement in the EA for additional background aquatic flora and fauna samples to be collected (in a manner to be agreed with the EPA) from the Mackenzie River adjacent to the Project site, and from Blackwater Creek, adjacent to the transportation corridor, prior to commencement of mining activities. However, if suitable conditions in the Mackenzie River and/or Blackwater Creek have not occurred prior to the commencement of mining activities, aquatic flora and fauna sampling in the Mackenzie River and/or in Blackwater Creek should be undertaken as soon as practicable thereafter.
12. Include a requirement in the EA for ongoing dust deposition monitoring to be undertaken at near field vegetation to monitor for potential impacts.
13. Include a requirement in the EA for a complaints management system (including corrective actions).

## 6.2 EMOS

1. Include a requirement in the EMOS for a cover material (including topsoil) utilisation management plan (including the results of the soil characterisation) to be developed to the satisfaction of the EPA. The plan must also include a revised assessment of the pre and post-mine land suitability for both cropping and grazing.
2. Include a requirement in the EMOS that the CHMP implemented for the Project must be acceptable to the EPA and the relevant Traditional Owner representatives.
3. Include in the EMOS, a map and table of the relevant GPS co-ordinates indicating the agreed boundary for the placement of the levee bank.

## 6.3 Plan of Operations

1. Implement the cover material utilisation management strategies developed through the EMOS in the Plan of Operations for the site.
2. Describe the method proposed to quantitatively measure the rate of soil loss during the grazing trial and other site rehabilitation in the Plan of Operations.
3. Implement the specific noise management strategies outlined in the EIS through the Plan of Operations.
4. Provide in the Plan of Operations, a map and table of the relevant GPS co-ordinates indicating the agreed boundary for the placement of the levee bank.

## 6.4 Recommended actions to be undertaken by the EPA

1. Address any outstanding issues regarding the transportation corridor crossing Blackwater Creek as conditions in the EA.
2. Address any outstanding issues regarding site water discharge locations, end of pipe release limits, suitable flow conditions of the Mackenzie River for discharge to occur and monitoring locations as conditions of the EA.
3. Address any outstanding issues regarding noise and vibration as conditions of the EA.



**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.

**Approved by:**

Dean Ellwood

Signature

16 January 2004

Date

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