



Assessment Report under the *Environmental Protection Act 1994*

on the

Environmental Impact Statement

for the

Newlands Coal Mine Extension into the Wollombi No.2 Surface Area

proposed by

**Xstrata Coal Queensland Pty Ltd,
Itochu Coal Resources Australia Pty Ltd,
ICRA NCA Pty Limited,
Sumisho Coal Australia Pty Limited**

3 August 2006

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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 Newlands Coal Mine Expansion into the Wollombi No. 2 Surface Area proposed by an unincorporated joint venture between Xstrata Coal Queensland Pty Ltd, Itochu Coal Resources Australia Pty Ltd, ICRA NCA Pty Ltd and Sumisho Coal Australia Pty Limited. The Environmental Protection Agency (EPA), as the administering authority of the EP Act, coordinated the EIS process. This assessment report has been prepared pursuant to Sections 58 and 59 of the EP Act.

The objective of this assessment report is to:

- address the adequacy of the EIS in addressing the final terms of reference (TOR) , and the adequacy of the draft environmental management plan (EM plan);
- summarise key issues associated with the potential adverse and beneficial environmental, economic and social impacts of the Newlands Wollombi No. 2 Project and the management, monitoring, planning and other measures proposed to minimise any adverse environmental impacts of the project;
- 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; and

(d) address the matters prescribed in section 3F of the *Environmental Protection Regulation 1998*.

Section 58 of the EP Act lists the criteria that the EPA must consider when preparing an EIS assessment report as follows: The final TOR for the EIS; the submitted EIS; all properly made submissions and any other submissions accepted by the chief executive; the standard criteria; and other prescribed matters.

Section 59 of the EP Act states the required content of the EIS assessment report. In summary, this assessment report addresses the adequacy of the EIS in addressing the TOR, the adequacy of the draft 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 Newlands Wollombi No. 2 Project, except where this report recommends modification of a condition in the streamlined set, or additional conditions.

The Newlands Wollombi No. 2 Project is a controlled action under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Consequently, matters prescribed in Part 1A of the *Queensland Environmental Protection Regulation 1998* (EP Reg) apply to the project, including matters for this EIS assessment report prescribed in section 3F of the EP Reg.

Delivery of this EIS assessment report to the proponent completes the State's EIS process under the EP Act. The Commonwealth's assessment stage under Part 8 of the EPBC Act ends when the Commonwealth Environment Minister has received both a copy of this EIS assessment report and a notice from the State in accordance with section 130(1B) of the EPBC Act.

1.1 Project details

Xstrata Coal Queensland Pty Ltd, Itochu Coal Resources Australia Pty Ltd, ICRA NCA Pty Limited and Sumisho Coal Australia Pty Limited are the proponents for the Newlands Coal Mine expansion project known as the Newlands Wollombi No. 2 Project. The EIS assessed in this report was required for amendment of the existing environmental authority (number 173942 MIM800098402) to allow the proposed mining activities.

The proposed Newlands Wollombi No. 2 Project would be located approximately 129km west of Mackay and 30km north-west of Glenden, within Nebo Shire, in central Queensland. Glenden is a small town with a population of around 1100 people. Glenden was established in the 1980s to support the Newlands Coal Mine.

The Project is located on an area of existing mining lease known as the Suttor Creek Mining Lease (ML4761). Although ML4761 has been granted, surface rights over an area of 722ha are required. The Project is a satellite deposit located to the west of the current Suttor Creek mining operation, which is a satellite deposit to the Newlands Coal Mine. The project will use some infrastructure and facilities located at the Newlands Coal Mine, thereby minimising the disturbance footprint. The size of the existing mining workforce will not change significantly because redistributed staff (a total of 125 personnel, including contractors) will work the new deposit, although an additional 60 staff will be required for the construction phase.

Newlands Coal Pty Ltd proposes to operate the Newlands Wollombi No. 2 Project as a contractor-operated open cut mine producing up to 2.5 million tonnes per annum (Mtpa) of Run of Mine (ROM) coal for a nominal annual average of 1.9Mtpa product coal over a 15 year mine life. The annual production from Wollombi pit may vary up to a maximum of 5.0Mt.

The target coal seams in the Project area are the Goonyella Middle seam and the Goonyella Upper seam. It is proposed to use an excavator and truck fleet combined with a dragline to produce high grade, medium volatile steaming coal and premium quality hard coking coal for the export market. The proposed project layout is shown in the EIS (Figure 2.2).

The proposed final void for the Wollombi pit remaining at the end of the mine life will be up to 300m deep, 2.5km long and between 250m and 500m wide.

Approximately 4.5km of Suttor Creek immediately to the South of the project is to be diverted. The environmental impacts of the diversion were assessed and approved by the EPA under an amendment of environmental authority application prior to submission of this EIS.

The water balance model for the project indicates that there will be a surplus of water over the life of the Project. Groundwater inflow to the pit has been estimated to be generally 80L/s, with possible inflows of up to 280L/s. Therefore, project water supply is assured in dry weather. In wet weather, the Project's water will be managed by storing it in sediment dams and the evaporation dam, and discharging where necessary discharge conditions are met.

1.2 Approvals

The following approvals are required for the Newlands Wollombi No. 2 Project:

Approval	Legislation (Administering Authority)
Environmental authority (mining activities)	<i>Environmental Protection Act 1994</i> (EPA)
Surface rights are required over an area of approximately 722 ha on ML4761	<i>Mineral Resources Act 1989</i> (Department of Natural Resources and Mines)
Approval to undertake action (a "controlled 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)
Interference with species listed under the Nature Conservation (Wildlife) Regulation 1994.	<i>Nature Conservation Act 1992</i> (EPA)

1.3 Impact assessment process

1.3.1 The EIS process

The environmental impact statement (EIS) for the Newlands Wollombi No. 2 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 Xstrata Coal Queensland Pty Ltd, on behalf of the project proponents, on 18 March 2005 by application to the EPA to prepare a voluntary EIS, including the Initial Advice Statement (IAS), for the Newlands Wollombi No. 2 Project under section 70 of the EP Act. The EPA approved the application to undertake a Voluntary EIS on 24 March 2005.

The EPA approved the draft TOR and issued a notice of publication of draft TOR to Xstrata Coal Queensland Pty Ltd, Itochu Coal Resources Australia Pty Ltd, ICRA NCA Pty Ltd and Sumisho Coal Australia Pty Ltd on 12 April 2005. The draft TOR were available for public comment from 18 April 2005 to 1 June 2005 with the EPA placing a public notice on the EPA's website on 15 April 2005 and in The Courier-Mail and Mackay Daily Mercury on 16 April 2005. The proponent issued copies of the public notice to affected and interested persons.

Nine (9) submissions were received by the EPA on the draft TOR within the public comment period. Submissions were received from one Commonwealth department, six State government departments and agencies, two non-government organisations. These submissions, together with one from the EPA, were forwarded to the proponent on 10 June 2005 to which Newlands Coal Pty Ltd, on behalf of the proponents, responded on 21 June 2005. The EPA considered all submissions received on the draft TOR and Newlands Coal Pty Ltd's responses prior to issuing the final TOR to Xstrata Coal Queensland Pty Ltd on 15 July 2005.

Xstrata Coal Queensland Pty Ltd, on behalf of the proponents, submitted the draft EIS on 19 October 2005 to the EPA for review prior to public notification. The EPA compared the draft EIS to the final TOR and advised the proponents on 25 November 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 as permitted under the EP Act at that time.

The draft EIS was available for public submissions from 9 December 2005 to 24 January 2006. Newlands Coal Pty Ltd placed a public notice in The Courier-Mail and Mackay Daily Mercury on 8 & 10 December 2005, and the EPA placed a public notice on the Agency website. The proponent also issued copies of the public notice to affected and interested persons.

Twelve (12) 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, and three non-government organisations. These submissions, together with one from the EPA, were forwarded to Xstrata Coal Queensland Pty Ltd by 10 February 2006 for consideration and response. Xstrata Coal Queensland Pty Ltd submitted a response to submissions (Supplementary Report) to the EPA on 10 March 2006.

On 14 March 2006, 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 22 March 2006.

Six (6) submissions were received on the Supplementary EIS. Four (4) submissions were received from State government agencies, one (1) submission from the Commonwealth government and one (1) from non-government organisations.

On 26 April 2006 the proponent was notified that the administering authority had decided not to allow the submitted EIS to proceed under Chapter 3, Divisions 5 and 6 of the EP Act. The reason given for the decision was an inadequate response to submissions on the submitted EIS and failure to make all appropriate amendments to the submitted EIS. The administering authority advised the proponent that once the inadequacies and amendments had been satisfactorily addressed the decision to allow the EIS to proceed would be reconsidered.

An Addendum to the Supplementary Report was received on the 25 May 2006. Copies of the Addendum were issued to those members of the advisory body whose concerns had been inadequately addressed in the Supplementary EIS.

Two (2) submissions were received on the Addendum to the Supplementary EIS. One (1) submission was received from a State Government agency and one (1) from a Commonwealth Government agency.

Subsequent amendments and requests for additional disturbances were received from the proponent on 6, 8, 20 and 28 June 2006.

The EPA decided on 3 August 2006 that the revised EIS was adequate for the process to proceed to the EIS assessment stage.

Together with the draft EIS and the various components of supplementary information provided by the proponent, 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. It will also be available on the EPA's website (www.epa.qld.gov.au).

1.3.2 Consultation program

Public consultation

The proponent held a number of meetings with interested and affected persons during the EIS process. The purpose of these meetings was to ensure that those people were provided with an opportunity to discuss any individual concerns, gain an understanding of any potential impacts and to discuss potential mitigation options. There were face-to-face discussions, meetings and teleconferences with the following groups:

- landowners on and neighbouring the project area;
- representatives of local interest group, traditional owners, and Nebo Shire Council; and

- representatives of various Queensland government departments and agencies.

The main issues of concern associated with the project, as identified through the consultation activities, were:

- rehabilitation;
- workforce fluctuations;
- dust;
- traffic; and
- potential impacts on flora and fauna.

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 Newlands Wollombi No.2 Project:

- Commonwealth Department of the Environment and Heritage;
- Mackay Conservation Group;
- Bird Observers Club of Australia;
- Burdekin Dry Tropics Board;
- Representatives of the Jangga people;
- Central Queensland Land Council Aboriginal Corporation;
- Queensland Department of Natural Resources, Mines and Water;
- Queensland Department of Local Government, Sport and Recreation;
- Queensland Department of State Development and Innovation.
- Queensland Department of Emergency Services;
- Queensland Department of Communities;
- Queensland Department of Main Roads;
- Queensland Department of Housing;
- Queensland Transport;
- Queensland Health;
- Queensland Police; and
- Nebo Shire Council.

Advisory body briefings were held in central Queensland during the draft TOR stage of the EIS process, and in both central Queensland and Brisbane during the draft EIS stage 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);
- EPA Naturally Queensland Information Centre, EPA Central Office, Brisbane (draft TOR only);
- EPA Customer Services Centre, EPA Central Office, Brisbane (draft EIS only);
- EPA District Office, Mackay;
- Nebo Shire Council Library;
- Glenden Library, Glenden Town Centre; and
- Sinclair Knight Merz, Brisbane (copies of the draft EIS could also be purchased from the proponent).

Site visit

A site visit for the advisory body took place on 18 May 2005 during the public notification period for the draft Terms of Reference. The proponent escorted members of the advisory body around key features of the project site including the Wollombi property, the Suttor Creek property, the Lancewood property, Newlands Coal Mine Suttor Creek mining and rehabilitation operations, the endangered brigalow regional ecosystem proposed to be impacted and areas along Suttor Creek proposed to be diverted.

1.3.3 Environment Protection and Biodiversity Conservation Act 1999

The proposal to undertake open cut coal mining within Mining Lease 4761 on the Wollombi pastoral lease was referred (EPBC referral 2005/2015) under section 68 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) to the Commonwealth Department of the Environment and Heritage (DEH) on 23 February 2005 and was declared a controlled action under section 75 of the EPBC Act on 9 March 2005. The controlling provisions for the action are sections 18 and 18A (Listed threatened species and ecological communities) of the EPBC Act. The two threatened ecological communities are brigalow woodland communities, identified as *Acacia harpophylla* (Regional Ecosystem 11.4.3¹) and *Acacia harpophylla* – *Eucalyptus cambageana* (Regional Ecosystem 11.9.1²). *Acacia harpophylla* dominant and co-dominant communities are listed as Endangered ecological communities under the EPBC Act. The decision on assessment approach under section 87 of the EPBC Act was made on 7 April 2005 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 Newlands Wollombi No. 2 Project and commented on the draft TOR and draft EIS.

The following EPBC Act listed species (i.e. species of National Environmental Significance) have been identified during the EIS process as possibly present on the Project area: ornamental snake (*Denisonia maculata*, vulnerable), brigalow scaly-foot (*Paradelma orientalis*, vulnerable), southern subspecies of squatter pigeon (*Geophaps scripta scripta*, vulnerable), yakka skink (*Egernia rugosa*, vulnerable) and black-throated finch (*Poephila cincta cincta*, endangered).

This EIS assessment report is required to contain enough information about the relevant impacts of the action and the proposed mitigation measures to let the Commonwealth Minister for Environment and Heritage make an informed decision on whether or not to approve the taking of the action.

In accordance with Section 130(1B) of the EPBC Act, a notice will be given to DEH, stating that matters not covered by the controlling provisions have been assessed to the greatest extent practicable. That notice is necessary before the Commonwealth Minister for Environment and Heritage can decide the action. Matters of national environmental significance are discussed further in section 3.9 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 ornamental snake, brigalow scaly-foot, southern subspecies of squatter pigeon, yakka skink and brigalow woodland communities) is outlined in sections 3.3 and 3.9 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 25 July 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.

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.

¹ Described in Sattler, P.S and Williams, R.D. (eds) 1999, The Conservation Status of Queensland's Bioregional Ecosystems, Environmental Protection Agency, Brisbane.

² Described in Sattler, P.S and Williams, R.D. (eds) 1999, The Conservation Status of Queensland's Bioregional Ecosystems, Environmental Protection Agency, Brisbane.



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 9 December 2005;
- (ii) the submissions response report (Supplementary Report) received by the EPA on 10 March 2006 that was provided to relevant advisory body members;
- (iii) the Addendum to the Supplementary Report received by the EPA on 25 May 2006 that was provided to relevant advisory body members;
- (iv) subsequent amendments and requests for additional disturbances received from the proponent on 6, 8 and 20 June 2006; and
- (v) the “*Draft Environmental Management Plan for the Newlands Coal Project: Including Wollombi No. 2 Surface Area*” (June 2006), submitted 28 June 2006.

2.3 Properly made submissions

The EPA received twenty (20) submissions on the submitted EIS. All were properly made and all were considered when preparing this EIS assessment report.

2.4 The standard criteria

Section 58 of the EP Act requires that, among other matters, the standard criteria listed in Schedule 3 of the EP Act must be considered when preparing the EIS assessment report. The standard criteria are:

- (a) *the principles of ecologically sustainable development as set out in the National Strategy for Ecologically Sustainable Development;*
- (b) *any applicable environmental protection policy;*
- (c) *any applicable Commonwealth, State or local government plans, standards, agreements or requirements;*
- (d) *any applicable environmental impact study, assessment or report;*
- (e) *the character, resilience and values of the receiving environment;*
- (f) *all submissions made by the applicant and submitters;*
- (g) *the best practice environmental management for activities under any relevant instrument, or proposed instrument, as follows—*
 - (i) *an environmental authority;*
 - (ii) *an environmental management program;*
 - (iii) *an environmental protection order;*
 - (iv) *a disposal permit;*
- (h) *the financial implications of the requirements under an instrument, or proposed instrument, mentioned in paragraph (g) as they would relate to the type of activity or industry carried out, or proposed to be carried out, under the instrument;*
- (i) *the public interest;*
- (j) *any applicable site management plan;*
- (k) *any relevant integrated environmental management system or proposed integrated environmental management system;*
- (l) *any other matter prescribed under a regulation.*

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

- land disturbance;
- impacts on brigalow communities;
- ecosystem off-sets;
- nature conservation commitments;
- revegetation;
- erosion control mitigation strategies & monitoring
- groundwater monitoring; and
- final landform design;

and these sections have been discussed below.

Note: All references made to the EM plan in Part 3 of this EIS Assessment Report, refer to the “*Draft Environmental Management Plan for the Newlands Coal Project: Including Wollombi No. 2 Surface Area*” (June 2006), submitted 28 June 2006.

3.1 Land

3.1.1 Land disturbance

Requirements of the TOR

Amongst other things, the TOR (sections 1.2 and 3.3.1), required the EIS to summarise the results of studies and surveys undertaken to identify the natural resources required to implement the proposal and describe the location, volume, tonnage and quality of natural resources (for example, land, water, forests, etc.). Maps at suitable scales were required to be provided showing all key aspects including excavations, stockpiles, areas of fill, watercourses, culverts, the location of any proposed buffers and boundaries of the project footprint.

The TOR (Section 2.2) required that feasible alternatives be discussed in sufficient detail to enable an understanding of the reasons for preferring certain options, and comparative environmental impacts of each alternative should be summarised. Reasons for selecting the preferred options were required to include technical, commercial, social and natural environmental aspects.

This information was required to assess why the scope of the proposal is as it is and to ensure that the Ecologically Sustainable Development principles and sustainable development aspects have been considered and incorporated during the scoping and planning of the proposal.

The TOR (Section 4.1.1) required that the EIS describe the existing environmental values of the land area that may be affected by the proposal, including the landscape character and visual amenity. The potential impacts and mitigation strategies were required to be described, with particular mention of broadscale topography due to spoil dumps and the visual impact of the proposal on particular panoramas and outlooks.

The final EIS

The final EIS provided that the project would involve the clearing of no more than 260 hectares of remnant brigalow vegetation for the purposes of open cut coal extraction and associated infrastructure, and an additional 79.4 hectares of disturbance of brigalow regrowth and areas previously cleared of brigalow vegetation for the purposes of temporary topsoil stockpiling. Figures illustrating key aspects of the Project layout (including excavations, spoil dumps, topsoil stockpile areas, watercourses, water diversions and buffers) and the boundary of the project disturbance footprint were provided (Note: The final version was provided on 20 June 2006, and has been included as Figure 16-2 in the attached EM plan).

The EIS adequately described the existing environmental values of the remnant brigalow communities. The environmental values of the brigalow communities and the assessment of significance of impacts upon those values will be discussed further in section 3.9 of this report.

The EIS proposes that a spoil dump (up to 30 m in height) will remain as a reshaped final landform. An illustration of this landform is provided in a conceptual final topography (EM plan, figure 16-16) and as a schematic cross-section of the landform (EM plan, figure 16-17).

Adequacy of this section of the EIS

(a) Additional land disturbance (79.4ha) for temporary topsoil stockpiling

Following EPA recommendations (in relation to the Supplementary EIS) that the EIS address alternatives to siting topsoil storage stockpiles within the remnant brigalow community, the proponent proposed (on 8 June 2006) to disturb an additional 79.4ha of land in the northeast corner of the Wollombi No.2 Surface Area for the purpose of storing topsoil.

The EPA responded to this request (in letter dated 14 June 2006), noting that the EIS (Table 5-11 – Assessment of significance) identified this area as a potential offset due to the presence of brigalow regrowth, and stating that the EPA considered this new disturbance to be excessive for the purpose of topsoil stockpiling. The EPA requested the proponent provide a justification of the area to be disturbed based on minimising the impact to environmental values, and requesting the justification include an explanation of why the 79.4ha area is significantly larger than the area previously proposed for stockpiling, and why two (2) out of the three (3) original topsoil stockpiles were still illustrated as land disturbances in the remnant brigalow area adjacent to the pit. The EPA noted that the areas of remnant brigalow illustrated as proposed topsoil stockpile disturbances should no longer require disturbance.

The proponent's response (letter of 20 June 2006) did not adequately address EPA concerns nor did it adequately address the TOR with respect to these matters. In particular:

- There was no response from the proponent committing those areas of remnant brigalow areas previously illustrated as topsoil stockpiles to now remain undisturbed. To the contrary, those areas are illustrated in the response (in Figure A-2, Vegetation map of the project area illustrating remnant vegetation to be cleared) as areas to be cleared.
- On the matter of the assessment of the environmental values of the regrowth brigalow area proposed to be disturbed, the response (i.e. assessment) simply states; *"while this area has minor amounts of brigalow regrowth, it has been heavily grazed"*. There were no details or clarification provided on why this area was previously assessed by the proponent to be of sufficient quality to be considered as a potential offset.
- On the matter of the size of the proposed disturbance area, the response stated that *"the original EIS document provided data that approximately 1.5 million m³ of topsoil material will be recovered and to ensure sufficient room for stockpiling (given maximum height requirements as per EIS section 3.8.6), movement of various plant and sediment control measures that would require installation, the installation, the 79.4 hectares is deemed necessary."* This response fails to point out:

(a) that progressive disturbance and rehabilitation will take place; and

(b) that the quoted 1.5 million cubic meters of topsoil is for the entire Wollombi Pit, less than half of which is located within the Wollombi No. 2 Surface Area, the subject of this EIS (refer to EIS section 3.8.6). Further, the response is in conflict with the original EIS commitments (in section 3.8.6) that *"topsoil stripping will be managed to maximise immediate placement of topsoil on rehabilitated areas thereby minimising the volume and area of topsoil stockpiles"*.

- There was no evidence provided that the proponent has consulted with the respective landowner regarding the new land disturbances.

Following consideration of the above, and the proposed mining sequence (outlined in EIS figures 2-6 to 2-8), the EPA considers that a suitable alternative location for the temporary topsoil stockpiles would be in the cleared area to the far east of the moving face of the pit (and within the current disturbance footprint), as the pit moves from west to east across the landscape over the 15 year duration of the project.

If disturbance is to occur in the northeast area specific success criteria are required in the EM plan and EA conditions, including the identification of an analogue site. Conditions shall also specify that this area of disturbance is only permitted for the purposes of temporary topsoil storage and its original landform must be restored.

(b) Additional (90 hectares) of disturbance (for infrastructure purposes) in remnant brigalow

The original EIS proposed to disturb a significant area of remnant brigalow adjacent to the northern end of the pit for the purpose of locating topsoil stockpiles and a Clean Water Storage.

Following EPA feedback regarding minimising unnecessary disturbance of this high value brigalow community due to project infrastructure, the proponent proposed (in the Addendum to the Supplementary EIS) that the need for the Clean Water Storage had been avoided by providing a drainage channel that will allow water to drain from the area north of the pit along a protective diversion bund westward to Suttor Creek. Furthermore, the proponent proposed that the topsoil storage stockpiles would be relocated to a cleared area to the north of the brigalow community. Such proposed changes should have resulted in a significant area of remnant brigalow remaining undisturbed.

The Commonwealth DEH (in letter of 6 June 2006, in relation to the Addendum to the Supplementary EIS) expressed that *"DEH understands that the reduction in the area of brigalow to be cleared has been achieved by amending the mine plan and that no project infrastructure will be located within the remnant. ... it must be stated that the area of brigalow to be cleared currently stands at 260 ha and may not be increased."*

However, the proponent subsequently proposed additional areas of remnant brigalow disturbance (estimated at approximately 90 hectares) directly adjacent to the northern end of the pit, for the stated purpose of operational infrastructures, including but not limited to: dragline walk paths; access roads; safety berms; and water collection measures. The proponent stated (in letter of 20 June 2006) that the new disturbance was *"due to an underestimation of the operational area required"*. This area is illustrated in EM Plan figure 16-2 as the area between the pit (black line) and the Protective Diversion Bund.

Although the EPA considers that this additional 90 hectares of disturbance is excessive for the stated infrastructure purposes, it is within the 260 hectares of brigalow disturbance that the Commonwealth DEH have expressed as the maximum allowable disturbance extent.

It will be required that all areas disturbed for infrastructure purposes, beyond the area illustrated as either the pit or reshaped spoil area, be rehabilitated back to a brigalow community.

(c) The protective diversion bund and associated water drainage channel

A Protective Diversion Bund and associated water drainage channel mark the northern and western extent of the disturbance footprint for the project.

In the Addendum to the Supplementary EIS, the proponent states that a water drainage channel has been designed to *"prevent water inundating the brigalow communities greater than that which may be considered natural"*. However, information regarding what the level of inundation that is considered *natural* is not provided. The contours are difficult to interpret (refer to EM plan figure 16-16), and previously requested information regarding the catchment size, frequency of inundation, likely volumes of water and likely area/extent of inundation has not been provided.

The EPA requested that the proponent provide evidence that the bund and channel have been located and designed in order that no flooding of brigalow will occur beyond the area illustrated to be disturbed by project activities.

The proponent's response (letter of 20 June 2006) stated the Protective Diversion Bund was purely designed to prevent water ingress into the pit, and that it was considered impractical to attempt to justify that it was designed for any other purpose.

The proponent has stated that a 500-600m section of the drainage channel requires advanced clearing so that a cut can be excavated to facilitate flow from the area. The source of the material used to construct the bund and the height of the bund were not stated.

The bund and channel are illustrated in an unlabelled figure (without contours) titled *"Conceptual location of Water Drainage Channel"* (provided on 20 June 2006), however this illustration has not been included in the EM plan.

The expected flooding of brigalow following project decommissioning and any plans regarding the rehabilitation of the bund and diversion were not described.

The proponent has stated that they are *committed to ensuring minimal impact outside the operational footprint*.

Assessment

The EPA's assessment is that the EIS has adequately described and justified land disturbance matters regarding the extraction of coal (i.e. land disturbances in the area illustrated as the pit). However, with regards to the proposed infrastructure disturbances, it is difficult to assess whether the Protective Diversion Bund and water diversion channel have been located and designed in a manner which is likely to, as stated, *prevent water inundating the brigalow communities greater than that which may be considered natural* and hence whether the full extent of project disturbance will be within the 260 hectares of brigalow disturbance that the Commonwealth DEH have expressed as the maximum allowable disturbance extent. Consequently, it is recommended that the EA conditions specify that the area of remnant brigalow to be disturbed due to project activities in the Wollombi No. 2 Surface Area will be no greater than 260 hectares, and that this area includes areas of brigalow impacted by flooding as a result of project activities. Patches of remnant brigalow should be left between the various required infrastructure types wherever possible.

Adequacy of this section of the EM Plan

The EM Plan is inadequate with respect to the following matters:

- (a) The EM plan (section 16.1 - Introduction), in relation to the Wollombi No.2 area, states that the *area consists of a mining pit only, therefore no other infrastructure will be required*. This statement is misleading and should be amended to reflect the true nature of the proposed disturbances/infrastructure requirements.
- (b) The proposed mining sequence (outlined in EIS figures 2-6 to 2-8) has not been included in the EM plan.
- (c) As stated previously, the figure "*Conceptual location of Water Drainage Channel*" (provided on 20 June 2006) has not been included in the EM plan.
- (d) The figure "*Vegetation map of the Project area illustrating remnant vegetation to be cleared*" (provided on 20 June 2006) has not been included in the EM plan.
- (e) The EM plan (Introduction, section 16.1) states that the water drainage line will be revegetated to provide habitat and connectivity.
- (f) The EM plan should include information regarding the rehabilitation of the Protective Diversion Bund and water diversion drain, and any expected flooding of brigalow following decommissioning.

Recommendations:

1. It is recommended that the EM plan (Part 16.3.5.5, Land Management - Commitments) contain a separate section or subsection for identifying and quantifying all proposed land disturbances. This section could be titled *Land Disturbance*.
2. It is recommended that the EA conditions (in the new Land Disturbance section) limit the total area (in hectares) to be disturbed in the Wollombi No. 2 Surface Area to that specified in the final EIS.
3. It is recommended that the EA conditions (in the new Land Disturbance section) specify that the area of remnant brigalow to be disturbed due to project activities in the Wollombi No. 2 Surface Area will be no greater than 260 hectares. This area includes areas of brigalow impacted by flooding as a result of project activities.
4. It is recommended that EA conditions (in the new Land Disturbance section) specify that patches of remnant brigalow shall be left between the various components of infrastructure to assist future rehabilitation and regrowth.
5. It is recommended that the temporary topsoil stockpile be relocated to the cleared area to the far east of the moving face of the pit (and within the current disturbance footprint). The area illustrated (in the EM plan, Figure 16-2 - Project layout) as the temporary topsoil stockpile area should not be disturbed, and all relevant figures should be amended

accordingly.

6. It is recommended that the EA conditions (in the new Land Disturbance section) specify the types and locations of disturbances permitted are in accordance with the area and types of disturbance indicated in EM plan, Figure 16-2 - Project layout.
7. It is recommended the EM plan statement that the Wollombi No.2 area “*consists of a mining pit only, therefore no other infrastructure will be required*”, (refer to section 16.1 - Introduction), be amended to accurately describe the proposed infrastructure and all proposed disturbances.
8. It is recommended that the proposed mining sequence (outlined in EIS figures 2-6 to 2-8) be included in the new Land Disturbance section of the EM plan, and referenced in the Progressive Rehabilitation section (16.3.5.5.7) of the EM plan.
9. It is recommended that the EA conditions (section 16.3.5.5.10 Rehabilitation Maintenance and Monitoring) specify the maximum size of the void, as outlined in the EIS, and reference the Conceptual Final Topography (EM plan Figure 16-16).
10. It is recommended that the figure titled “*Vegetation map of the Project area illustrating remnant vegetation to be cleared*” (provided on 20 June 2006) be included in the EM plan.
11. It is recommended that the EA conditions require the proponent to submit, 28 days prior to any project clearing, a detailed survey plan (including GPS coordinates) of all remnant brigalow on the Wollombi No. 2 surface area. The plan will serve as the baseline against which the administering authority will monitor compliance with the clearing limits.
12. It is recommended that the EA conditions require the commitment made in Addendum to the Supplementary EIS, reference 01.04, that prior to project clearing the proponent will provide the administering authority with a detailed survey map (including GPS coordinates) indicating areas of brigalow that are not to be disturbed and demonstrating that the area of brigalow to be disturbed will be no greater than 260 hectares. The survey map is required to illustrate remnant brigalow areas that are to remain between the various components of infrastructure.
13. It is recommended that EA condition (E2) be amended to read as follows: “For the Wollombi No. 2 surface area, prior to project clearing, fences and signs will be erected to ensure that protected brigalow areas and buffer areas are not disturbed, and to ensure that no disturbance occurs beyond the area identified to be impacted by project activities (Refer to figure in EM plan).”
14. It is recommended that the EA conditions (section 16.3.5.6) specify that all areas disturbed for infrastructure purposes, beyond the area illustrated as either the pit or reshaped spoil area, be rehabilitated back to a self-sustaining native vegetation community. The EA conditions should specify:
 - a. Re-establishment of vegetation communities representative of eucalypt acacia woodland communities (agreed with EPA as representative of the analogue sites) including dominant and under-story species of Regional Ecosystems cleared for levee banks or subsequently losing remnant status through dieback associated with inundation;
 - b. Specific rehabilitation acceptance criteria in relation to area, floristic characteristics of the existing (pre-mining) regional ecosystems including composition, cover and species diversity;
 - c. A rehabilitation monitoring program designed to demonstrate progressive succession of rehabilitated areas towards sustaining native vegetation communities; and
 - d. Proposed remedial actions for rehabilitation areas not meeting the required outcomes.
15. It is recommended that the EM plan include the figure “*Conceptual location of Water*

Drainage Channel” (provided on 20 June 2006).

16. It is recommended that the EM plan include information and commitments regarding the final rehabilitation of the Protective Diversion Bund and water drainage channel, and information regarding any expected alteration to the present periodic flooding of brigalow following decommissioning.

3.1.2 Erosion control

The EIS was generally adequate with respect to the Terms of Reference regarding erosion control measures (refer to EIS sections 3.6 & 3.8.3).

Requirements of the TOR

Amongst other things, the TOR (section 4.1.2.4) required the EIS to provide possible erosion rates and management techniques for all permanent and temporary landforms. The TOR also required an erosion-monitoring program to be outlined, including rehabilitation measures for erosion problems during monitoring. Methods proposed to prevent or control erosion were required to be developed with regard to preventing significant degradation of local waterways by suspended solids.

The final EIS:

The Project was found to have the potential for erosion due to the land disturbance required for development of the pit, spoil dumps and mine infrastructure. Soil types on site were found to be particularly susceptible to gully erosion, and some soil types were also found to be highly susceptible to sheet erosion and rill erosion. Maximum slope angles of up to 30% are proposed (in EIS Table 3-31) for the post-mine final landform.

Erosion and sediment control measures to be employed include, among other things, contour banks and external bunds to reduce slope length on the low slope elements of the landform. The EM plan (section 16.3.5.5.5 – Post Mine Landform) commits to the construction of contour banks of sufficient dimension to contain the runoff from a 1 in 100 year 72 hour rainfall event assuming nil infiltration. Cross-bunds are proposed to be constructed at intervals not exceeding 50m along the contour bank channel - preventing flow of water along the channel. The EM plan commits to the construction of a runoff containment bund at the base of all external slopes to contain the run off from a 1 in 100 year 72 hour event from its catchment area.

Adequacy of this section of the EIS and the EM Plan

- (a) The EIS general text (p3-86 and elsewhere) is inconsistent with regard to the maximum slope angles adjacent to natural ground saying in one sentence that up to 30% will be applied and then in the same paragraph that a maximum of 15% will be used. This inconsistency was carried forward into Table 3-31 and the EM plan's Table 16-35. There is inadequate discussion of how dispersive overburden material will be managed in a way that would permit 30% slopes without consequent significant erosion.
- (b) The EIS does not propose details regarding an erosion monitoring program. The Supplementary EIS states that erosion monitoring on the soil slopes is to be commenced following revegetation. It is considered necessary that the EM plan should contain a section dedicated to erosion control, erosion monitoring and erosion rehabilitation measures. This section should include commitments for all areas disturbed, not limited to the post-mine landform.
- (c) The Supplementary EIS states that downstream monitoring of salinity and ecosystem health are considered surrogate measures of sediment control for erosion monitoring. This approach is not considered to be adequate on its own.

Assessment

The EPA's assessment is that the EIS has adequately described and addressed methods to prevent or control erosion with the exception of the 30% maximum slope angles. Steep slope angles can lead to increased erosional instability, loss of valuable soil material, difficulties achieving rehabilitation success, increased sedimentation of land, decreased downstream water quality, difficulties related to access or repair of any failed rehabilitation and increased long-term maintenance risks and costs. The EIS notes that some overburden material will be dispersive, but does not in either the EIS or EM Plan provide detail of how dispersive material will be placed and encapsulated in a way that will prevent long-term erosion of spoil dumps. It will be necessary

for the proponent to revise the EM Plan to address the management of overburden with regard to erosional stability.

Recommendations

Recommended measures/conditions for the EM Plan / draft EA are:

- 17. It is recommended that the EM plan must include a separate section dedicated to erosion control, monitoring and remediation. The revised section must demonstrate (e.g. by reference to successful management elsewhere) that dispersive material can be managed in a way that would allow all external slopes to be constructed at a maximum slope angle of 15%.**
- 18. It is recommended that the EM plan and EA conditions regarding landform construction (Table 16-35) specify that for all external slopes, maximum slope angles will be no greater than 15%.**
- 19. It is recommended that the EM plan revise the commitments for monitoring of erosion to avoid the reliance on downstream monitoring of ecosystem health.**

3.1.3 Vegetation management

Vegetation management issues are discussed in various sections of this EIS Assessment Report, including Sections 3.1.5 (Rehabilitation), 3.3 (Nature Conservation) and 3.9 (Matters of National Environmental Significance).

3.1.4 Post-mining landform

Requirements of the TOR

Amongst other things, the TOR (section 4.1.2) required the EIS to provide details of the final drainage and seepage control systems, consolidation, managing use of topsoil, possible erosion rates, erosion prevention and management techniques, potential impacts of the project landscape character (including visual impacts of the projects structures and associated infrastructure), sketches/diagrams to portray the near and far views of the completed structures and their surroundings from visually sensitive locations. The TOR (section 3.7) required the final topography to be shown on maps at a suitable scale.

The final EIS

The EIS proposes a final void (i.e. a non-beneficial land capability) to remain following cessation of mining in the Wollombi pit and provides an illustration of this void in a conceptual final topography (final version provided 20 June 2006, attached) and as a schematic cross-section of landform (final version provided 6 June 2006, attached). The EIS quantified the final void as occupying approximately 18 hectares of the Wollombi No. 2 surface area, and the final void for the entire Wollombi pit could be up to 300m deep, 2.5km long and 250m to 500m wide. The rationale provided for the remaining void was based on the economic cost of backfilling; stated to be at a cost of \$750M for the complete backfilling of the entire Wollombi pit, and representing 10 times the annual turnover for the project. The point at which backfilling becomes uneconomic was not specifically identified.

The final EIS proposed that all coal tailings and rejects would be disposed of at the nearby Newlands mining lease, and hence the management of that material is not part of the scope of this Project. Therefore, the final changed landform above natural ground level will consist entirely of overburden/spoil material with a cover of topsoil. The reshaped spoil landform will feature an internally draining landform system of flat cells in areas of relatively level topography. Each cell will be enclosed by earthen bunds to contain rainfall, maximise infiltration and nutrient capture, minimise runoff and hence improving the conditions for vegetative growth.

Adequacy of this section of the EIS

The EIS had the following deficiencies:

- (a) The various contours of the created landform are not identified on conceptual final topography illustrations (including the final version provided 6 June 2006), and hence they are difficult to interpret.
- (b) Sketches portraying views of the completed structures against their surroundings and from visually sensitive locations should have been provided. Rather, regarding aesthetic aspects of the landform, the EIS (section 9) stated: three of the four nearby homesteads (within 10 km of the Project) will not have views of the Project site, whilst the Suttor Creek North Homestead (7 km north of the project site) will view the spoil dumps as “a thin line in the far distance”; and there will be no direct views of any elements of the Project from Glenden Road.

Assessment

The internally drained landform approach for residual mounds above natural ground level is considered acceptable in this location, providing the stated maximum heights are not exceeded.

Adequacy of this section of the EM Plan

The height of the final landform is not stated in the EM plan and the numerical values for the various contours of the created landform are not identified in the conceptual final topography illustration (final version provided 6 June 2006). However, the proponent has confirmed (in email of 6 June 2006) the maximum height of the rehabilitated landform shall be 30m. It is recommended that this commitment be included as a condition of the Environmental Authority.

Recommended measures/conditions for the EM Plan / draft EA are:

- 20. It is recommended that the EA conditions (Table 16-19 Landform construction criteria) state that the maximum height permitted for the final landform is 30m.
- 21. It is recommended that the conceptual final topography illustration in the EM plan (final version provided 20 June 2006, attached) clearly show the numerical values for the various contours.

3.1.5 Rehabilitation

The EIS was generally adequate with respect to the Terms of Reference regarding rehabilitation matters.

Requirements of the TOR

Amongst other things, the TOR (section 3.7) required the EIS to provide the options, strategies and methods for progressive and final rehabilitation of the environment disturbed by the proposal. Revegetation methods and proposed species are required be described along with the proposed monitoring strategy. The stability of the final landform and likely final vegetation coverage are required to be addressed.

The final EIS

Generally the requirements of the TOR regarding rehabilitation are adequately addressed in the EIS. The proponent proposes to use knowledge and experience gained at other Newlands Coal Mine operational areas and other Xstrata coal mines in the Bowen Basin to meet rehabilitation objectives.

The EIS (section 3.3.3) anticipates a net reduction in land suitability rating will result from mining and subsequent rehabilitation. The project will remove some Good Quality Agricultural Land³, including 30ha of Class C (Pasture) land. No post-mining areas are considered suitable for dry land cropping. The EIS states that grazing is not proposed on the post-mining land. A post-mine Land Suitability Class 4 has been allocated to the spoil areas and Class 5 has been allocated to the void.

The EIS (3.8.1) proposes the post mining land use for all areas disturbed by mining will be a self-sustaining native vegetation community. Local plant species are proposed to be used wherever possible to restore elements of the pre-mining vegetation assemblages. The EM plan (Table 16-30) provides a list of indicative seed species for rehabilitation, with a note that this list may change depending on the success of rehabilitation.

³ Four Classes of agriculture land for Queensland identified in Department of Local Government and Planning (DLGP) and Department of Primary Industries (DPI) 1993, *Planning Guidelines: The Identification of Good Quality Agricultural Land*, Queensland Government, Brisbane.

It is recommended that any changes to the list of proposed seed species for rehabilitation are made in consultation with the administering authority.

As noted in section 3.1.1 above, there is a significant amount of clearing proposed for infrastructure purposes in remnant and regrowth brigalow areas north of the pit. As these activities (access roads, protection berms etc.) will not significantly alter the soil profile, rehabilitation to a native vegetation community is recommended post-mining.

Patches of remnant brigalow should be left between the various required infrastructure types wherever possible to assist in rehabilitation. A map illustrating those areas to be rehabilitated to a self-sustaining native vegetation community should be provided in EM plan section 16.3.5.6.

Adequacy of this section of the EIS

The EIS had the following deficiencies

- (a) The EIS did not describe the rehabilitation outcomes in terms of the structural complexity that the rehabilitation strategy was aiming to achieve.
- (b) The initial rehabilitation success criteria do not distinguish between areas requiring different rehabilitation or revegetation outcomes. For example, areas to be returned to a riverine ecosystem community will require a different set of outcomes (and correlating analogue site/s) to areas of rehabilitated spoil material to be returned to a self-sustaining native vegetation community.
- (c) Commitments are made (in EIS Table 5-9) to reinstate vegetation on the affected portions of Suttor Creek, as part of the Project rehabilitation, including the restoration of the creek morphology. Rehabilitation success indicators and targets are not provided for the affected portions of Suttor Creek or for the Suttor Creek diversion and there is no timeframe given for identification of an analogue site for assessing rehabilitation of this disturbance. Furthermore there are no proposed monitoring conditions in relation to the rehabilitation of the affected portions of Suttor Creek or for the Suttor Creek diversion.

Adequacy of this section of the EM Plan

The EM Plan is inadequate with respect to:

- (a) Various EIS commitments have not been carried forward as quantifiable and testable actions in the EM plan.
- (b) The EM plan (sections 16.3.5.5 – 16.3.5.5.10) does not contain the EIS commitment (Supplementary EIS, sections 4.04 and 4.05) that grazing is not proposed on the post-mining land. The EM plan does not contain any commitments to fence off rehabilitated areas to offer protection from grazing animals.
- (c) The EM plan (Table 16-30) provides a list of indicative seed species for rehabilitation, however section 16.3.5.5.8 notes that this list may change depending on the success of progressive rehabilitation. It is recommended that section 16.3.5.5.8 state that “*any changes to the list of species of proposed seed species for rehabilitation are made in consultation with the administering authority before the EM plan is amended*”.
- (d) The EM plan (Table 16-30) list of indicative seed species for rehabilitation contains two species (*Paspalum nicorae* and *Stylosanthes seabrana*) that should be removed as they are not native to the area.
- (e) The EM plan (section 16.3.5.6) proposes initial rehabilitation success criteria targets for self-sustaining vegetation. The success criteria with respect to species composition and diversity (EA condition E8, Table 16-33) nominate greater than or equal to three (3) species of trees and shrubs and greater than or equal to two (2) species of grasses. These commitments do not go far enough, given the species diversity of the pre-mining communities as described in EIS section 5.3.2 and Appendix F1 (for example, the *Acacia harpophylla* open forest community was found to contain 41 flora species/subspecies). It is recommended that a more diverse range of flora species (at least 10 with viable seed) that are representative of the pre-mining communities at the Wollombi No. 2 site, is proposed as a success criterion for the rehabilitated community.
- (f) EA condition E3 proposes that *progressive rehabilitation must commence within 2 years of when areas become available*. This condition should be reworded to state that (i) *progressive rehabilitation will*

commence within 12 months of when areas become available, and (ii) the rehabilitation actions (other than monitoring, maintenance and remediation) will be completed within 2 years from when areas become available, or within a longer period as agreed in writing with the administering authority.

- (g) The EA conditions in relation to rehabilitation success criteria targets (EM plan section 16.3.5.6) do not specify a timeframe for identifying suitable analogue sites, or for gathering representative data from those sites.
- (h) There are missing details regarding commitments in relation to affected portions of Suttor Creek and the Suttor Creek Diversion. Commitments are made (in EIS Table 5-9) to reinstate vegetation on the affected portions of Suttor Creek, as part of the Project rehabilitation, including the restoration of the creek morphology. However, this commitment has not been transferred to the EM plan. The EM plan (section 16.1 - Introduction), states that the Suttor Creek Diversion will be *designed to restore the creek morphology and habitat*. However, rehabilitation success indicators and targets are not provided (in EM plan section 16.3.5.6) for the affected portions of Suttor Creek or for the Suttor Creek diversion, and there is no timeframe given for identification of an analogue site for assessing rehabilitation of these disturbances. Furthermore, there are no monitoring conditions in relation to the rehabilitation of the affected portions of Suttor Creek or for the Suttor Creek diversion.

Assessment

The EPA's assessment is the EIS provides general strategies and methods for progressive and final rehabilitation of the environment disturbed by the proposal. However, specific details regarding the final vegetation composition and structural complexity outcomes, and monitoring and maintenance commitments to achieve these outcomes (for each of the various disturbance areas) have not been carried forward as quantifiable and testable actions.

Additional default acceptance criteria are necessary to measure whether rehabilitated areas are progressing towards becoming a self-sustaining vegetation community. The suite of criteria should include:

- physical and chemical indicators of soil profile development; and
- ecosystem functionality characteristics such as key species recruitment, nutrient cycling, habitat complexity and successional change towards a defined native vegetation community.

The development and application of indicators as acceptance criteria for a rehabilitation program are comprehensively discussed in the ⁴ACARP Project C12045 and the ⁵Australian Centre for Mining Environmental Research Publication – Indicators of Ecosystem Rehabilitation Success. These and other relevant references should be considered to broaden the range of default acceptance criteria for measuring the success of rehabilitation on spoil areas compared with local reference site/s and should be further refined based on the outcomes of ongoing rehabilitation trials, monitoring and research programs.

Brigalow once eradicated is very difficult to re-establish. Consequently, Xstrata should investigate options for rehabilitating degraded areas with some viable remnant brigalow or areas of brigalow regrowth within or surrounding the project site during the life of the project. Additionally, Xstrata should evaluate rehabilitating areas cleared for infrastructure with eucalypt species commonly found with brigalow to assist the restoration of connectivity and enhance local biodiversity. Default acceptance criteria should also be developed and further refined based on the outcomes of ongoing rehabilitation trials, monitoring and research programs.

Recommended measures/conditions for the EM Plan / draft EA are:

- 22. It is recommended that the EA include a condition requiring that at least 28 days prior to project commissioning a *Rehabilitation Plan* be provided to the administering authority. The Plan must include:**

- a. surface area (in hectares) of RE communities proposed to be cleared for constructing roads and infrastructure;**

⁴ 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.

⁵ Australian Centre for Mining Environmental Research (ACMER) (July 2003). Indicators of Ecosystem Rehabilitation Success, Stage 2 – Verification of EFA Indicators – Final Report.

- b. a progressive revegetation plan for an area no less than that proposed to be cleared for roads and infrastructure that identifies local areas, including riparian areas of Suttor Creek, that are appropriate to rehabilitate, and that achieves the key objective of enhancing corridor connectivity and promoting long-term local biodiversity;
 - c. specific rehabilitation acceptance criteria including indicators for chemical and physical 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. a rehabilitation monitoring program designed to demonstrate progression of rehabilitated areas towards a self-sustaining vegetation community based on local reference site/s;
 - e. an auditing and reporting mechanism to identify rehabilitation not achieving the required outcomes; and
 - f. proposed remedial actions for rehabilitation areas not meeting the required outcomes. It is recommended that EM plan include a commitment to fence off rehabilitated areas in order to provide protection from grazing animals.
- 23. It is recommended that the EM plan (section 16.3.5.5.8) state that any changes to the list of proposed seed species for rehabilitation will be made in consultation with the administering authority, and the EM plan amended accordingly.
- 24. It is recommended that two species, *Paspalum nicorae* and *Stylosanthes seabrana*, be removed from the list of indicative seed species for rehabilitation (EM plan, Table 16-30).
- 25. It is recommended that EM plan Table 16-33 (Initial Rehabilitation Success Criteria Targets) be amended to specify a species composition and diversity target of *more than ten (10) species with viable seed*.
- 26. It is recommended that Table 16-33 (Initial Rehabilitation Success Criteria Targets) be amended to specify a “bare ground” indicator that is consistent with the agreed post-mining community and the relevant analogue site.
- 27. It is recommended that a map be provided (in EM plan section 16.3.5.6) identifying the rehabilitation outcomes (i.e. appropriate analogue sites) for each disturbance area.
- 28. It is recommended that condition (E3) be reworded to state that: (i) progressive rehabilitation will commence within 12 months of when areas become available, or within a longer period as agreed in writing with the administering authority; and (ii) the rehabilitation actions (other than monitoring, maintenance and remediation) will be completed within 2 years from when areas become available, or within a longer period as agreed in writing with the administering authority.
- 29. It is recommended that EA conditions (EM plan section 16.3.5.6) specify: (i) suitable analogue sites will be identified in consultation and agreement with the administering authority within 12 months of commencement of mining within the Wollombi No.2 surface area; (ii) representative data will be gathered from analogue sites for each of the rehabilitation success indicators within 3 years of commencement of mining within the Wollombi No.2 surface area; (iii) representative data for each of the rehabilitation success indicators, as gathered from analogue sites, will be submitted to the administering authority within 3 years of commencement of mining within the Wollombi No.2 surface area and the EM plan success criteria targets will be amended to include this data; and (iv) a progress report on the monitoring of each of the rehabilitation success indicators at the various analogue sites will be submitted to the administering authority within 18 months of commencement of the Wollombi No. 2 surface area.
- 30. It is recommended that the list of Definitions (EM plan section 16.4): (i) include definitions for the terms “*establishment phase*” and “*sustainability phase*” used in the indicative monitoring program (Table 16-31); and (ii) present all words and phrases in alphabetical

order.

31. It is recommended that the EM plan (Indicative Rehabilitation Monitoring Program, Table 16-31) specify the frequency of monitoring to be undertaken in the “*sustainability phase*”.
32. It is recommended that EA condition (E14) be replaced with the following condition: For the Wollombi No. 2 area: (i) monitoring of the each of the indicators listed in Table 16-33 (Initial Success Criteria Targets) will be undertaken in accordance with Table 16-31 (Indicative Rehabilitation Monitoring Program); (ii) a monitoring report will be prepared annually and made available to the administering authority upon request.
33. It is recommended that condition (E16) be amended to read as follows: “Each Plan of Operations will provide a detailed rehabilitation monitoring and maintenance program, that: (i) is consistent with the commitments in the EM plan and conditions of the Environmental Authority; (ii) summarises the results of past monitoring and maintenance; and (iii) proposes remediation plans for any areas of rehabilitation experiencing failure.”
34. It is recommended that the EM plan (section 16.3.5.6) include an EA condition to *reinstate vegetation and restore creek morphology on the affected portions of Suttor Creek* as part of rehabilitation.
35. It is recommended that a range of rehabilitation success indicators and targets be provided (in EM plan section 16.3.5.6) for the affected portions of Suttor Creek and for Suttor Creek diversion, and that a timeframe be nominated for identification of an analogue site for assessing rehabilitation of these disturbances. Monitoring conditions in relation to the rehabilitation of the affected portions of Suttor Creek and for the Suttor Creek diversion are also required.

3.2 Water

3.2.1 Surface water

The EIS was generally adequate with respect to the Terms of Reference regarding surface water matters.

Requirements of the TOR

The TOR required the EIS to, among other things: discuss the potential environmental harm to the flow and quality of surface waters from all phases of the proposal; ensure the quality characteristics discussed should be those appropriate to the downstream and upstream water users that may be affected; and discuss the chemical and physical properties of any waste water at the point of entering natural surface waters.

The final EIS

The EIS (section 4.1.4) identified that the project area is within the Suttor/Belyando Rivers catchment. Water from the project area flows to Suttor Creek, which flows to Suttor River, a tributary of the Burdekin River. The water quality in Suttor Creek was found to be typical of ephemeral streams in rural catchments in regional Queensland, and flows are generally the result of high intensity rainfall events. The EIS reported that the catchment is in moderate condition, with slight degradation as a result of low flow (estimated at 30 days per year) and impact by cattle. An artificial dam immediately upstream of the mine site also restricts flow.

The EIS stated that environmental values of Suttor Creek relate to aquatic ecosystems, irrigation and livestock. The predominant use of water in the area is for stock watering purposes. Perennial waterholes exist more than 30km downstream, providing a slightly degraded aquatic habitat, and there is no water drawn for human consumption within 50km of the Newlands site.

The EIS stated that the water quality in Suttor Creek has not been influenced by past mining activities (i.e. from the adjacent Suttor Creek mine). The pH is generally alkaline and water is suitable for irrigation and stockwater, although there are occasional elevated levels of iron and aluminium due to high sediment loads in major flows. Water exceeded the ANZECC guidelines for aquatic ecosystems for a range of metals (aluminium, copper, lead, zinc and selenium), although there was no indication of toxicity for freshwater organisms in the region.

The EIS stated that it may be necessary to discharge water from the sediment dams and the evaporation dam to Suttor Creek, and that discharge water quality will conform to ANZECC 2000⁶ limits for beef cattle (outlined in EIS Table 4-3). The proponent has committed that water quality downstream during discharge must fall within ANZECC (2000) guidelines⁷ (or later editions) for aquatic ecosystems, and where the natural concentrations of analytes exceed these guideline values, the maximum known concentrations will be set as the limit. Other commitments include: (a) the collection of data on macro-invertebrates as an indicator of aquatic ecosystem health; and (b) the monitoring of suspended sediment at upstream and downstream stations during flow events.

As stated previously, approximately 4.5km of Suttor Creek immediately to the South of the project is to be diverted. However, the diversion application does not form part of this EIS. The Department of Natural Resources, Mines and Water (DNRMW) has authorised the diversion of Suttor Creek under Water Licence 185466 and Development Permit 185506.

Some of the Project area (representing approximately 1.4% of the Suttor Creek catchment) will be removed from the catchment by a protective diversion drain (along the northern and western side of the pit), reducing flows marginally. Runoff from undisturbed areas will be drain into Suttor Creek.

Flood patterns in Suttor Creek were provided, and the EIS found that the Project will have negligible impacts on flooding patterns downstream.

Assessment

The EPA's assessment is that the EIS has adequately discussed the potential environmental harm and mitigation measures regarding the flow and quality of surface waters as a result of project activities on the Wollombi No.2 site. This assessment is based on the information provided and the mitigation measures proposed in the EIS and EM plan.

Adequacy of this section of the EM plan

Other sections of this EIS assessment report address surface water matters relevant to the EM plan, including recommended measures/conditions. For example, section 3.1.2 addresses measures to minimise erosion and sedimentation and thus reduce impacts on water quality, and section 3.3.1 includes recommendations regarding the monitoring of macro-invertebrates and stygofauna as indicators of water quality and aquatic health.

3.2.2 Groundwater

The EIS was generally adequate with respect to the Terms of Reference regarding groundwater matters.

Requirements of the TOR

Among other things, the TOR required the EIS to: review the quality, quantity and significance of groundwater in the proposal area and neighbouring areas; include a survey of existing groundwater supply facilities to the extent of any environmental harm; develop objectives and a network of monitoring points to assess the effectiveness of groundwater management strategies.

The final EIS

The EIS (section 4.5.4) states, in relation to groundwater quality for the Wollombi area, that there is a trend of increasing total dissolved solids (i.e. increasing salinity) and therefore deterioration in quality with depth. Water quality of the basalt aquifers was assessed as '*generally poor*' for livestock usage, while the Permian aquifer was assessed as '*marginal to unsuitable*' (2 080 mg/L to 11 000 mg/L) and exceeded livestock water quality guidelines⁸ of 5 000 mg/L. Samples in the alluvial and basalt aquifers were found to contain elevated

⁶ ANZECC & ARMCANZ (2000) Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) 2000, Australian and New Zealand Guidelines for Fresh and Marine Water Quality, ANZECC & ARMCANZ, Canberra.

⁷ ANZECC & ARMCANZ (2000) Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) 2000, Australian and New Zealand Guidelines for Fresh and Marine Water Quality, ANZECC & ARMCANZ, Canberra.

⁸ Based on ANZECC 2000 guidelines: Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) 2000, Australian and New Zealand Guidelines for Fresh and Marine Water Quality Management Strategy, ANZECC & ARMCANZ, Canberra.

molybdenum (maximum 0.151 mg/L and 0.101 mg/L) that exceeded the livestock guidelines of 0.01 mg/L. According to the salt industry⁹, molybdenum causes copper deficiency, and cattle have a low tolerance of high levels of molybdenum. Tolerance of non-ruminant animals to molybdenum is much higher than that of ruminant species. Alkaline soils increase molybdenum availability but decrease copper availability to plant life.

The EIS identified two (2) registered groundwater bores (of unknown status) within 10km of the Project boundary, located northeast at distances of 5km and 8.5km. In addition, four (4) unregistered private active bores were identified (within or adjacent to the interpreted basalt aquifer unit that extends into the southern part of the Wollombi Pit) at distances of 3km and 4.6km.

The EIS assessment of significance of impacts found that groundwater draw-down is unlikely to affect existing vegetation communities and is unlikely to affect nearest bores. However, the Project has the potential to effect ground water quality. (Table A-5, Addendum to the Supplementary EIS)

The assessment determined that there would be no significant effect during operation on water quality in the alluvial aquifers or any impacts on bores surrounding the mine because the radius of influence is predicted to be 2km and there are no bores located within 3km of the pit.

The EIS states (in section 4.7) that *should a detrimental impact on groundwater supplies be detected, and shown to be related to the Project, then the Proponent will seek to reach mutually agreeable arrangements with affected neighbouring groundwater users for the provision of alternative supplies throughout the mine life, and after mine closure.* This commitment has been carried across into the EM plan.

The EIS (section 4.6.3.2) presented the results of modelling undertaken to determine the expected final void storage volumes and associated water levels, concluding that the final void will not fill to levels at which it might spill to the surrounding area and that there will be a relatively constant water level over the void life. Modelling estimated that the final void could fill to a maximum of 60 000 ML, and at it's maximum predicted water level (2205 mRL) there would be approximately 80 m of freeboard remaining within the void.

The EIS stated that the final void is not expected to significantly impact on the groundwater quality as the water in the final void (due to groundwater ingress, direct rainfall and overland surface flows from the in-pit spoil dump) is unlikely to seep into the surrounding aquifers, due to high evaporation rates causing a flow of groundwater along the hydraulic gradient into the void.

In contrast with the groundwater quality assessments of the alluvial and basalt aquifers, the EIS section 2.16.5 finds that the final void water quality will be suitable for stock or irrigation use. The EIS states that as the water level will be at considerable depth and the area fenced off to cattle, its use is more likely to be limited to the provision of water for wildlife (in particular, birds and bats).

Assessment

The EIS has adequately discussed the quality of groundwater.

However, the EPA considers that it is likely that the final void water quality will become increasingly saline over time and likely to exceed the livestock guidelines for a range of parameters. This assessment is based on the limited surface water runoff, ongoing groundwater inflow and evaporative processes.

Adequacy of this section of the EM plan

The EM plan adequately provides for the monitoring of a range of groundwater quality parameters (at 6 monthly intervals) at nine (9) monitoring locations.

Background groundwater contaminant limits and levels are proposed to be determined by sampling for a period of one year from the reference bores identified in EM plan Table 16-18. However, a monitoring frequency is not provided.

Recommended measures/conditions for the EM Plan / draft EA are:

36. It is recommended that the proposed EA condition (C11) be amended to specify that the groundwater monitoring network must:

- a. ensure that the groundwater monitoring network is sufficient to identify groundwater**

⁹ The Salt Institute: <http://www.saltinstitute.org/47p.html>

- level draw-downs prior to any impacts being experienced by surrounding receptors;
and
- b. enable groundwater quality monitoring from all relevant aquifers underlying the site;
37. It is recommended that the EA condition (C17) be amended to state that the background groundwater contaminant limits and levels are to be determined by sampling for a period of one year, at the reference bores and monitoring frequency specified in Table 16-18 of the EM plan. The condition should also specify that a monitoring report must be submitted, within 2 months of completion of the one year monitoring period noted above, for approval by the administering authority, and the EM plan amended accordingly.
38. It is recommended that the EA conditions restate the EIS commitment (in section 4.7) that *should a detrimental impact on groundwater supplies be detected, and shown to be related to the Project, then the Proponent will seek to reach mutually agreeable arrangements with affected neighbouring groundwater users for the provision of alternative supplies throughout the mine life, and after mine closure.*

3.3 Nature Conservation

3.3.1 Flora and Fauna

Requirements of the Terms of Reference

Amongst other things, the TOR (section 4.7.1) required the EIS to describe the flora and fauna communities that are rare or threatened, environmentally sensitive localities including waterways, riparian zones, and habitat corridors. The TOR required terrestrial vegetation maps and descriptions of the terrestrial and riparian fauna occurring in the areas affected by the project; including species diversity and abundance, habitat requirements and sensitivity to change, the existence of exotic species, targeted surveys for particular species if necessary, and use of the area by migratory species. The EIS was required to describe potential impacts and mitigation measures, such as: strategies for protecting any rare or threatened species; the potential environmental harm to ecological values; the potential environmental harm on flora and fauna due to any alterations to surface water and groundwater; the provision of buffer zones and movement corridors; weed management strategies; and the rehabilitation of disturbed areas.

The final EIS

The EIS identifies two threatened ecological communities of brigalow (*Acacia harpophylla* dominant and co-dominant communities) to be disturbed within the Wollombi No. 2 surface area. The two communities are listed as "endangered" ecological communities under the EPBC Act and *Vegetation Management Act 1999*. A total of 206ha of *Acacia harpophylla* open forest with *Terminalia oblongata* (11.4.9) and 54ha of *Acacia harpophylla* – *Eucalyptus cambageana* open forest (11.4.1) are proposed to be cleared. According to information provided by the proponent, this represents the removal of 1.9% of the remaining *Acacia harpophylla* - *Terminalia oblongata* community, and the removal of 1% of the remaining *Acacia harpophylla* – *Eucalyptus cambageana* community in the Northern Bowen Basin region (refer to EM plan Table 16-41). The adequacy of the EIS assessment of significance of impacts and proposed mitigation strategies regarding the two Endangered brigalow communities are discussed in Section 3.9 of this EIS Assessment Report.

In addition, the EIS identifies two regional ecosystems, listed as "of concern" under the *Vegetation Management Act 1999*, present within the Wollombi No. 2 surface area. A total of 24ha of *Eucalyptus tereticornis* – *Eucalyptus spp.* (11.3.4) and 12ha of *Eucalyptus populnea* – *Eremophila mitchelli* (11.9.7) are present but not proposed to be disturbed. (EIS Table 5-2)

The Commonwealth DEH have identified the riparian vegetation associated with Suttor Creek and the brigalow block as significant fauna habitat. The following fauna species are EPBC Act listed species that may be impacted by the project: ornamental snake (*Denisonia maculata*, vulnerable); brigalow scaly-foot (*Paradelma orientalis*, vulnerable); southern subspecies of squatter pigeon (*Geophaps scripta scripta*, vulnerable); and yakka skink (*Egernia rugosa*, vulnerable). The adequacy of EIS assessment of significance of impacts and proposed mitigation strategies regarding these Matters of National Environmental Significance are discussed in Section 3.9 of this EIS Assessment Report.

A number of fauna studies were conducted over the Suttor Creek mining lease area between 1996 and 2005, and the various methodologies are outlined in EIS section 5.2.3.2. Fauna studies in the Wollombi No.2 area in 2005¹⁰ identified nine (9) frog species, twenty-one (21) reptile species, nineteen (19) mammal species and seventy-two (72) bird species (summarised in EIS Appendix F3). Fauna species of conservation significance included the worm skink (*Anomalopus brevicolis*, rare – *Nature Conservation Act 1992*), little pied bat (*Chalinolobus picatus*, rare – *Nature Conservation Act 1992*), and a number of birds listed under international treaties for the protection of migratory birds and their habitats.

Although not found on site, several other species of conservation significance are considered likely to occur based on available habitat and occurrence on nearby sites, including: ornamental snake (*Denisonia maculata*); brigalow scaly-foot (*Paradelma orientalis*); and southern subspecies of the squatter pigeon (*Geophaps scripta scripta*).¹¹

The EIS found that although there are no direct physical impacts on aquatic flora and fauna due to mining activities in the Wollombi No. 2 area, potential exists for impacts on aquatic flora and fauna due to water discharges from the Wollombi No. 2 area. The EIS found that the potential for impacts upon riparian vegetation due to groundwater drawdown is considered unlikely, as standing water levels in Suttor Creek are generally over 15-20m below ground level during dry periods (hence unavailable within the root zone), and therefore the riparian vegetation is not dependent on groundwater.

Physical impacts will occur on terrestrial and aquatic flora and fauna due to the diversion of Suttor Creek. The environmental impacts of the diversion were assessed and approved by the EPA under an amendment of environmental authority application prior to submission of this EIS. Nevertheless, the EIS provides an assessment of significance of impacts, as required by the Commonwealth DEH under the EPBC Act, on flora and fauna as a result of the diversion of Suttor Creek (Section 3.9 of this EIS Assessment Report discusses matters of NES).

The EIS proposes (section 5.6.4) rehabilitation of habitat that is to be protected from mining activities on the Wollombi No. 2 surface area. The EIS identifies a number of opportunities to improve habitat connectivity and quality on the Project area as a compensation for the loss of habitat resulting from the Project, including: restricting access to vegetated areas of conservation significance; enhancing and restoring riparian zones and buffers; and allowing previously disturbed areas to regenerate.

The proponent has committed to implementing a "Biodiversity Strategy" by which management of ecologically important ecosystems within Xstrata's control can be agreed through negotiation with stakeholders. No timeframe has been set for establishment or implementation of the Biodiversity Strategy.

The proponent has made commitments (in the IAS, and EIS section 5.6.3.1) to reach an agreement (a compensatory land agreement) with Commonwealth and State agencies that will provide an area of land of equal area and similar ecological value to the area of nominated ERE affected by the Project. The proponent has committed to having the agreement in place before the commencement of disturbance in the Project area.

In the Supplementary EIS, the proponent committed to negotiating a Nature Conservation Agreement with the EPA under the *Nature Conservation Act 1992 (Queensland)*, for an area of land of suitable location and size that will help to maintain biodiversity and improve connectivity with existing remnant vegetation.

Adequacy of this section of the EIS

The EIS had the following deficiencies:

- (a) At the time of writing of this report, there is no Nature Conservation Agreement in place under the *Nature Conservation Act 1992*, and there is no compensatory land agreement in place with Commonwealth and State agencies. Further discussion of a proposed compensatory land agreement, and associated requirements, is provided in Section 3.9 of this EIS Assessment Report.

¹⁰ Houston, W., Melzer, A. and Black, R. 2005, Wollombi Station Fauna Survey, Central Queensland University, Rockhampton, prepared for Newlands Coal Pty Ltd

¹¹ Houston, W., Melzer, A. and Black, R. 2005, Wollombi Station Fauna Survey, Central Queensland University, Rockhampton, prepared for Newlands Coal Pty Ltd

Adequacy of this section of the EM plan

The EM plan had the following deficiencies:

- (a) The measures proposed in the EM plan to avoid or minimise negative impacts on terrestrial flora and fauna are non-committal and the EIS commitments have not been carried forward as quantifiable and testable actions in the EM plan. Rewording of commitments is required, with more detail on how mitigations will be undertaken. Presently there are only two (2) proposed Environmental Authority conditions regarding nature conservation matters (refer to EM plan section 16.3.6.6) for the entire Newlands Coal Project, comprising ten (10) mining leases. Given the conservation significance of the ecological communities in the Wollombi No. 2 surface area, this is unsatisfactory. Furthermore, there are no proposed Environmental Authority conditions in relation to the monitoring of flora and fauna.
- (b) The EM plan (section 16.3.6.5, Commitments – Terrestrial Flora and Fauna) refers to a *specific rehabilitation plan* for Wollombi No. 2 areas of vegetation that are considered significant and are to be retained on site. This should be included as an EA condition and a timeframe provided for development of the plan in consultation with relevant stakeholders.
- (c) The EM plan should emphasise that habitats retained on site need linkages for animals to disperse through in order to maintain a healthy population. It is considered that the *rehabilitation plan* for the Wollombi No. 2 area aim to ensure that linkages are maintained or re-instated as soon as possible following disturbance.
- (d) The EM plan (16.1 and 16.3.6.5) refers to buffer zones and the preservation of habitat along Suttor Creek. However, the term “Riparian buffer” has been used ambiguously. Section 16.3.6.5 states that a *Riparian buffer area will be enhanced to compensate for the loss of vegetation and habitat on the Wollombi No. 2 area*. In this context the buffer appears to be a vegetation buffer. However, section 16.3.6.5 also states that *the remnant Suttor Creek channel will be used to create a backwater or billabong (called Riparian buffer)*. In this context the buffer appears to be an area of inundation. Furthermore, EM plan Figure 16-2 is unclear regarding the exact extent of the riparian buffer.
- (e) It is not clear whether regrowth areas within riparian areas and within the riparian buffer will be grazed. It is recommended that the riparian areas and associated buffers have protective fencing erected.
- (f) The EM plan (section 16.1 - Introduction) states that the water drainage line be *revegetated to provide habitat and connectivity*, and section 16.3.6.5 (Commitments - Terrestrial Flora and Fauna), regarding mitigation measures intended to reduce the potential impacts of the mine on terrestrial flora and fauna values of the Wollombi No. 2 area, states that the establishment of a vegetated drainage line will *provide shelter and breeding habitat for key fauna species*. Details of this revegetation, including key species recruitment, should be described in EM plan section 16.3.6.5 (Commitments - Terrestrial Flora and Fauna).
- (g) Greater gliders and sugar gliders were found in the riparian woodlands and adjacent *Eucalyptus cambageana* woodland, reflecting the availability of large-diameter mature hollow-bearing trees. The proponent has committed in the Supplementary EIS section 01.05 to retaining riparian areas on Suttor Creek as habitat for Greater Gliders and Sugar Gliders. The extent of riparian areas and adjoining buffer zones to be retained are not detailed. The EM plan (section 16.3.6.5.1) should be amended to include these commitments and, as previously recommended, provide a detailed map of the extent of riparian areas and buffers zones to be retained.
- (h) The proponent has committed in the Supplementary EIS section 01.05 to reusing cleared vegetation for habitat enhancement wherever practical, and re-erecting suitable tree species (supplemented with nesting boxes) at appropriate locations to enable the relocation of greater gliders and sugar gliders. These commitments should be included in the EM plan sections 16.3.6.5.1 and 16.3.6.6. It is considered that a *rehabilitation plan* should aim to ensure that any linkages that have not been maintained are re-established within twelve (12) months of the linkage being broken. Plans and maps should be used to show location of areas proposed to be fragmented by works and show where re-erected timber corridors will re-link these areas, including fragmented creek vegetation and fragmented eucalypt communities.

In relation to the Suttor Creek diversion, the EPA recommends that the proponent follow the rehabilitation hierarchy detailed below. In all circumstances, living trees are preferred to dead trees, and weatherproof

nesting boxes made from natural hollows are preferred to artificial rectangular boxes. Any dead trees erected to provide linkages that fall during the proponent's period of responsibility for the site must be re-erected within one month unless a live tree of sufficient size has taken its place. Tree heights may vary, but the shorter the trees, the closer they need to be placed (eg. 8 m trees must be placed no more than 10 m apart; while 12 m trees can be placed up to 20 m apart). The rehabilitation hierarchy in descending order of preference is as follows:

- i. Re-erect live trees of >30 cm diameter at breast height (DBH), 15 m tall or greater (with hollows present), every 30 m.
 - ii. Re-erect live trees of >30 cm DBH (with hollows present) every 700 m, with trees of 15-30 cm DBH in between. The main trunks of dead trees can also be used without branches to act as gliding poles for native fauna to reach larger trees with hollows.
 - iii. Re-erect live trees between 15-30 cm DBH along the whole 2.5 km diversion. The main trunks of dead trees can also be used without branches to act as gliding poles, however nest boxes will need to be attached at least every 700 m.
 - iv. Re-erect dead trees of >30 cm DBH (with hollows present) every 500 m, with power poles erected every 20 m in between. Fast growing semi-mature trees at least 1 m high (i.e. not tube stock) planted every 50 m, to provide future linkage and provide vegetation to encourage use by gliders.
- (i) The following paragraph in (EM plan section 16.3.6.5.1) regarding placing cleared timber on the banks of the diversion to speed fauna re-colonisation is non-committal: *"This option could be developed further to include erection of some dead standing timber in a vertical position for use by avifauna. Bird and bat boxes could also be added to offset loss of nesting holes"*.
 - (j) The project area was found to lie close to the northern extent of the Yellow-tailed Black Cockatoo species range (EIS section 5.4.3). The proponent has committed (Supplementary EIS section 01.11) to erect a number of nest boxes in the rehabilitated area (e.g. on reshaped, topsoiled and seeded spoil heaps). The EPA recommends that this commitment be extended to specify: *(i) two boxes per hectare be erected within two years following rehabilitation processes; and (ii) nest box design should meet the needs of a variety of gliders, bats and avifauna species known to inhabit the adjoining areas*. This commitment, as detailed, has not been carried through into the EM plan.
 - (k) The EM plan does not discuss fire prevention or management strategies in relation to the protection of significant vegetation and regrowth vegetation areas on the Wollombi No.2 site.
 - (l) With regard to aquatic flora and fauna, the EM plan (section 16.3.6.5.3) commitments are lacking in detail. This section states that *"impacts from the diversion will be managed via the DNRM waterworks licence"*. However, the water licence (no. 185466) does not contain any conditions regarding flora and fauna. All EIS commitments regarding mitigation and rehabilitation measures in relation to aquatic/riparian flora and fauna must be carried forward as quantifiable and testable actions into this section and in section 16.3.6.6, (Proposed Environmental Authority Conditions – Nature Conservation) of the EM Plan.

Assessment

The EIS adequately describes the flora and fauna communities that are rare or threatened. However, the commitments for protecting areas or threatened species, monitoring of flora and fauna, provision of buffer zones and rehabilitation of disturbed areas require improvement. The improved measures should be included in a revised EM Plan.

Recommendations

39. It is recommended that all EIS commitments regarding nature conservation matters be carried forward as quantifiable and testable actions in the EM plan (section 16.3.6.5.1, Commitments - Terrestrial Flora and Fauna) and EA conditions (section 16.3.6.6, Proposed Environmental Authority Conditions – Nature Conservation).
40. It is recommended that EA conditions (section 16.3.6.6, Proposed Environmental Authority Conditions – Nature Conservation) include quantifiable and testable actions in relation to the monitoring of flora and fauna.

41. It is recommended that EA conditions specify an agreement, to establish a Nature Conservation Agreement under the *Nature Conservation Act 1992*, is required to be signed by the proponent and landholder prior to commencement of works at the Wollombi No. 2 project site, and:
 - a. The offset area (i.e. the conservation area under the agreement) must be defined in the agreement and be acceptable to both the Commonwealth DEH and the EPA. The selection of the offset area is required to be in accordance with the guidelines set by DEH and EPA (as specified in the EIS assessment report); and
 - b. The EPA preferred offset area is part of leasehold lots 3DK236 and 4DK264, an area of approximately 3748 ha of land.
42. It is recommended that EA condition (F1) include a timeframe for establishment and implementation of the proposed *Biodiversity Strategy*.
43. It is recommended that EM plan (section 16.3.6.6, Proposed Environmental Authority Conditions – Nature Conservation) include a commitment to develop and implement a specific rehabilitation plan for Wollombi No. 2 areas of vegetation that are considered significant and are to be retained on site. The condition should include a timeframe for development of the rehabilitation plan in consultation with relevant stakeholders.
44. is recommended that the EM plan state that the rehabilitation plan should aim to ensure linkages are maintained, or reinstated on site within 12 months, following disturbance.
45. It is recommended that the EM plan (section 16.3.6.5.1) commit to providing protective fencing for regrowth areas within the riparian areas and riparian buffers, noting that barbed wire will not be used except where cattle exclusion is necessary
46. It is recommended that details of key species recruitment outcomes be described in EM plan section 16.3.6.5 (Commitments - Terrestrial Flora and Fauna) to fulfil commitments regarding revegetation of the water drainage line to provide *habitat and connectivity* and *shelter and breeding habitat for key fauna species*.
47. It is recommended that the EM plan clarify the exact meaning, area and location of the riparian buffer to be retained and enhanced and provide a detailed map illustrating the extent of riparian areas and buffers zones to be retained. It is recommended that commitments to retaining riparian areas on Suttor Creek as habitat for native fauna be included in EM plan (section 16.3.6.5.1)
48. It is recommended that EM plan sections 16.3.6.5.1 and 16.3.6.6 include the commitments to reusing cleared vegetation for habitat enhancement wherever practical, and re-erecting suitable tree species (supplemented with nesting boxes) at appropriate locations to enable the relocation of Greater Gliders and Sugar Gliders (i.e. to act as gliding poles for arboreal marsupials where any linkages have been broken). Also, the following should be included: (i) any linkages that have not been maintained will be re-established within 12 months of the linkage being broken; (ii) tree spacings, tree selection and nesting box supplementation along the Suttor Creek diversion will be in accordance with the EPA's preferred rehabilitation hierarchy as outlined in the EIS assessment report. This hierarchy should be included in the EM plan; and (iii) plans and maps will be established to show location of areas proposed to be fragmented by works and show where re-erected timber corridors will re-link these areas, including fragmented creek vegetation and fragmented eucalypt communities.
49. It is recommended that the commitment (in EM plan section 16.3.6.5.1) regarding re-erecting some suitable trees supplemented with nesting boxes at appropriate locations to allow fauna to relocate to other areas of habitat be amended as follows (and included in section 16.3.6.6): *"Re-erecting suitable trees supplemented with nesting boxes designed for gliders, at locations identified by map XX, where vegetation has been cleared greater than 30m thereby fragmenting habitat, in a corridor design suitable to aid movement of gliders and other arboreal fauna between areas of habitat. A Re-linkage Rehabilitation Report outlining the process to be used to re-erect trees, and maps showing their GPS location will be provided to the Environmental Protection Agency at least 28 days prior to disturbing habitat*

known or suitable for glider populations. The Re-linkage Rehabilitation Report will include a monitoring program designed to demonstrate the success of the linkage rehabilitation program”.

50. It is recommended that the EM plan (sections 16.3.6.5.1) paragraph regarding placing cleared timber on the banks of the diversion to speed fauna re-colonisation be amended to state: *“This option will be developed further to include erection of some dead standing timber in a vertical position for use by avifauna and arboreal mammals. Bird, bat and glider boxes will be added to offset loss of nesting holes. Two nest boxes per hectare of rehabilitation area will be erected in a corridor design to re-connect vegetation, suitable to aid movement of gliders. A Re-linkage Rehabilitation Report will be provided to the Environmental Protection Agency at least 28 days prior to disturbing habitat known or suitable for glider populations.”*
51. It is recommended that the EM plan sections 16.3.6.5.1 and section 16.3.6.6 include the following commitments: (i) nest boxes will be erected in the rehabilitated area (e.g. on reshaped, topsoiled and seeded spoil heaps), at a rate of two nest boxes per hectare, within two years following completion of rehabilitation processes; and (ii) nest box design will meet the needs of a variety of gliders, bats and avifauna species known to habitat the adjoining areas.
52. It is recommended that the EM plan (section 16.3.6.5.1) include a description of fire prevention and management strategies for the protection of flora and fauna on the Wollombi No. 2 site.
53. It is recommended that all EIS commitments regarding mitigation and rehabilitation measures in relation to aquatic/riparian flora and fauna must be carried forward as quantifiable and testable actions in this section and in sections 16.3.3.5 and 16.3.6.6 (Proposed Environmental Authority Conditions – Nature Conservation).
54. It is recommended that the EM plan (section 16.3.3.5) include a commitment to engage a suitably qualified and experienced specialist to undertake assessments regarding aquatic macro-invertebrates and stygofauna in Suttor Creek.
55. It is recommended that EMP plan (section 16.3.6.5.1) reword the paragraph regarding species to be used in rehabilitation works as follows: *“Native species endemic to the area will be used in the rehabilitation works.”*
56. The paragraph in (EM plan section 16.3.6.5.1) regarding fencing of significant vegetation should be amended as follows: *“areas of remnant vegetation (outside the disturbance footprint) which are considered as significant (i.e. ‘endangered’ or ‘of concern’), and are to be retained on the lease area, will be identified and have protective fencing and signage erected, to restrict access to these areas. Barb-wire fencing will not be used except where cattle exclusion is necessary.”*

3.4 Air Quality

Requirements of the Terms of Reference

The EIS was adequate with respect to the Terms of Reference.

The final EIS

Regarding dust impacts, the EIS found that the prevailing winds are from the east to south east and, based on past monitoring results, dust generated from the mine and haul route may impact at Wollombi Homestead (5km west of the site) and Suttor North Homestead (7km west of the site). However, the EIS concluded that predicted dust levels will achieve the objectives of the *Environmental Protection (Air) Policy 1997*, and dust will not cause a nuisance.

The EIS found that dust deposition is not predicted to exceed 250mg/m²/day beyond 1km of the minesite, and is unlikely to have an impact on vegetation growth.

Predicted impacts on ambient air quality suggest only marginal increases to recently monitored levels.

The EIS proposes a range of dust mitigation measures to reduce the potential for air quality impacts, including among other measures: watering of exposed areas and haul roads during operations; speed limits on unsealed roads; progressive rehabilitation; and prompt investigation of complaints and implementation of appropriate actions to reduce dust nuisance.

Regarding greenhouse gas emissions, the EIS found that the Wollombi pit activities would directly contribute 183,997 tonnes of carbon dioxide equivalents in Year 15 of operations. This figure was found to represent approximately 0.03 percent of annual greenhouse gas emissions in Australia. However, annual emissions from the Newlands Coal Project will not increase as a result of the Wollombi No. 2 project, as the Wollombi pit will replace current production.

Adequacy of this section of the EM plan

The EM Plan is adequate with respect to this matter.

The EM plan commits to monthly monitoring of air quality from dust deposition gauges located at seven (7) monitoring locations within a 10km radius of the minesite, including Wollombi and Suttor North Homesteads. Monitoring is to be carried out in accordance with the *Australian Standard 3580.10.1:2003* (Methods for sampling and analysis of ambient air - Method 10.1 Determination of particulate matter – Deposited Matter – Gravimetric method).

The EM plan also commits to maintaining a register of dust complaints and, in the event of an unreasonable dust nuisance, immediately implementing dust abatement measures so that emissions of dust from the activity do not result in further environmental nuisance.

Assessment

Our assessment is that the EIS provides a comprehensive examination of air quality issues, in particular those associated with dust generation, dispersion and management. This assessment is based on the results of past dust monitoring and results of modelling predictions presented in the EIS.

Recommendations

Recommended measures/conditions for the EM Plan / draft EA are as follows:

- 57. It is recommended that the EA include the standard EPA set of air quality licence conditions that are applied to mining projects, with an additional condition for dust monitoring at specific locations as identified within the EM Plan (Table 16-8, section 16.3.2.6).**

3.5 Noise and Vibration

Requirements of the Terms of Reference

The EIS was adequate with respect to the Terms of Reference.

The final EIS

The EIS found that road noise from road trains and haul trucks are likely to be the dominant source of noise at the nearest noise sensitive receptors Suttor North Homestead (7km north west of the site, and 2.4km from the haul road) and Wollombi Homestead (6km west of the site, and 6km from the haul road). However, predicted noise levels from all mining activities are likely to be well below the *Environmental Protection (Noise) Policy 1997* noise objectives ambient level of 55dB(A). As the Wollombi pit is proposed to operate continuously, the assessment was based on night-time (10pm – 7am) noise objectives.

The EIS found that low-frequency noise (20-200Hz) from mining machinery is predicted to be within the requirements of the draft EPA *Guideline for the Assessment of Low Frequency Noise*. The predicted low frequency noise level for the Project (30dB) complies with the guideline's evening/night limit value and is 5dB below the daytime limit.

The proposed blasting regime at the Wollombi pit is not expected to differ from the current operations. Airblast and vibration impacts have been monitored at the Suttor Creek Homestead. The EIS found that airblast

overpressure and vibration are expected to be within the relevant noise and vibration limits at the nearest sensitive receptors.

Noise and vibration mitigation measures in the EIS include: blasting is not undertaken on Sundays; no night blasting will take place (after 8pm and before 6am); monitoring at the closest homestead during the initial 12 months of blasting to validate vibration levels; monitoring in response to complaints; and a register of complaints and corrective actions.

Assessment

Our assessment is the EIS provides an adequate description of the existing environmental values that may be affected by noise and vibration from the proposal, identifies the location of sensitive sites and results of baseline monitoring and potential impacts and mitigation measures. The assessment is based on the EIS modelling of noise for the first and fifteenth years of operations at Wollombi no 2 site, and on the Low Frequency Noise Assessment provided in the Supplementary EIS.

Adequacy of this section of the EM plan

The EM Plan is adequate with respect to this matter apart from the following minor amendments.

- (a) The EM plan states that blasting is not undertaken on Sundays. The EA conditions (section 16.3.4.7) should be amended to reflect this commitment.
- (b) The EA commitments should be amended to include the EIS commitment to consult with neighbours regarding the location and timing of blasts.

Recommendations

Recommended measures/conditions for the EM Plan / draft EA are as follows.

It is recommended that the EA include the standard EPA set of noise and vibration licence conditions that are applied to mining projects, with the following additional conditions to ensure ongoing compliance:

- 58. It is recommended that the EA conditions (section 16.3.4.7) be amended to include the commitment that blasting will not be undertaken on Sundays.**
- 59. It is recommended that the EA conditions specify: "Prior to blasting, reasonable efforts will be made to notify neighbouring residents of blast times, and all blasts will be videotaped."**

3.6 Cultural Heritage

Requirements of the Terms of Reference

The EIS was adequate with respect to the Terms of Reference.

Adequacy of the final EIS

A cultural heritage study¹² and subsequent cultural heritage surveys by the Traditional Owners (the Jangga People) identified the location of a range of culturally significant features including archaeological places, historical places, culturally important geographical features and a range of other features. Specific locations of sites remain confidential. The cultural heritage study was undertaken under the provisions of the (now repealed) *Cultural Records (Landscapes Queensland and Queensland Estate) Act 1987*, as the study was undertaken prior to the declaration of the current *Aboriginal Cultural Heritage Act 2003*.

Regarding the assessment of scientific (archaeological) significance, the Aboriginal cultural heritage items and sites in the Project area were assessed as having varying levels of significance.

Regarding the assessment of Aboriginal cultural significance undertaken by the Traditional Owners, the places and items were found to be culturally and spiritually significant to the Traditional Owners.

¹² Conducted by the Biri Gubba Gutha Bimbi and Sacred Sites Aboriginal Corporation and Northern Archaeological Consultancies Pty Ltd in October 1997, and covering the Suttor Creek mining lease and the Wollombi No. 2 Project area.

The EIS stated that the proponent has signed a Cultural Heritage Management Plan (CHMP) for the Project area with the Jangga People. The CHMP is registered as an Approved CHMP under Section 107 of the *Aboriginal Cultural Heritage Act 2003*.

Comments submitted on the EIS, by Northern Archaeological Consultancies (on behalf of the Jangga People), noted the following:

- The mine plan has changed since the (1997) cultural heritage study, and the focus of the study at that time was not in brigalow areas. On this basis there are substantial areas within the brigalow that have not been subject to detailed study and assessment.
- The EIS does not adequately address the protection of the endangered brigalow from a cultural heritage viewpoint, in particular its cultural sites and values. Sections of brigalow contain substantial numbers of sites and cultural heritage values (including artefact scatters, utilised ochre sources, scarred trees, culturally significant vegetation and artefact flaking floors).
- While the EIS notes that mitigation measures are contained in the CHMP, these measures reflect only the results of the 1997 study where the focus was on the proposed Suttor Creek open cut mine pits which were in land that had already been cleared. Consequently, the EIS does not adequately address cultural heritage within the brigalow areas.

In response to these concerns, the proponent has stated (in the Supplementary EIS) that although the mine plan has changed, this does not change the surface record. EIS Figure 8-1 illustrates that the Wollombi No. 2 brigalow area was within the cultural heritage study area. Nevertheless, the proponent has indicated that assessments and protective measures in relation to cultural heritage within the brigalow will be undertaken in accordance with the CHMP for the project.

The EIS commitment (page ES-7) that *"Items of cultural heritage will be either relocated out of the Project area or salvaged and stored by the Jangga people"* is unsatisfactory because the first clause suggests that items could be relocated in an inappropriate manner. That is because it does not specify who would do the relocation or what the fate of the items would be.

Regarding European cultural heritage, the final EIS stated that no objects of European cultural heritage significance were identified.

Adequacy of this section of the EM plan

The EM Plan does not specify, as it should, what must occur if previously unrecorded artefacts of cultural heritage significance are found during mining activities.

Assessment

Despite less than adequate surveys in the EIS of the brigalow areas, the EPA is satisfied that cultural heritage values in the project area will be protected by measures to be undertaken in accordance with the CHMP for the project. Those measures will ensure that any artefacts found in the brigalow areas are dealt with in a sensitive and appropriate manner.

Recommendations

Recommended measures/conditions for the EM Plan / draft EA are as follows.

60. It is recommended that the EM Plan (section 16.3.9.5) include the commitment that In the event that unrecorded cultural heritage sites or materials are discovered in surface or subsurface deposits during development operations (apart from those which have been otherwise dealt with), all work at that particular location should cease, pending further advice from the cultural heritage coordinators.

3.7 Waste Management

Requirements of the Terms of Reference

The EIS was adequate with respect to the Terms of Reference.

The final EIS

The EIS found that the major sources of wastes to be generated by the Project are cleared vegetation (260ha) and waste rock (200 million bank cubic metres).

The proponent has committed to reusing cleared vegetation on site for habitat enhancement wherever possible.

The EIS provided illustrations showing the proposed location of spoil material. Issues regarding stability and rehabilitation of waste rock/spoil are addressed in section 3.1 of this EIS assessment report. Regarding the chemical characteristics of waste spoil, the EIS found that all overburden groups are essentially non-acid forming with positive acid neutralizing capacity and no spoil groups exhibit limitations from elemental or metal toxicity. The proponent has committed to identifying potentially acid forming and non-acid forming spoil to ensure the appropriate selective placement of waste.

The EIS advised that product coal from the Wollombi No. 2 Project is to be processed at the coal handling and production plant at the Newlands Coal Mine, and associated tailings and reject material generated will be managed and disposed at the Newlands site. Predicted volumes of tailings and reject material were not provided.

The EIS advised that other sources of wastes will be minimal, and include: waste oil, oily sludge, absorbent degreaser, grease oily rags, oil filters, general wastes, tyres, recyclables, scrap metals and drums. These wastes will be integrated into the existing waste management system at the Newlands Coal Mine. The EIS outlined the estimated quantities of wastes (including regulated wastes) and associated management methods including off-site movement of regulated wastes. Diagrams indicating the proposed waste streams were also provided.

The EIS provided details of the existing approved landfill facility at Newlands, and advised that the material generated from the Wollombi No. 2 Project that may report to this landfill is consistent with the landfill design and conditions of approval.

The EIS advised that waste management protocols were consistent with the *Environmental Protection (Waste Management) Policy 2000* waste management hierarchy waste hierarchy: (1) avoid; (2) re-use; (3) re-cycle; (4) energy recovery; (5) waste disposal.

Adequacy of this section of the EM plan

The EM Plan is adequate with respect to this matter, with the following minor amendments:

- (a) The EM plan (section 16.3.7.4) and EA condition (G6) should be amended to specify that cleared vegetation should preferably be used in rehabilitation, habitat reconstruction or mulched and incorporated into growing medium for use at the Wollombi No. 2 site.
- (b) It is recommended that the EA conditions (section 16.3.7.7) are amended to ensure that when sending regulated waste off site, waste tracking requirements under the *Environmental Protection (Waste Management) Regulation 2000* are followed. The following condition is recommended: "Where regulated waste is removed from the licensed place, the holder will monitor and record the following: (a) the date, quantity and type of waste removed; (b) the name of the waste transporter and/or disposal operator that removed the waste; and (c) the intended treatment/disposal destination of the waste."

Assessment

The EPA's assessment is the EIS adequately addressed matters concerning the handling and fate of all wastes to be generated by the Project except with regard to the handling of potentially acid forming and/or dispersive spoil material. The handling of those materials should be addressed in the revised EM Plan.

Commitments regarding the reuse of cleared vegetation on site for habitat enhancement are acceptable. The EPA is satisfied with advice from the proponent that the project will not generate any new wastes in addition to those managed currently at Newlands Coal Mine; and that wastes (other than spoil) can be managed using the existing waste management system at the Newlands Coal Mine.

Recommendations

Recommended measures/conditions for the EM Plan / draft EA are as follows:

61. It is recommended that the waste management objectives and commitments (EM plan, sections 16.3.7.4 and 16.3.7.5) be amended to specify that cleared vegetation should preferably be used in rehabilitation, habitat reconstruction or mulched and incorporated into growing medium for use at the Wollombi No. 2 site.
62. It is recommended that the EA conditions (section 16.3.7.7) specify: *“Where regulated waste is removed from the licensed place, the holder will monitor and record the following: (a) the date, quantity and type of waste removed; (b) the name of the waste transporter and/or disposal operator that removed the waste; and (c) the intended treatment/disposal destination of the waste.”*
63. It is recommended that the EM plan commitment regarding selective placement of waste spoil (section 16.3.7.5.1) be amended as follows and included as an EA condition: *“The operator will provide for the identification of potentially acid forming (PAF) and non-acid forming (NAF) spoil, and of dispersive and non-dispersive spoil to ensure the appropriate selective placement of waste. The relevant identification and selective placement procedures and, evidence of operations in accordance with those procedures, will be made available to the administering authority upon request.”*

3.8 Road Infrastructure

Requirements of the Terms of Reference

The EIS was adequate with respect to the Terms of Reference.

The final EIS

The EIS found that there will be no impact on the existing road network outside the mining lease area due to the Project. The Suttor Creek haul road will be extended into the Project area to enable coal from the project to be transported by road trains to the Newlands Coal Mine. Should sufficient mine expansion eventuate (which is not subject to a separate EIS), the proponent will advise the Department of Main Roads if significant volumes of coal (greater than 50 000 t per annum on state-controlled roads) are hauled by road.

The EIS found that the Project is not expected to impact on existing traffic patterns during the operational phase of the Project, as the coal production will be similar to existing levels from the adjacent Suttor Creek mining operation and the existing equipment and workforce will be utilized.

During construction phase the workforce traffic will increase as the workforce will increase by 60 personnel, (from 125 to 180 personnel). Personnel will use their own transport to and from the project site.

The Queensland Department of Main Roads (DMR) require further information on impacts the haulage of coal to Newlands may be having on the Glenden Road, and also wish to discuss with Xstrata any future plans to declare the Cerito Alignment (linking the Bowen Developmental Road to the Glenden Road) a state-controlled road.

Adequacy of this section of the EM plan

The EM Plan does not address road infrastructure matters. Should analysis regarding intersection performance or road safety impacts indicate significant impacts, the EM Plan should detail recommendations for mitigation strategies, as discussed with and approved by the district DMR office.

Assessment

The EPA's assessment is the EIS adequately describes arrangements for the transport of plant, equipment, products and personnel during the operational phase of the project. However, the EIS does not propose mitigation measures for addressing increased traffic impacts during the construction phase. This assessment is based on the advice that: (a) coal production will be similar to existing levels from the adjacent Suttor Creek mine, using the current production equipment and using the existing workforce during the operational phase; and (b) the workforce will increase by 60 personnel, from 125 to 180, during the construction phase. Xstrata should deal directly with DMR on matters related to public road infrastructure.

Recommendations

Recommended measures/conditions for the EM Plan are as follows.

64. It is recommended that the proponent perform an analysis of intersection performance (on the Glenden Road / mine access road intersection) during shift changes to ensure there are no significant road safety implications due to increased traffic during the construction phase.
65. It is recommended that the proponent advise the district office of the Department of Main Roads regarding: (a) impacts the haulage of coal to Newlands may be having on the Glenden Road; and (b) any future plans to declare the Cerito Alignment (linking the Bowen Developmental Road to the Glenden Road) a state-controlled road.

3.9 Matters of National Environmental Significance

The Newlands Coal Mine extension Project has been declared a *controlled action* under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and the State EIS process has been accredited under the Bilateral Agreement between the Queensland and Australian governments, developed under the provisions of the EPBC Act.

Requirements of the Terms of Reference

The TOR (Section 1.7) required the EIS to address the potential impacts on those matters of National Environmental Significance (NES) identified in the *controlling provisions*. The *controlling provisions*, identified when the project was declared a *controlled action*, were sections 18 & 18A of the EPBC Act, which relate to listed threatened species and ecological communities.

The TOR (section 4.7.3) identifies an area of 404ha of the Wollombi surface area containing two endangered regional ecosystems (ERE) under the *Vegetation Management Act 1999*, which are also listed threatened ecological communities under part 3 of the EPBC Act. The TOR requires that consideration should be given to mitigating the impacts on the brigalow community (listed as an Endangered ecological community under the EPBC Act) by any or all of the following: a compensatory land agreement to provide more area of similar, or potentially superior ERE than affected by the project; maximising retention of the ecological communities through detailed mine planning; reestablishment and confirmation of biodiversity values in the rehabilitated areas of the mined ecological communities; additional site specific studies; and the development of management strategies for target species.

The TOR states (page 3) that the diversion of Suttor Creek will be assessed through a separate process involving an application to amend the current environmental authority, and that the EIS will be required to address only those matters that impact on the Wollombi (brigalow) area for which surface rights are needed. Nevertheless, the controlled action includes the diversion of Suttor Creek. Consequently, the diversion has been considered in this EIS assessment report. Flora affected by the creek diversion are of species not covered by the controlling provisions. The significance of the creek diversion relates only to potential impacts on fauna species covered by the controlling provisions and their habitat. These matters are dealt with in the section on threatened fauna species below.

The final EIS

The EIS was adequate with respect to the Terms of Reference.

Threatened ecological communities

The final EIS identifies two threatened ecological communities of brigalow (*Acacia harpophylla* dominant and co-dominant communities) to be disturbed within the Wollombi No. 2 surface area. Habitat values to be impacted include community structure, richness and supporting topography. The two communities are listed as "endangered" ecological communities under the EPBC Act and *Vegetation Management Act 1999*. A total of 206ha of *Acacia harpophylla* open forest with *Terminalia oblongata* [described¹³ as Regional Ecosystem (RE) 11.4.9] and 54ha of *Acacia harpophylla* – *Eucalyptus cambageana* open forest (RE 11.4.1) are proposed to be

¹³ Sattler, P.S and Williams, R.D. (eds) 1999, The Conservation Status of Queensland's Bioregional Ecosystems, *Environmental Protection Agency, Brisbane*.

cleared. In September 2003, less than 10% of the pre-clearing area of each of these ecological communities remained. According to information provided by the proponent, Project clearing represents the removal of 1.9% of the remaining *Acacia harpophylla* - *Terminalia oblongata* community, and the removal of 1% of the remaining *Acacia harpophylla* – *Eucalyptus cambageana* community in the Northern Bowen Basin region (Note: Source of information regarding the percentage of ecosystem remaining within the region was not stated. Refer to EM plan Table 16-41).

In addition, the EIS identifies two regional ecosystems, listed as “of concern” under the *Vegetation Management Act 1999*, present within the Wollombi No. 2 surface area. A total of 24ha of *Eucalyptus tereticornis* – *Eucalyptus* spp. (RE 11.3.4) and 12ha of *Eucalyptus populnea* – *Eremophila mitchelli* (RE 11.9.7) are present but not proposed to be disturbed. (EIS Table 5-2)

The EIS identifies the vegetation associated with Suttor Creek as *Eucalyptus tereticornis* / *Corymbia tessellaris* tall open forest. There is no indication in the EIS that this vegetation belongs to a threatened ecological community.

During the EIS process it was identified that regional ecosystem areas were initially incorrectly identified as RE 11.4.3 (*Acacia harpophylla* and/or *Casuarina cristata* shrubby open forest on cainozoic clay plains) rather than as RE 11.4.9 (which is indicated by the presence of *Terminalia oblongata* – a distinguishing feature of 11.4.9). This has been corrected, and an amended map illustrating remnant vegetation within the Wollombi No. 2 area is provided in the EM plan (Figure 16-20).

Assessment of significance

The EIS assessment of significance of impacts (section 5.5.6.2) states that the proposed clearing of brigalow on the Wollombi No. 2 site represents a loss of less than 0.001% of the entire remaining brigalow population in Queensland, and that a loss of this size is considered unlikely to lead to a long-term adverse impact on either brigalow community.

The assessment states that there will be an initial loss of the extent of the brigalow community although the community will expand in area through regeneration. The assessment concludes that the loss of habitat is not considered as being critical to the survival of the community.

In relation to the clearing of riparian habitat due to the diversion of Suttor Creek, the assessment of significance (provided in Table A-4 of the Addendum to the Supplementary EIS) identified that the clearing activities are likely to have a moderate impact on riparian habitat, although this will be a short-term impact until the recreated habitat (associated with the realignment of Suttor Creek) is established and connectivity regained. The EIS identifies the vegetation associated with Suttor Creek as *Eucalyptus tereticornis*/ *Corymbia tessellaris* tall open forest. However, the assessment of significance (provided in Table A-4 of the Addendum to the Supplementary EIS), does not detail the area of habitat to be impacted nor does it identify habitat values in relation to the riparian community.

The EIS assessment of significance of impacts (section 5.5.6.2) states that the Project will not interfere with the brigalow communities outside the current mine footprint. There is, however, no assessment of edge effects, although section 5.5.2 recognises that effects could include loss of soil moisture, increased wind, dust and noise impacts, changes to species composition and abundance, increased predation and competition, and particularly increased weed invasion.

The EIS assessment of significance of impacts found that there is potential for the spread of weed species as a result of the Project. The brigalow communities on the Project area currently have several pest species present (e.g. parthenium, noogoora burr and prickly pear). However, there is a weed management plan in place and, as a result, weeds should be kept under control.

The EIS assessment of significance of impacts (section 5.5.6.2) found that the brigalow communities are not currently fragmented. However, fragmentation of the community (subsequently identified as RE 11.4.9) will occur to an extent. The assessment concluded that the fragments will be connected through the community of RE 11.9.1 in the central western area of the Project.

The Commonwealth DEH (in letter of 6 June 2006, in relation to the Addendum to the Supplementary EIS) expressed that “it must be stated that the area of brigalow to be cleared currently stands at 260 hectares and may not be increased”. In addressing the DEH’s comments, the proponent responded as follows: “Newlands



confirm that the area of Brigalow to be disturbed due to project activities under this approval process will be no greater than 260 hectares."

A number of mitigation measures are outlined in section 3.3 of this EIS assessment report. Mitigation measures proposed in the EIS also include:

- (a) Commitments (in the Addendum to the Supplementary EIS) to provide the administering authority with a survey map indicating areas of brigalow that are not to be disturbed.
- (b) Commitments regarding the protection of brigalow vegetation (EIS section 5.6.3.1) include the progressive rehabilitation of remnant brigalow (of similar quality to that proposed to be cleared by mining) present on the Project area. Rehabilitation methods include weed removal, soil stabilisation and revegetation where necessary. Similarly, commitments are made to target young regrowth brigalow for on-site rehabilitation and preservation purposes.
- (c) Commitments regarding the realignment of Suttor Creek prior to clearing, and restoration of creek morphology and habitat recreation in the realigned section.
- (d) Commitments regarding rehabilitation of disturbances within the Project area following mining (Refer to section 3.1.4 of this EIS Assessment Report). The proponent has advised (Supplementary EIS 02.15) that although the resulting vegetation community will have species found in the original ecosystem, the resulting vegetation will be fundamentally different from the community it is replacing.
- (e) The establishment of ecosystem offsets. The proponent has made commitments (in the IAS, and EIS section 5.6.3.1) to reach an agreement (a compensatory land agreement) with Commonwealth and State agencies, which will provide an area of land of equal area and similar ecological value to the area of nominated ERE affected by the Project. The proponent has previously committed to having the agreement in place before the commencement of disturbance in the Project area.
- (f) Commitments (in the Supplementary EIS) to negotiating a Nature Conservation Agreement under the *Nature Conservation Act 1992*, for an area of land of suitable location and size that will help to maintain biodiversity and improve connectivity with existing remnant.

The EIS was found to be deficient with respect to the following matters:

- (a) Assessment of edge effects.
- (b) Issues concerning the possibility of flooding of brigalow communities beyond the area illustrated to be disturbed by project activities (refer to section 3.1.1 of this EIS assessment report).
- (c) At the time of writing of this report there is no compensatory land agreement in place between the proponent, State or Commonwealth regarding compensatory land. However, discussions are underway, and the EPA and DEH are assisting the proponent in identifying areas of suitable habitat. The EPA has stated that such an agreement (a Nature Refuge Agreement) should: be signed by the proponent and landholder prior to commencement of works on site; be ratified under the *Nature Conservation Act 1992*; and provide an overall gain for the biodiversity values of the affected brigalow community. The EPA preferred offset is part of leasehold lots 3DK236 and 4DK264, an area of about 3748 ha.

The Commonwealth DEH require that an offset package be implemented prior to the commencement of project clearing, or by an agreed time after clearing commences. Based on the proponent's commitments at the outset of the EIS process, and the EPA requirements as stated above, it is recommended that an offset agreement be required to be signed prior to commencement of works on site (although it should be noted that the signing of the agreement may occur following the issuing of relevant State and Commonwealth approvals).

The DEH have provided the following comments on the matter of offset selection:

- *In accordance with contemporary offset policy, an offset package must include the acquisition of a remnant regrowth area(s) of brigalow that is greater in area than that which will be impacted by the extension of Newlands Coal Mine into the Wollombi No 2 Surface Area.*
- *Preferably, the offset area(s) should be in the vicinity of the Newlands Coal Mine or at least in an area utilised by the same suite of fauna species.*



- The offset(s) must support regrowth that consists of the same suite of plant species contained in RE 11.4.3 and 11.9.1. (Note: This should be interpreted as 11.4.9 rather than 11.4.3, as discussed previously).
- Site selection must give consideration to maximising biodiversity gains. For example, habitat requirements for migratory species that will be impacted by loss of foraging trees and water sources must be included in site selection.
- The offset(s) must not be located on land under which there is a mining resource.
- The offset area must be placed under some sort of secure legal protection, such as conservation covenant, that ensures protection runs with title. Protection must be in perpetuity.
- The offset package must include management measures to ensure offset areas remain viable in perpetuity. Such measures may include the management of supplementary planting, weeds, fire, feral animals, livestock, and restrictions on access.
- Monitoring and maintenance activities that can be used to measure the success of the offset area must be included in the package.
- The offset area must be established on land that would otherwise not be formally protected (i.e. would need to be located on private land) and not be within forest reserves, existing national parks or other conservation reserves (although of course, it may become part of the conservation estate as a result of the offset proposal).
- It is desirable that the offset area provides connectivity with other areas of native vegetation in order to have greater resilience to disturbance and to better contribute to existing habitat network/corridors.

Threatened flora species

Finger panic grass

Although field studies did not locate finger panic grass (*Digitaria porrecta*, endangered), there is a likelihood of the species occurring at the site. The assessment of significance found that if it is present it could be associated with the stream associated ecosystem (11.3.4), and would be lost where riparian ecosystem are removed. Proposed mitigation measures, as outlined in the Addendum to the Supplementary EIS, include: Post wet-season monitoring of fertile grasses in remnant riparian zone; protection of grass if located; and inclusion of seed in rehabilitation mix if available. It is noted that this species has been included in the EM plan list of seeds to be used for rehabilitation. It is recommended that all mitigation commitments in the final EIS regarding finger panic grass be included in the EM plan.

Black ironbox

Although field studies did not locate this black ironbox (*Eucalyptus raveretiana*, vulnerable), there is a likelihood of the species occurring at the site. The assessment of significance found that if black ironbox was present in the recent past (as presumed) it would have been associated with that portion of the riparian ecosystem closest to the stream bed. Mining of the riparian area would remove potential habitat for reinvasion of presume former distribution. *Eucalyptus raveretiana* has been included in the EM plan list of indicative seed species for rehabilitation.

DEH received advice during the EIS process that the project area has been selectively logged in the past for this species.

Bluegrass dominant grasslands

There were no grasslands of this type (ie. *Dicanthium queenslandicum* and *Dicanthium setosum*) found on site.

King bluegrass, Marlborough blue, curly-bark, toadflax, quassia, and ooline

There were no plant species of the following types found on site: King bluegrass (*Dichanthium queenslandicum*, vulnerable); Marlborough blue (*Cycas ophiolitica*, endangered); curly-bark (*Acacia curranii*, vulnerable); toadflax

(*Thesium australe*, vulnerable); quassia (*Quassia bidwillii*, vulnerable); and ooline (*Cadellia pentastylis*, vulnerable).

Threatened fauna species

The Commonwealth DEH identified the riparian vegetation associated with Suttor Creek and the brigalow block as significant fauna habitat. The DEH have identified the following fauna species as matters of NES (i.e. EPBC Act listed species) that may be impacted by the Project: ornamental snake (*Denisonia maculata*, vulnerable); brigalow scaly-foot (*Paradelma orientalis*, vulnerable); southern subspecies of squatter pigeon (*Geophaps scripta scripta*, vulnerable); yakka skink (*Egernia rugosa*, vulnerable); and the southern sub-species of the black-throated finch (*Poephila cincta cincta*, endangered).

Ornamental snake

Regarding the ornamental snake, the EIS stated that although no individuals were observed during field surveys (due to drought influence), the assessment found it is highly likely that this species is present within the habitat. It is likely that the forest/woodland could be considered critical to the survival of the ornamental snake in the locality. Brigalow gilgai areas and the nearby riparian habitat were important for providing shelter and habitat for their food source (frogs). The species is likely to be impacted due to loss of cracking clay and gilgai habitat and possible loss of dry season food source. Proposed mitigation measures included: retaining existing vegetation in the northern and western sections of the lease; regeneration of the Suttor Creek diversion; the retention and preservation of a suitably large (though presently undefined) riparian buffer along Suttor Creek; revegetation of the water drainage channel bordering the mine pit; addition of structural elements (including windrow of rough woody debris along the edge of the water drainage channel); and onsite monitoring to determine the success of mitigation measures. The outcome of the assessment of significance found that the additional mitigation measures may enable a small percentage of the population within the cleared area to survive.

Regarding populations of the ornamental snake, the EIS assessment of significance suggests that long-term impacts are unlikely due to a number of factors, including that rehabilitation of the Project area post-mining can provide suitable habitat for population recovery. The Supplementary EIS (section 02.08) states that the ornamental snake has been found in similarly disturbed areas, although the report does not provide the locations. The EIS concludes that the Project will not result in a significant degree of modification, destruction or isolation of habitat likely to lead to a decline in the ornamental snake species.

The Supplementary EIS stated that the cracking clay soils that will facilitate the rehabilitation of the site will be replaced, and any impact on frog species will be temporary. It is recommended that this commitment be included in the EM plan and as a success criterion for rehabilitation.

Brigalow scaly-foot

Regarding the brigalow scaly-foot, the EIS states that it is difficult to estimate the area of occupancy for this species as no individuals were observed during field surveys. However, it is likely to occur in low abundance. The species is found within the Brigalow Belt biogeographical zone in south-central Queensland and it shelters under logs or other ground debris. The EIS suggested that populations of the species have suffered decline in the Project area as a result of loss of habitat and possible poisoning by cane toads, and it is likely that the forest/woodland habitats on the Project area could be considered critical to the survival of the brigalow scaly-foot in the locality. Although the EIS confirmed that the Project will have a direct impact on critical habitat of the species, the EIS concludes that no significant and long-term decreases in populations of this species are envisaged due to the proposal to undertake mitigation measures including: retaining existing vegetation in the northern and western sections of the lease; regeneration of the Suttor Creek diversion; the retention and preservation of a suitably large (though presently undefined) riparian buffer along Suttor Creek; revegetation of the water drainage channel bordering the mine pit; addition of structural elements (including windrow of rough woody debris along the edge of the water drainage channel); and onsite monitoring to determine the success of mitigation measures. The outcome of the EIS's assessment of significance found that the additional mitigation measures may enable a small percentage of the population within the cleared area to survive.

Regarding long-term impacts on populations of the brigalow scaly-foot, the assessment also concludes that the Project will not result in a significant degree of modification, destruction or isolation of habitat likely to lead to a decline in the species.

Squatter pigeon

Regarding the squatter pigeon, the EIS states that it is difficult to estimate the area of occupancy for this species as no individuals were observed during field surveys (possibly as a result of prolonged drought conditions), although it is likely to occur on site in wetter seasonal periods as the species was found during studies¹⁴ in 1998 to be widespread, occupying Suttor Creek and adjacent woodland (including areas disturbed by cattle grazing). Those sightings were often close to water. The species exhibits a preference for woodland habitats featuring permanent water. The assessment of significance of impacts (EIS Table 5-9) found that it is possible that local populations of the squatter pigeon have suffered natural and severe decline in the Project area as a result of overgrazing and drought during the past several years. The DEH consider that degradation from grazing does not preclude occurrence of the pigeon. Previous studies¹⁵ in the locality have suggested that natural population fluctuations may occur. The assessment concluded that it is likely that the retention and preservation of a suitably large riparian buffer along Suttor Creek would adequately conserve the areas of habitat for this species on the site, and the implementation of the site's feral animal control program will maximise potential for native species to survive. The likely impact on the squatter pigeon as a result of the diversion of Suttor Creek was not specifically discussed, although the EIS (Table 5-9) states that it is also possible that mining operations may enhance the likelihood of finding this species on site by creating additional permanent waterbodies.

Yakka skink

Regarding the yakka skink, the EIS states no individuals were recorded in the area (during a number of surveys undertaken), and it is highly unlikely that the species occurs within the Wollombi No. 2 area.

Black-throated finch

Regarding southern sub-species of the black-throated finch, the EIS states that based on a lack of current regional occurrence records (including no recordings during site surveys, or from Queensland Museum WildNet or Birds Australia Atlas database) it is unlikely the species occur on site. The Traditional Owners stated during the EIS process that the black-throated finch is present in the region. The proponent responded by stating that it is possible the species may be present seasonally. If it is present, the species is likely to be dependent on grasses associated with the riparian forest, trees and hollows (for roosting and nesting) and available winged termites for food. Mitigation measures are not specified in the EIS and an assessment of significance was not provided. It is recommended that mitigation measures include monitoring for the black-throated finch (as part of bird monitoring).

Migratory species

The EIS identified twenty-four listed migratory species under the EPBC Act have been recorded on the Project area. The EIS assessment of significance of impacts (Section 5.5.6.3) found that the project is unlikely to significantly impact these species or disrupt the lifecycle of these species.

The EIS (section 5.6.3.3) identified that several exotic species found at the Wollombi property are declared pests under the *Land Protection (Pest and Stock Route Management) Regulations 2003*.

A number of mitigation measures in relation to fauna species are outlined above and in section 3.3 of this EIS assessment report. Additional mitigation measures proposed in the EIS in relation to the protection of threatened fauna species include:

- (a) Commitments were made to conduct ongoing monitoring to determine if pests are spreading into riparian buffer areas and rehabilitated areas, and to implement effective responses to pest infestation.
- (b) Commitments to establishing monitoring plots (to be located in the riparian buffer area along Suttor Creek) aimed at recording the integrity of vegetation and monitoring for any changes in the presence and abundance of pests. Furthermore, the weed/pest monitoring program will be undertaken in conjunction with the proposed rehabilitation / revegetation works.

The EIS had the following deficiencies with respect to threatened fauna species:

¹⁴ Melzer, A and Pickering, G. 1998, *Vegetation of the Suttor Creek Project (ML4761) Glenden (Nebo Shire)*, Central Queensland University, Rockhampton, prepared for Newlands Coal Pty Ltd.

¹⁵ Campbell and Barnard, 1917, Barnard and Barnard, 1925 cited in Garnett, S.J. and Crowley, G.M. 2000, *The Action Plan for Australian Birds*, Environment Australia, Canberra.

- (a) DEH has questioned the validity of the brigalow scaly-foot surveys, given that the EIS (section 5.4.4.4) stated that the species is mostly found in the summer only, while the survey was conducted in March.. Although March is not far out of the summer season, DEH consider that March may not be the optimal time to survey if the active breeding season has ended;
- (b) DEH have advised that it is unlikely that the baseline population size for ornamental snake, brigalow scaly-foot and squatter pigeon species can be determined without a targeted survey. DEH have recommended (in their submission on the draft EIS) that targeted surveys of both the riparian and brigalow habitats be undertaken for each of the EPBC Act listed species, and that the survey timing should be appropriate for locating the species; and
- (c) The assessment identifies an “*Action Plan for Australian Reptiles*” that details management actions required for brigalow scaly-foot. However, the assessment does not provide details of the management actions specified in the Action Plan, nor is there any commitment to undertake any specific actions in accordance with the Plan.

Recovery program for threatened species

The Supplementary EIS stated that the proponent is willing to co-operate with World Wildlife Fund for Nature in the latter's program to produce a DEH funded recovery program for threatened species in the local area. It is recommended that this commitment be included in the EM plan.

Assessment

The *Acacia harpophylla* - *Terminalia oblongata* community (RE 11.4.9) is considered by the EPA to be one of the highest value remnant units of this ecosystem in the bioregion. Extensive clearing has meant that most of the remaining examples of this community are small (less than 50ha) and fragmented. The area on the mining lease is of sufficient size and an appropriate shape to enable the natural integrity, including the species diversity within it to be maintained. It is part of a large tract of remnant vegetation and has good connectivity to the bioregional wildlife corridor to the south.

The EIS has adequately address the potential impacts on threatened species and ecological communities as a result of mining activities within the Wollombi No. 2 surface area of the mine footprint, and adequate consideration has been given to mitigating the impacts on the threatened ecological communities. This assessment is based on: (a) the information and commitments/mitigation measures provided in the submitted EIS; (b) the outcome of the assessment of significance; and (c) the commitment to establish ecosystem offsets.

Adequacy of this section of the EM plan

The EM Plan is inadequate with respect to the following matters:

- (a) As stated in section 3.3 of this EIS assessment report, the EM plan measures to avoid or minimise negative effects to flora and fauna are non-committal and the majority of EIS commitments (including mitigation measures proposed in the Addendum to the Supplementary EIS - Table A-4) have not been carried forward as quantifiable and testable actions in the EM plan. Rewording of EM plan commitments is required, with more detail on how mitigations will be undertaken. Presently there are only two (2) proposed EA conditions regarding nature conservation matters (refer to EM plan section 16.3.6.6) for the entire Newlands Coal Project. Furthermore, the EM Plan has no proposed EA conditions in relation to the monitoring of flora and fauna. Given the conservation significance of the ecological communities in the Wollombi No. 2 surface area, this is unsatisfactory.
- (b) Regarding the potential for increased weed invasion in the remnant brigalow community adjacent to the mine footprint (i.e. edge effects), there are no specific weed management conditions in EM plan section 16.3.6.6. and
- (c) The EIS commitments regarding realignment of Suttor Creek prior to project clearing, and restoration of creek morphology and habitat recreation in the realigned section have not been carried through to EM plan section 16.3.6.5.3 (Commitments – Aquatic Flora and Fauna).

Draft Recommendations (Note: These are to be finalised following discussions with DEH regarding the draft EIS assessment report)



A number of recommendations concerning nature conservation matters have been provided in section 3.3 of this EIS assessment report. In addition, the following measures/conditions for the EM Plan / draft EA are recommended:

66. It is recommended that the EM plan (section 16.3.6.6, condition F2) should be improved by:
 - a. (a) ensuring the elimination or control of weeds within areas of the mining lease adjacent to mining disturbances, in particular the adjacent brigalow vegetation that is outside the mine footprint. This measure would assist in mitigating the edge effects brigalow communities outside the current mine footprint associated with mining disturbances;
 - b. (b) ensuring the elimination or control of all weeds – i.e. not limited to those species declared under legislation; and
 - c. (c) including the results of weed monitoring and mitigation measures as part of reporting in the plan of operations.
67. It is recommended that the EM plan clarify the area of each brigalow community likely to be impacted by flooding.
68. It is recommended that the EM plan (section 16.3.6.5.3, Commitments – Aquatic Flora and Fauna, and EA conditions section 16.3.6.6) include the commitments regarding realignment of Suttor Creek prior to Project clearing, and restoration of creek morphology and habitat recreation in the realigned section. Conditions should also specify that rehabilitation success criteria must include presence of key species from the *Eucalyptus tereticornis/Corymbia tessellaris* community.
69. It is recommended that the EM plan be amended to include the commitment that cracking clay soils that would facilitate the rehabilitation of the site will be replaced, and any impact on frog species will be temporary.
70. It is recommended that all mitigation commitments regarding finger panic grass be included in the EM plan (i.e. post wet-season monitoring of fertile grasses in remnant riparian zone, and protection of grass if located).
71. It is recommended that the EM plan be amended to include monitoring of the black-throated finch.
72. It is recommended that the EA include a condition that prior to construction activities the proponent must provide the EPA with latitude/longitudinal GPS defined extent of impact of remnant regional ecosystems, consistent with the illustrations provided in the EM plan. The EM plan should be amended to include these latitude/longitudinal boundaries.
73. It is recommended that the EM plan include the commitment to co-operate with World Wildlife Fund for Nature to produce a recovery program for threatened species.
74. It is recommended that the EA include a condition that an offset package, formally accepted in writing by the EPA and the Commonwealth DEH, must be implemented prior to the commencement of clearing within the Wollombi Surface Area No. 2 surface area. Refer to Sections 3.3 and 3.9 of the EIS assessment report for further details.
75. It is recommended that the EA include a condition that the offset agreement include the provision of land:
 - a. (a) greater in area and of similar ecological value to the area of nominated ERE affected by the Project;
 - b. (b) that will provide an overall gain for the biodiversity values of the affected brigalow community;
 - c. (c) that will be of suitable location and size to help maintain biodiversity and improve connectivity with existing remnant vegetation; and
 - d. (d) addresses Commonwealth requirements for offset selection, as outlined in this EIS assessment report, to the satisfaction of the administering authorities.



76. It is recommended that the Nature Conservation part of the EM plan include a section on rehabilitation of remnant and regrowth brigalow.

77. It is recommended that all commitments regarding pests be brought through into the EM plan (section 16.3.6.5), in a specific section titled *Pest Management*.

The Bilateral Agreement applies to Part 8 (Assessment Stage) of the EPBC Act process. 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, in addition to this EIS assessment report, will need to be provided 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 the proponent in the Supplementary Report. The EPA has reviewed the amendments to the draft EM plan agreed to by the proponent 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. A revised EM plan must be submitted to the EPA in accordance with s201 of the EP Act for consideration before the decision under s207 is made on whether to allow the application to proceed to the draft environmental authority stage.

Recommendation:

78. It is recommended that the EA include a condition requiring compliance with the finalised EM plan (i.e. the EM plan version that includes integration of the recommendations outlined in this EIS Assessment Report).

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
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Environmental Operations
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3/8/2006

Date

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