MAC-ENC-MTP-047
REHABILITATION STRATEGY

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Revision History

<table>
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<tr>
<th>Version number</th>
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<td>1.0</td>
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<td>Approved by the Department of Planning &amp; Infrastructure on 14/11/12.</td>
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1.0 Introduction

This Rehabilitation Strategy has been developed to address the Conditions of Project Approval 09_0062– Mt Arthur Coal Mine – Open Cut Consolidation Project dated 24 September 2010 (Project Approval) which was issued to Hunter Valley Energy Coal Pty Ltd (HVEC) by the NSW Department of Planning (DoP). Schedule 3 of the Project Approval requires the preparation and, where relevant, the implementation of the following Strategies and / or Plans which relate to biodiversity and rehabilitation:

• Biodiversity Offset Strategy – Schedule 3 Condition 36;
• Biodiversity Offset - Schedule 3 Condition 38;
• Long term Security of Offsets – Schedule 3 Condition 39;
• Biodiversity Management Plan – Schedule 3 Condition 40;
• Conservation Bond – Schedule 3 Condition 41;
• Rehabilitation Strategy – Schedule 3 Condition 42;
• Progressive Rehabilitation – Schedule 3 Condition 43; and
• Rehabilitation Management Plan – Schedule 3 Condition 44.

This document has been developed to address Schedule 3 Condition 42 – Rehabilitation Strategy. The objectives of this Rehabilitation Strategy are to provide:

• A structure which underpins the planning and assessment process which relates to mine closure (that is able to be readily revised and updated); and
• A transparent and overarching framework that can be utilised during current and future stakeholder engagement programs.

Appendix 1 provides a guide to the relevant section of this Rehabilitation Strategy that addresses each requirement of the various Project Approval Conditions that pertain to the Rehabilitation Strategy.

Mt Arthur Coal currently has approval to carry out the project in accordance with the Environmental Assessment titled Mt Arthur Coal Consolidation Project Environmental Assessment (6 volumes), dated November 2009, including the Response to Submissions, the Statement of Commitments and conditions of the Project Approval. This Project Approval is a step in Mt Arthur Coal’s ongoing growth programs, and mining is currently expected to continue well beyond 2022. Further Project Approvals and all other regulatory requirements will be sought as required to facilitate ongoing mining at Mt Arthur Coal Complex.

Mt Arthur Coal has a firm commitment to minimising the impact of its operations on the local environment and community, and has a comprehensive Environmental Management System (EMS) in place to fulfil this commitment. This Rehabilitation Strategy is a component of the Mt Arthur Coal EMS.
1.1. Rehabilitation Goals

The following rehabilitation goals underpin this Rehabilitation Strategy:

- Successful design and rehabilitation of landforms to ensure structural stability, revegetation success and containment of wastes; and
- Post-mining land use compatible with surrounding land uses to provide environmental and community benefits.

1.2. Project Area

Hunter Valley Energy Coal Pty Ltd operates the Mt Arthur Coal Complex\(^1\) which consists of approved open cut and underground mining operations, a rail loop and associated rail loading facilities. The operations are located in the Upper Hunter Valley, NSW approximately five kilometres south west of Muswellbrook, refer to Figure 1.

Figure 2 provides an overview of the existing site, including the creeks and information on the existing active mine workings.

Figure 3 provides a diagrammatic representation of the post mining landscape of the project area and surrounding lands as per the concept strategy depicted in Appendix 8 of the Project Approval (DA 09_0062).

1.3. Endorsement of Persons

In accordance with Schedule 3, Condition 42 of the Project Approval, Department of Planning and Infrastructure (DPI) has endorsed the engagement of the following team to prepare the necessary documentation to develop the Rehabilitation Strategy:

- Nicholas Bugosh – GeoFluv
- Mark Burns – Global Soil Systems;
- Rod Eckles – Landforma; and
- Neil Nelson – Agvice Pty Ltd.

A copy of the correspondence from DPI is provided in Appendix 2.

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\(^1\) The combined operations of the project (including the former Mt Arthur North mine, Bayswater No. 2 mine, Bayswater No. 3 mine and the South Pit Extension Project), and the Mt Arthur Underground Project (MP 06_0091) are referred to as the Mt Arthur Coal complex.
2.0 Consultation with Stakeholders

Mt Arthur Coal proposes throughout the life of the mine to engage with neighbouring operations, agency and community stakeholders to optimise the synergy that strategies such as the Rehabilitation Strategy offer in terms of landscape and landuse. Base references that will be used throughout this engagement will be the EA (Hansen Bailey 2009), Strategic Framework for Mine Closure (ANZMEC MCA) and the Synoptic Plan for Mine Rehabilitation in the Upper Hunter Valley (Andrews 1999. A summary of stakeholder consultation undertaken by Mt Arthur Coal during the production of this Rehabilitation Strategy is included in Table 1. Records of correspondence are included in Appendix 2.
Table 1: Consultation, feedback and response relating to Rehabilitation Strategy

<table>
<thead>
<tr>
<th>Rehabilitation Strategy Revision</th>
<th>Evidence of Consultation and Feedback</th>
<th>Response</th>
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</table>
| Pre-Draft (Revised Table of Contents) | 3 August 2011 - Draft Rehabilitation Strategy discussed at CCC meeting  
• CCC should have some input into who is chosen on the team of suitably qualified and experienced persons to prepare the strategy. Names and qualifications of independent experts to be sent to the CCC members with the meeting minutes to review.  
• Concern expressed over the timeframe for the preparation of the strategy. Muswellbrook Shire Council (MSC) requested further information detailing how Mt Arthur Coal is going to deliver the Rehabilitation Strategy.  
• CCC not consulted during the preparation of the Rehabilitation Strategy. Whole community needs to view the Rehabilitation Strategy to provide comments and feedback on the strategy. | • Letter sent to Muswellbrook Shire Council (MSC) on 26 August 2011, outlining schedule and process for completion of Rehabilitation Strategy.  
• Meeting held with council for staff for 6 September 2011 to discuss the Rehabilitation Strategy. |
|                                  | 4 August 2011 – Meeting with Department of Trade & Investment, Regional Infrastructure & Services - Division of Resources and Energy (DRE)  
• level of detail CCC requested is not suitable for the purpose of the Rehabilitation Strategy document (no response required).  
• Requested more information on domain based detail with key elements to achieve a self-sustaining and stable landform. | • Information on Mine Closure Domains included in Section 3 of Rehabilitation Strategy. |
| Draft 4                           | 2 September 2011 – Draft Rehabilitation Strategy sent to sent to Office of Environment & Heritage (EOH), MSC, DRE, NSW Office of Water (NoW) and CCC members  
• No comment received | • N/A |
<table>
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<tr>
<th>Rehabilitation Strategy Revision</th>
<th>Evidence of Consultation and Feedback</th>
<th>Response</th>
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| **6 September 2011 – Meeting with MSC** | 1. Item raised around potential future industrial land development.  
2. Dialogue around soil classes and inability to return to appropriate class  
3. Review of rehab strategy in 5 years. Commitment needed to review landform design, this could be as part of ongoing review  
4. Alignment and revegetation of the original Whites Creek drainage line - requested native “woody” vegetation.  
5. Figure 3 should have realignment options of Edderton Rd shown as highlighted in the EA.  
6. More detail requested for the final void section in reference to the management of water. Lower gradient for void highwall always more desirable.  
7. Dialogue around capping of tailings dams & why trees aren’t suitable to be grown.  
8. Explanation of point above ‘sub-lease area text’ in figure 3 and why contours elevated here? It appears this is within the tailings dam footprint.  
9. More detail requested regarding “natural landform” assessment. This followed reference to JM advising we were exploring feasibility of designs.  
10. Reference to infrastructure areas & how these are rehabilitated. Use and reference to best post mining use.  
11. Inclusion of reference to requirement for roads and tracks through rehabilitated areas.  
12. Would like commitment to include a soil rehabilitation enhancement plan (not immediately but in the future). Would like MAC to include detail regarding a commitment to the above.  
13. Ensure MAC strategy addresses draft MSC policy. Response required about what is and is not considered out of the MSC Rehab Policy within the document & where conditions are addressed. | Letter sent to MSC on 22 September 2012 addressing feedback from meeting, including:  
1. Section 3.7 (page 13) of the Rehabilitation Strategy has been amended to make allowance for the potential future use of offset areas for industrial development.  
2. This will be addressed in greater detail within the Rehabilitation Management Plan in relation to soil capability and agricultural capability.  
3. As advised during the meeting Mt Arthur Coal have committed to ongoing review and have outlined this in further detail within the Rehabilitation Strategy -Section 6: Review of the Strategy.  
4. This has been agreed to and captured within the amended figure 3 of the Rehabilitation Strategy.  
5. The figure has been amended accordingly to include the options for Edderton Road realignment as presented in the EA.  
6. Discussion of Final Void use and management is covered in section 3.4 of the strategy. More detailed Final Void Management information will be included in the Final Void Management Plan.  
7. Detail regarding preference of pasture cover over tree vegetation on tailings dam will be presented in the Rehabilitation Management Plan.  
8. Figure 3 amended to reflect proposed final landform over his tailings storage.  
9. Options for alternatives for landform design are still being investigated and will be included in detail in the Rehabilitation Management Plan.  
10. Reference is made in section 3.4 of the strategy to post mining land use of the foot-titling storage.  |
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<tr>
<th>Rehabilitation Strategy Revision</th>
<th>Evidence of Consultation and Feedback</th>
<th>Response</th>
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<tbody>
<tr>
<td><strong>8 September 2011 – Extraordinary meeting of CCC to discuss Rehabilitation Strategy</strong></td>
<td></td>
<td>Responses provided to CCC at 23 September 2012:</td>
</tr>
<tr>
<td>1. Following discussion, the general feel from the CCC was for industrial use along the offset area along Thomas Mitchell Drive. MAC stated that area has been approved as an offset area, but noting need for further discussion, the wording of the Rehabilitation Strategy will be changed to reflect further determination of best land use for this area.</td>
<td>1. Mt Arthur Coal noted that the CCC would prefer to see some areas made suitable for future industrial development. The Rehabilitation Strategy was amended to make allowance for the potential future use of offset areas for industrial development.</td>
<td></td>
</tr>
<tr>
<td>2. CCC recommended a rural landscape on the bund facing towards the township.</td>
<td>2. Mt Arthur Coal noted that the CCC would prefer to see a rural landscape on the bund facing towards Muswellbrook. The options for this area are constrained by commitments and obligations outlined in the Environmental Assessment and the bund remained designated as woodland.</td>
<td></td>
</tr>
<tr>
<td>3. CCC recommended for trees on top of the bund.</td>
<td>3. Mt Arthur Coal noted that the CCC would prefer to see high density tree planting on top of the north facing bund. The area was designated as woodland.</td>
<td></td>
</tr>
<tr>
<td>4. CCC recommended for grasslands and grazing on the corner of Denman and Edderton Roads.</td>
<td>4. Mt Arthur Coal noted that the CCC would prefer the land at the corner of Edderton and Denman Roads to be used for grazing purposes. The area was designated as pasture.</td>
<td></td>
</tr>
<tr>
<td>5. MAC acknowledged that information provided in the Closure Plan regarding tailings dam security measures should be reiterated in the Rehabilitation Strategy.</td>
<td>5. Mt Arthur Coal noted that the CCC would prefer the Rehabilitation Strategy to account for the long term security of the tailings dam. Mt Arthur Coal amended the Rehabilitation Strategy to include provisions for security in Section 4.8 of the strategy.</td>
<td></td>
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<td>6. CCC requested the domains be mapped on the plans.</td>
<td>6. The Rehabilitation Strategy has been modified to outline the domains on Figure 3.</td>
<td></td>
</tr>
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<td>7. CCC requested that the strategy contain more text on why different types of rehabilitation were chosen for the mix of land uses available.</td>
<td>7. Additional comment on the rationale for the selection of rehabilitation categories has been added in Section 4.0 of the Rehabilitation Strategy.</td>
<td></td>
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<td>Rehabilitation Strategy Revision</td>
<td>Evidence of Consultation and Feedback</td>
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<tr>
<td>Draft 6</td>
<td><strong>23 September 2011 – Extraordinary CCC to discuss Rehabilitation Strategy</strong></td>
<td>Subsequent amendments to Rehabilitation Strategy:</td>
</tr>
<tr>
<td></td>
<td>1. CCC requested that Mt Arthur Coal reassess the bund facing Muswellbrook to determine if it is feasible to change from an offset area to a rural landscape.</td>
<td>1. MAC to investigate and determine if it is feasible to change the bund facing Muswellbrook from an offset area to a rural landscape and discuss at the next CCC meeting.</td>
</tr>
<tr>
<td></td>
<td>2. CCC requested that a review of the Rehabilitation Strategy include consultation requirements similar to what was required in the preparation of the document to include consultation with stakeholders.</td>
<td>2. Any changes to the strategy require approval from the DoPI to determine if the change is necessary. MAC has revised Section 6.0 of the Rehabilitation Strategy to address the concerns of the CCC.</td>
</tr>
<tr>
<td></td>
<td>3. Colour used for the final voids on Figure 3 of the Rehabilitation Strategy makes them hard to define.</td>
<td>3. MAC has adjusted the colour of the final voids to make them more explicit.</td>
</tr>
<tr>
<td>Draft 9</td>
<td><strong>30 September 2012 - Submitted to DoPI for review</strong></td>
<td>Amendments and comments incorporated into final version submitted to DoPI on 5 October 2012, including:</td>
</tr>
<tr>
<td></td>
<td>1. Can’t see description or justification for the rehab strategy, including final landform.</td>
<td>1. Description and justification of Rehabilitation Strategy is contained throughout document, and summarised at start of Section 3. Final Landform is described in Sect 3.3 Overburden Emplacement.</td>
</tr>
<tr>
<td></td>
<td>2. A table with the consent requirement and where in the document the relevant point is addressed would be helpful.</td>
<td>2. Table provided in Appendix 1 outlines PA requirements, and relevant sections of Rehabilitation Strategy.</td>
</tr>
<tr>
<td></td>
<td>3. Where are the rehab objectives for the site?</td>
<td>3. Table 1, Section 5, presents Rehabilitation Goals and Objectives</td>
</tr>
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<td></td>
<td>4. Is progressively carrying out rehab as soon as practicable, particularly on the face of emplacements that are visible off site addressed (as per cond 43)</td>
<td>4. Commitment to progressive rehabilitation is stated in Section 4, and Section 4.1 Planning. Final dot-point in Section 3.4 also commits to “Minimising exposure of work areas to sensitive receivers where possible”.</td>
</tr>
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<td></td>
<td>5. Did the strategy build on the concept strategy in appendix 8?</td>
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<td>6. Include table of revisions, evidence of consultation with relevant stakeholders and the response to any issues raised.</td>
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<td></td>
<td>7. It is noted that the max RL is 375 with an average of 360. The concept plan shows variable landform. Can you please provide a more detailed rehab plan showing how the</td>
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<tr>
<td>Rehabilitation Strategy Revision</td>
<td>Evidence of Consultation and Feedback</td>
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<td></td>
<td>current and proposed rehab will comply with the height and landform requirements.</td>
<td>5. Major features presented visually in Appendix 8 of EA, Rehabilitation and Offset Strategy, are developed and discussed further in the Rehabilitation Strategy – especially description of domains in Section 3..</td>
</tr>
<tr>
<td></td>
<td>8. How does the mine plan to comply with the EA Visual impact assessment p85 which states: “As part of the mine plan development for the Project, final landforms were considered in terms of creating more natural landforms. It was possible in that context to create some modulation with gully-like indentations close to Macleans Hill and adjacent to the main haul road. Similarly the typical flat top of the OEA was avoided by the creation of minor landforms on top of the OEA. Such considerations provided a good basis for the modelling of vegetation patterns to collectively emulate existing landscapes of the locality.”</td>
<td>6. Table 1 contains evidence of consultation and response.</td>
</tr>
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<td></td>
<td>9. Consent requires investigation of future use of disturbed areas including voids. Some description of those potential uses should be provided and not left to the final void management plan.</td>
<td>7. Figure 3 shows contour heights of highest landform features in post-mine landscape.</td>
</tr>
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<td>8. Description of management measures generally outlining how landform will achieve the 2009 Visual Impact Assessment commitments are contained in Section 3.3.</td>
</tr>
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<td></td>
<td>9. Brief discussion of final void post-mining use included in Section 3.4.</td>
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3.0 Proposed Rehabilitation Strategy for Disturbed Areas

In keeping with commitments made in the Mt Arthur Coal Consolidation Project Environmental Assessment (EA) (Hansen Bailey 2009), this Rehabilitation Strategy has been developed to ensure that the post mining landform supports the selected agricultural post-mining landuses, while also enhancing habitat value of the wooded areas integrated into the wider agricultural landscape.

Due consideration to visual amenity has been integrated into the Rehabilitation Strategy, with minimisation of visual impact during mining operations, and blending the post-mining landform with surrounding un-mined topography, being key aims. The post-mining landform will also allow for grazing in selected areas, with the re-establishment of land capability classes equivalent to pre-mining. Further information on landform design is contained in Sections 3.3 and 3.4.

The Rehabilitation Strategy also aims to increase native woodland areas at the end of mine life, and enhance regional habitat linkages between remnant onsite native vegetation communities, offset areas, rehabilitated mined land and offsite vegetation areas. This is consistent with the general vegetation strategies found in the Synoptic Plan (NSW Department of Mineral Resources 1999). Following comprehensive community consultation and strategy modification, the Rehabilitation Strategy generally reflects community expectations for the final landform.

3.1 Mine Closure Domains

To assist in defining the lands requiring rehabilitation under this Rehabilitation Strategy, the site has been divided into a range of differing domains\(^2\) based on final landuse. A pictorial representation of the final landform and landuse is provided on Figure 3. The domains include:

- Active mining;
- Overburden Emplacement;
- Final Void;
- Infrastructure Areas;
- Water Management;
- Tailing Storage Facility;
- Post mined lands – pasture;
- Post mined lands – woodland;
- Offset Areas; and
- Non operational lands.

\(^2\) A domain can be defined as a land management unit within a mine site, usually with similar geophysical characteristics. It is likely that most domains will require a different rehabilitation methodology to achieve the intended post-mining land use.
3.2 Areas of Active Mining

Areas of active mining will become overburden emplacement areas as the mine progresses. At the end of mine life, there will not be any land in this domain – it will be in either the Final Void, Post mining lands – pasture, Post mining lands - woodland or water management domains.

3.3 Overburden Emplacement

The key components of the final proposed landform as defined in the EA pertaining to the areas of active mining and overburden emplacement include:

- Increase in Mt Arthur North overburden emplacement height to an average of RL 360m (maximum height of RL 375m AHD to create visual relief on the overburden emplacement area);
- Development of Bayswater No 3 (Saddlers Pit) overburden emplacement height up to RL250 m AHD;
- Development of Drayton sub-lease emplacement area up to RL 290m AHD (part of South Pit extension);
- Development of an out-of-pit overburden emplacement area up to RL 360m AHD.

Coarse reject will continue to be co-disposed within overburden emplacement areas or utilised in the construction of the tailings dams, stockpiles or other site based infrastructure.

A conceptual final landform design (upon the completion of mining activities) has been developed as shown on Figure 10 of the EA. This confirms that, if mining were not continued beyond 2022, then the orderly closure of the Mt Arthur Coal Complex could be achieved. The landform design has been developed based on the following criteria:

- Utilisation of a risk based approach to the hazards that exist – both in terms of environmental factors and safety matters;
- Consideration of the construction and design of the holding structure for tailings and emplacement material;
- Characterisation of emplacement and capping materials; and
- Location of appropriate capping materials.

As noted in Section 8.15.1 of the EA, the overall aim of the rehabilitation program is to return the post mining landscape to its pre-mining overall level of land capability. Additionally, it is proposed to increase the average percentage of forest to improve the habitat value and to provide shade and shelter for stock (Section 8.15.2 of the EA).

In this context, future use of areas disturbed by active mining is closely linked to landform design and general vegetation strategies found in the Synoptic Plan (NSW Department of Mineral Resources 1999). The EA states ‘The conceptual final landform provides an integrated landscape that is consistent with the Synoptic Plan and aims to link existing vegetation communities within and surrounding the EA boundary with rehabilitation areas to provide corridors for the movement of fauna. The corridors proposed are consistent with, and will further complement, both the Synoptic Plan and the final landforms of surrounding mining...
Proposed vegetation linkages are shown in Figure 26 in Section 8.6.2 of the EA.

As a consequence of the above mentioned EA requirements the following emerge as important completion criteria:

- restoration of mined land to achieve visual amenity;
- biodiversity conservation; and
- ecologically sustainable land management practices.

Further details on these completion criteria are provided in Section 4 of the Rehabilitation Strategy.

An integral part of the rehabilitation program will be the characterisation of the reject emplacement, overburden and soil materials. Initial pasture and cover crop sowings will temporarily stabilise steep slopes prior to tree planting and sowing. Research and trials will continue in order to establish native grass species typical of the local area in rehabilitated pastoral grassland. Improved (exotic) pastures and occasional forage crops will be considered on areas of class IV land (refer Section 8.15.2 of the EA).

For woody native ecosystem establishment different species combinations will be used to establish communities in accordance with the dominant species characterising those stated in Project Approval Condition 38 (a) and (b) and Commitment 15 (Appendix 3 - Statement of Commitments) which focus on the establishment of significantly threatened plant species.

Other vegetation communities will include areas sown to exotic and native grasses, and native woodland and forest communities which will achieve Synoptic Plan (Andrews 1999) linkages as well as function as woodlot and windbreaks for stocked areas.

As proposed in the EA (Section 8.15.3), the final land uses of the rehabilitated site will include pastoral, recreation and/or wildlife habitat opportunities with due consideration to visual amenity aligned to the surrounding landscapes.

Management measures designed to reduce the visual effect created by the overburden emplacement have been incorporated into the mine plan. Such measures include:

- The integration of tree corridors on overburden emplacements as part of progressive rehabilitation;
- The retention of the eastern flank of MacLean’s Hill to assist in creating landscape diversity at the foot of overburden emplacements;
- Modifying final void high walls and low wall slopes to minimise final disturbance;
- Incorporating minor landform relief features on the top of overburden emplacements to provide variation to otherwise level emplacement surface areas;
- The strategic design and rehabilitation of overburden emplacements for increased visual shielding of operations;
- Establishing visual and ecological planting patterns of native trees to achieve landscape patterns that complement the existing spatial distribution of tree and grass cover in a grazing landscape; and
• Minimising exposure of work areas to sensitive receivers where possible, largely through the timely rehabilitation of visible overburden emplacements.

Figures 4 to 6 give an indication of the predicted visual impact on residents to the mine’s north from the proposed final landform.

Mt Arthur Coal, in consultation with MSC and DoP, are also proposing to undertake the *Future Landscapes Design Project* (FLDP). The objective of the FLDP is to identify design options for a more visually integrated final landform for the main overburden dump, known as VD1. Design options will address stakeholder concerns and landform safety and stability, while also considering operational efficiencies.

This project will focus on the following design considerations:

- macro and micro relief research
- landform height and stability
- dump development viability
- hydrology, soil stability
- erosion control
- vegetation and ecosystem function design
- visual relief and simulations
- noise and air quality consideration during dump development

The FLDP is being completed as a standalone project, as resultant dump design modification would require significant mine planning, environmental constraints analysis, stakeholder consultation and regulatory approvals, before implementation and construction.

*Figure 4: Predicted view of final landform from South Muswellbrook in year 2022.*
3.4 Final Void

Post mining final voids will be utilised for local catchment water storage, with void locations and respective catchment boundaries within the conceptual final landform shown in Figure 3. Preliminary consideration has been given to potential alternate uses for the voids, such as public recreation or dedicated fauna habitat zones. The opportunity to maximise the area of void suitable for safe low density grazing (subject to low wall/ highwall realignment, or increased backfilling) has also been given consideration. Further investigation into the feasibility of alternate uses will be completed during preparation of the Final Void Management Plan. Post mining surface catchment areas of the final voids will be minimised to protect against external flooding, with runoff from most rehabilitated and revegetated areas of the Project being directed to the local drainage network. All areas of the site, with the exception of the final voids and their surrounding catchments, will be free draining. The aim of this is to maintain the effective catchment contribution and yield to the Hunter River following the cessation of mining.

A Final Void Management Plan will be prepared as part of the closure planning process at Mt Arthur Coal to ensure selected management strategies for the voids are adequately planned and implemented.
3.5 Infrastructure Areas

All surface infrastructures at the Mt Arthur Coal Complex where a post mining use cannot be identified will be removed from the site (Section 8 of the EA). Consequently, resulting disturbed areas will generally be revegetated using the techniques discussed in Section 4.5.

3.6 Water Management Areas

The water management system for Mt Arthur Coal requires water to be effectively sourced, captured, diverted, stored, monitored, utilised and reticulated across the site. This system is based on adherence to well established, best water management practices in the Australian mining industry. These principles are:

- Efficient use of water based on the concepts of ‘reduce, re-use and recycle’;
- Avoiding or minimising contamination of clean water streams and catchments; and
- Protecting downstream water quality for other beneficial uses such as agriculture and industry.

Final landform design will involve the reconstruction of a channel in the north west of the project area through to Denman Road as shown in the Mt Arthur Coal Consolidation Project EA. This may be reconsidered in future environmental assessments if mine life is extended.

A flood protection bund will be constructed between Denman Road and the Environmental Assessment Boundary where the topography is lower in elevation than the 1955 peak flood level in the Hunter River. Water run-off from the rehabilitation landform is to be directed into channels that flow into the existing drainage pattern around the mine. The water run-off in the channels will vary in discharge depending on local weather conditions and storm activity. Temporary sediment controls such as the use of gabions, geotextiles, hay bales, sediment control fencing techniques, and other techniques used during mine life, may be integrated with vegetation and permanent engineering strategies to achieve stability in relevant areas.

The drainage pattern of the final landform will be designed to integrate with the surrounding catchments and will be revegetated to achieve long term stability and erosion control and also to harmonise with more general rehabilitation and revegetation strategies. Reconstructed creek lines will be revegetated with species prevalent within the existing creek channels. Reconstructed creek channels will be established where required in accordance with best practice standards at the time of construction (Section 8.9.3 of the EA).

Temporary stabilisation measures may also be required. Reconstructed creek design will include significant areas of rehabilitated overburden and other mine areas to ensure that the reconstructed channels are stable in a wide range of flows (Section 8.9.3 EA). To achieve rapid stabilisation, particularly in high flow scenarios, quick establishing pasture species will be used. There has been extensive use of pasture species for this purpose on both Mt Arthur Coal Complex and other mines, and techniques are well developed. In terms of future use, these areas will be protected from incompatible land use activities such as over grazing which may damage their integrity.
3.7 Tailings Storage Facilities

As part of mine rehabilitation activities, all tailings produced from the CHPP as a result of the Project will continue to be disposed of in the tailings emplacement area as shown on Figures 8, 9 and 10 of the EA. As for infrastructure and water management areas, the rehabilitated tailings dam will be integrated into the total mine landform and revegetation strategy. As an example the tailings storage dam located in the Bayswater No. 2 and Drayton Sub lease Areas will be integrated with other rehabilitation in the Drayton Sub-lease area to form an elevated landform to the east of the main MAN landform.

Revegetation of tailings dams will be completed after final capping. The design of the capping layer will focus on both sealing the underlying material and creating suitable conditions (based on the characterisation of the tailings and capping materials) for sustainable vegetation establishment. Tailings storage facilities will be protected from incompatible land use activities such as over grazing which may damage their integrity.

3.8 Offset Areas

As discussed in Section 4.12 of the EA, the mine plan for the project has been specifically designed, as far as possible, to reduce environmental impacts, including specific impacts on threatened flora and fauna species. The approach to habitat, vegetation and rehabilitation has specifically been developed to integrate offset areas with local and regional vegetation corridors, existing Conservation Areas, and Mt Arthur Coal’s existing biodiversity conservation commitments. These areas may be utilised for strategic grazing – the management of which will ensure alignment to the conservation values of the offset areas. It will achieve this through conserving, improving and creating woodland and forest communities, including habitat for threatened species, such that the net area of vegetation communities and the condition of habitats increase over time.

The offset areas are located within an area where the express intention is that the surface will not be disturbed; however, its creation will not preclude the maintenance of tracks and fire breaks, the installation of service utilities and any required water management or erosion control works or other such low impact activities. If part of this area is required by Muswellbrook Shire Council in the future for industrial usage or community infrastructure, the amount of area disturbed will be replaced by additional offset area of same quality of vegetation to that of the land to be disturbed or by increasing the amount of land to be rehabilitated to native woodland or forest.

Further information on the management and implementation of the Offset Areas will be provided in the Biodiversity Offset Strategy and Biodiversity Management Plan.

The proposed vegetated areas for the Project total approximately 3,000 hectares and will be provided through the following:

• **Mount Arthur Conservation Area** is approximately 105 ha in size of existing vegetation and covers the upper and lower slopes of Mount Arthur;
• Saddlers Creek Conservation Area is approximately 295 ha in size of existing vegetation, and includes the main channel of Saddlers Creek running along the southern and south eastern boundaries of the EA Boundary;
• Thomas Mitchell Drive Off-site Offset Area which will offer protection and enhancement for 495 hectares of land to be established outside the Environmental Assessment Boundary and mining lease boundary comprised of existing vegetation;
• Thomas Mitchell Drive Onsite Offset Area which will offer protection and enhancement of 222 hectares of land within the Environmental Assessment boundary with vegetation to be established;
• Roxburgh Road ‘Constable’ Offset Area comprising 110 hectares of existing vegetation and vegetation to be established within it;
• Additional Off-site Offset Area comprising 165ha of existing vegetation and vegetation to be established within it; and
• Rehabilitation Area comprising vegetation to be established over 1915 hectares of the disturbance area for open cut operations, encompassing habitat corridors and rehabilitated woodlands.

3.9 Non Operational Lands; Post mined lands – Pasture; Post Mined lands – Woodland

The Offset areas (existing and proposed) are to be further enhanced by Non Operational Land and Post mined lands – Pasture and Post mined lands - Woodland. These domains are to be managed to enhance habitat and corridor values at completion of mining.

The short to long term management and revegetation of these lands will require:
• Regeneration and revegetation works;
• Corridor establishment and management;
• Habitat augmentation;
• Fencing and access control;
• Weed and vertebrate pest species management and control;
• Track construction and maintenance;
• Strategic grazing and stock control; and
• Bushfire management.

The final adopted rehabilitation and management option for these areas will largely depend on their prevailing condition and, particularly, whether they have been cleared or contain remnant vegetation. Specific details on these aspects will be provided in the Rehabilitation Management Plan (prepared to address Schedule 3 condition 44).
4.0 Key Steps within the Rehabilitation Strategy

Mt Arthur Coal has extensive experience in achieving successful mine rehabilitation with rehabilitation works being completed for various mining areas. Rehabilitated areas will continue to be established and managed in accordance with methods currently in place at Mt Arthur Coal under the Environmental Management Strategy which includes commitments to progressive rehabilitation and monitoring.

The following sequential strategy will be followed to ensure rehabilitation success. Further details on the various rehabilitation methodologies that will be used for each of the nominated domains will be provided in the Rehabilitation Management Plan.

4.1 Planning

Effective planning commences in the project feasibility phases. The EA contains specific details on rehabilitation planning. This planning will be expanded on in the Rehabilitation Management Plan. There are five main elements that either have or will be considered in the rehabilitation planning process:

1. Pre-mining surveys to document existing land use values.
2. Rehabilitation objectives – what do you want to achieve? What is the agreed end land use following stakeholder consultation?
3. A description of the site – including likely limiting factors.
4. A detailed plan of the site – what goes where and when?
5. Relevant methodologies.

Rehabilitation will be integrated into the total mine planning process and will be governed by mining titles, environmental assessments, project approval conditions and licences. However, it will also be highly influenced by Mt Arthur Coal values, policies and procedures to achieve the best possible outcome.

To the extent practicable, rehabilitation will be undertaken progressively during the life of the mine. Progressive rehabilitation of mining operations will minimise the area of exposed disturbance and reduce Mt Arthur Coal’s environmental impacts. Progressive rehabilitation will also enable significant economic advantages and efficiencies through better integration of equipment use during mining and rehabilitation, reduced earth moving costs and improved topsoil management. Ultimately, this practice will lead to enhanced rehabilitation outcomes.

Sufficient personnel and resources will be allocated during mining to enable progressive rehabilitation. Final rehabilitation will be budgeted while the mine is operating. Progressively rehabilitating mined land may also enable the progressive return of security bonds subsequent to successful rehabilitation of defined areas. Rehabilitation planning will consider the logical sequence of actions needed to achieve rehabilitation success.

The landform rehabilitation goal is to create a fully-functioning landform that satisfies post-mining land use criteria including water quality and catchment management, vegetation species
and diversity, self sustaining final landforms and visual aesthetics consistent with the surrounding landscape and landuse.

The effects of the mining across Mt Arthur Coal Complex land holdings range from minimal in undisturbed areas to significant in the mine pit and overburden emplacement areas. Mt Arthur Coal will mine coal reserves progressing from east to west and generally place overburden spoil behind the advancing pit. The project will generate significant volumes of overburden.

The aim of the overburden emplacement design at Mt Arthur Coal will be to ensure that:

- Overburden emplacement capacity is balanced with final landform design in order to minimise areas of disturbance and create a stable landform with visual relief where possible;
- Runoff water quality will be similar to undisturbed lands and will not degrade receiving stream channels;
- The rehabilitated landform will support vegetation species and composition diversity aligned to plant diversity in adjacent unmined lands;
- Land will support its designated post-mining uses; and
- The rehabilitated landform will be compatible with the surrounding countryside.

4.2 Final Void

The low wall slopes of the final void landform will be designed with an overall slope of around 18 degrees. The final void landform will be rehabilitated with vegetation species and diversity that are appropriate for the complex landform. The highwall will also be rehabilitated using the best reasonable and feasible rehabilitation technologies available and re-vegetated with species that are appropriate for its steepness, aspect, and water retention capabilities.

Design alternatives for the final void will continually be evaluated and will be prepared as part of the closure planning process at Mt Arthur Coal. Regardless of the final design alternative selected, the location and use of the final void is outside the 100-year recurrence interval flood prone area of the Hunter River. Appropriate measures will be used to limit access to steep areas around the final void to restrict cattle, pedestrian and vehicle access. These measures may include large rock placement, landform shaping, or fencing as agreed with relevant government authorities close to closure.

4.3 Surface Water Management

Surface water will be routed from and through the rehabilitation landform in stream channels. Consideration will be given where possible to matching the pre-mine and post-mine discharges to natural channels so that the natural channels are not degraded.

Temporary sediment detention features may be designed into the channels during construction periods. These features will provide protection of receiving waters’ quality during construction. Stock dams and water features providing habitat for aquatic flora and fauna will be established.
at strategic locations across the landscape. Further details on their construction and components will be provided in the Rehabilitation Management Plan.

The proposed final landform drainage is shown on Figure 7.
Figure 7: Proposed Final Drainage and Landform Plan (EA Appendix M - Figure 15)
4.4 Characterisation of Soils and Overburden

In order to understand the selective handling of materials characterisation of soils and overburden will be undertaken throughout the development of the mine.

Topsoil and subsoil characterisation will be undertaken in order to:

- Identify any physical or chemical deficiencies or toxicity (particularly alkalinity, salinity and sodicity) which may affect such things as vegetation establishment, landform stability and propensity for spontaneous combustion; and
- Develop selective placement strategies and / or develop suitable amelioration techniques.

Overburden characterisation is important for similar reasons and more specifically to:

- Identify material for use in the root zone which is capable of supporting sustainable vegetation establishment;
- Identify materials toxic to plant growth or which may contaminate surface or ground water, and hence may require special handling, treatment or disposal; and
- Identify any propensity for spontaneous combustion.

There are a range of procedures and tests which may be utilised and will be described in the Rehabilitation Management Plan. These include:

- Timing of characterisation.
- Properties influencing plant growth and water quality.
- Amelioration techniques.

The Soil Survey and Land Resource Assessment (Appendix Q of the EA) contains extensive topsoil information and this will be supplemented with further testing of topsoil, subsoil and relevant overburden material when required.

Although successful revegetation can be achieved on some overburden strata, superior results are generally achieved where topsoil is respread. If correctly characterised, stripped, stockpiled and respread topsoil generally has superior physical and chemical characteristics (e.g. structure, nutrition) compared to overburden. These topsoils may contain native seed and beneficial micro-organisms which have been shown to be advantageous to the more rapid development of a sustainable and productive ecosystem.

Not all topsoils or subsoil material is suitable for surface spreading. The Rehabilitation Management Plan will provide more detail on suitability assessment and processes required to successfully manage the topsoil resource. Processes may include some or all of those listed below:

- Pre-mining soil survey. This survey will build on the information as provided in the EA (Appendix Q) and outline the selection of suitable topdressing material and identify preferred and problematic material on a strip by strip basis;
- Calculation of the volume of suitable topsoil available for life-of-mine rehabilitation;
- Advantages and disadvantages of using topsoil and / or subsoil;
- Topsoil and subsoil testing and acceptable values;
• Factors to be considered when clearing remnant vegetation and areas of pasture;
• Important factors in topsoil and subsoil stripping and stockpiling;
• Important factors in topsoil and subsoil re-spreading and ground preparation; and
• Recommended amelioration techniques.

4.5 Clearing and Reuse of Vegetation

Land use disturbance will be minimised by clearing the smallest practical area of land at any one time and leaving it exposed for the shortest possible time. This will be achieved by:
• Limiting the cleared width to that required to effectively operate the mine;
• Programming the works so that only the areas which are scheduled for mining activities are cleared.

Proposed use of felled timber will follow current practice and may include practices such as collection of timber for fencing, harvesting of brush material that is laden with fruit/seed, mulching and incorporating understorey and saplings into stripped topsoil, and repreading coarse timber residue onto re-contoured land.

4.6 Revegetation

Development of a revegetation strategy is an important component within this Rehabilitation Strategy and the associated Rehabilitation Management Plan. End land use objectives will determine the generic form of vegetation required e.g. native woodland/forest/grass ecosystem, and grazing.

The landscape and revegetation management strategies at the Mt Arthur Coal Complex are described in the EA and have been designed to incorporate the objectives of the Department of Primary Industries (DPI) Synoptic Plan for Mine Rehabilitation in the Upper Hunter Valley (Synoptic Plan) (Andrews, 1999).

The regional habitat links are shown in Figure 3 and are designed to provide linkages between areas of existing native vegetation, offset areas, rehabilitation areas and offsite vegetation areas. The establishment of ecological corridors will enhance flora and fauna integrity both locally and regionally. In summary, separate native vegetation strategies will apply to specific domains including:
• Post mined lands – pasture;
• Post mined lands – woodland;
• Offset Areas;
• Water Management; and
• Non operational lands.

Rehabilitation at the Mt Arthur Coal Complex is generally divided into areas for biodiversity outcomes and areas of pasture (the predominant previous site use). The Rehabilitation Strategy aims for a net increase in native vegetated areas at the end of mine life. Mt Arthur Coal
has specifically agreed to establish a minimum of 30% of the disturbance area for open cut operations to woody vegetation and to re-establish 500 hectare of white box, yellow box, Blakely’s red gum woodland.

Mt Arthur Coal has already experienced considerable success with these general techniques which, as mentioned, will be further refined to meet specific future land use objectives and vegetation outcomes. Where necessary, research and trials will be undertaken to test alternative techniques and refine methodologies.

Revegetation techniques that may be used in the rehabilitation of mined land to achieve land use objectives include:

- Direct seeding of native tree, shrub, groundcover and grass species;
- Tube-stock planting – predominantly native tree, shrub and groundcover species;
- Brush material harvested from the local area;
- Translocation of key threatened plant species; and
- Respreading of topsoil from premining plant communities which are aligned to the proposed post mining plant communities.

4.7 Approach to Rehabilitation Management Plan

The more detailed Rehabilitation Management Plan, to be prepared subsequent to this Strategy, will describe a range of factors or limitations likely to affect plant growth and how these will be addressed including:

- Landform factors;
- Soil/overburden conditions;
- Surface water management;
- Erosion and sediment control;
- Weeds/biological issues;
- Soil compaction;
- Climate and weather;
- Research program related to techniques used in the rehabilitation program; and
- Grazing/feral animal threats.

The main revegetation steps may include:

- Species selection;
- Sowing rates and species proportions;
- Tube stock densities;
- Consideration of habitat augmentation;
- Seed pre-treatment requirements;
- Seed spreading and planting techniques;
- Soil amelioration and fertilizer requirements;
- Use of temporary cover crops to assist soil stabilisation;
• Protection from vertebrate pest species, domesticated stock and unauthorised access; and
• Maintenance requirements.

The Rehabilitation Strategy and associated Rehabilitation Management Plan, together with the Offset Strategy will focus on the re-establishment of:

• significant and/or threatened plant communities, including:
  - Upper Hunter White Box – Ironbark Grassy Woodland;
  - Central Hunter Box – Ironbark Woodland;
  - Central Hunter Ironbark – Spotted Grey-Gum Box Forest;
  - Narrabeen Footslopes Slaty Box Woodland; and
  - Hunter Floodplain Red Gum Woodland Complex; and
• significant and/or threatened plant species, including:
  - Lobed Blue-grass (*Bothriochloa biloba*);
  - Tiger Orchid (*Cymbidium canaliculatum*); and
  - Weeping Myall (*Acacia pendula*); and
• habitat for significant and/or threatened animal species.

### 4.8 Maintenance and Monitoring

It is essential to monitor the success of the rehabilitation programme and be prepared to address any aspect of rehabilitation not meeting acceptable standards. As such, identifying maintenance needs will be an important objective of the monitoring programme and the continuous improvement process. Good initial planning and practice will minimise the need for maintenance.

Until the mining lease is relinquished, regular field inspections will be undertaken of all rehabilitated areas. These inspections will assess for areas requiring maintenance in terms of the revegetation works, sedimentation, erosion and site user safety. Monitoring results, any required maintenance activities, and any refinement of rehabilitation techniques will be reported in the site’s Annual Environmental Management Report (AEMR). Further details on the monitoring, site security and maintenance programs will be provided in the Rehabilitation Management Plan.
5.0 Completion Criteria

Preceding parts of the Rehabilitation Strategy stipulate how Mt Arthur Coal will service rehabilitation needs. The following completion criteria are provided as a guide to aid in the direction of rehabilitation and enhancement measures and have not been developed / designed to form a framework for the purpose of assessing compliance. Completion criteria are objective target levels or values that can be measured to quantitatively demonstrate the progress and ultimate success of a biophysical process. Where relevant the completion criteria are nominated for each phase of rehabilitation so that rehabilitation success can be quantitatively tracked throughout the life of the mine. The development of suitable completion criteria is an iterative process and acceptable values or levels may change over time with advances in research and technology.

The completion criteria have been developed in accordance with the range of existing project related documentation i.e. EA, Directors General’s Report and the Project Approvals. The completion criteria are underpinned by a range of land management documents. These include industry standards, BHP Billiton Standards and MAC Procedures. The ongoing development of these documents will provide the basis for the review of the Rehabilitation Strategy with resultant amendments being recorded in documents such as the Mt Arthur Coal Annual Environmental Management Report (AEMR) and Mining Operations Plan (MOP) / Rehabilitation and Environment Management Plan (REMP).

The performance measures and performance indicators which are aligned to the completion criteria are to be defined in the Rehabilitation Management Plan, prepared to address Condition 44.

There is an element of risk attached to the development of completion criteria, in that it is impossible to predict all of the variables that might influence the recovery or otherwise of those lands which are rehabilitated. Many variables operate at catchment or regional scales, such as river flows and pest outbreaks. Other factors that operate at continental or even global scales, such as climatic influences (including droughts or floods brought about by La Niña and El Niño events), could significantly influence the long-term sustainability of the vegetated lands encompassed at Mt Arthur Coal. To this end, the completion criteria measures have been designed to provide an appropriate benchmark or guide against which to assess the management of project lands and the resulting improvements.

The Goals and Objectives and associated Completion Criteria as related to the identified domains of the rehabilitation program are described in Table 2.
## Table 2: Goals, Objective and Completion Criteria of the MAC Rehabilitation Program

<table>
<thead>
<tr>
<th>Goal: Successful design and rehabilitation of landforms to ensure structural stability, revegetation success and containment of wastes</th>
<th>Domain</th>
<th>Completion Criteria</th>
</tr>
</thead>
</table>
| Rehabilitation is consistent with the Environmental Assessment (EA) | All Domains | • Stable and permanent, drainage and benching, batter slopes developed using a mix of existing methodologies and industry practice  
• Closure criteria and proposed final landuse are developed through stakeholder consultation  
• All mining and overburden emplacement areas will be progressively rehabilitated |
| Maximise likelihood of long term landform stability and minimise erosion |  | • Slope angles and lengths are compatible with regulatory requirements  
• Growing media are characterised and managed accordingly in context of the post mining landuse and landscape  
• Water movement is designed to maximise infiltration, limit ponding on areas of known dispersive material and be confined to designated flow lines  
• Minimisation of constructed slopes greater than 10 degrees |
| Optimise final void dimensions | Final Void | • Safe and stable rehabilitation of final voids  
• Current void use is compatible with long term plans for voids  
• Void water meets predictions of gradual change over long time frame |
| Ensure removal, treatment and/or containment of hazardous or contaminated material | • Areas of active mining;  
• Overburden Emplacement;  
• Final Void; | • Licensed hazardous materials managed in accordance with regulatory requirements  
• Secure and safe containment of waste substances  
• Undertake a hazardous materials assessment of infrastructure to identify the potential health and environmental risks |
<table>
<thead>
<tr>
<th>Objective</th>
<th>Domain</th>
<th>Completion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goal: Successful design and rehabilitation of landforms to ensure structural stability, revegetation success and containment of wastes</strong></td>
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<tr>
<td><strong>Objective</strong></td>
<td><strong>Domain</strong></td>
<td><strong>Completion Criteria</strong></td>
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<tr>
<td></td>
<td>• Infrastructure Areas; and</td>
<td>associated with demolition of these facilities</td>
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<td></td>
<td>• Tailing Storage Facility</td>
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<td></td>
<td>• Removal of infrastructure associated with mine related activities – unless deemed as being required post mining</td>
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<td></td>
<td>• Problematic materials will be capped</td>
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<td></td>
<td>• Confirm that historic tailings deposits are not acid generating</td>
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<td></td>
<td>• Potential subsidence of materials deposited into the TSF will also be taken into account when designing the final landform</td>
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<tr>
<td></td>
<td>• Post mined lands – pasture;</td>
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<td>• Post mined lands – woodland;</td>
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<tr>
<td></td>
<td>• Offset Areas; and</td>
<td></td>
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<tr>
<td></td>
<td>• Non operational lands.</td>
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<td></td>
<td></td>
<td>Sustainability of vegetation type and suitability to final landform type</td>
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<td></td>
<td></td>
<td>Plant communities are aligned to the physical and chemical characteristics of the growing media</td>
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<td></td>
<td></td>
<td>Effective habitat linkages are aligned to surrounding vegetated lands in terms of the size of stands and corridor length and design</td>
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<td></td>
<td>Native vegetation establishment will consider local species and sourcing seed of local provenance</td>
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<td>Threatening processes, such as weeds, overgrazing, uncontrolled fire and pest species will be managed in accordance with relevant legislation</td>
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<td></td>
<td>Biodiversity Offset Strategy is implemented in accordance with that as described in the Project Approval</td>
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<td></td>
<td></td>
<td>Plant growth characteristics will be incorporated in terms of fauna recolonisation and landscape function</td>
</tr>
<tr>
<td>Objective</td>
<td>Domain</td>
<td>Completion Criteria</td>
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<tr>
<td>Return appropriate areas of land to sustainable and productive grazing use</td>
<td>Post mined lands – pasture; and Non operational lands</td>
<td>Pasture species mix aligned to preferred land capability and pasture productivity</td>
</tr>
<tr>
<td>Ensure final land use is compatible with surrounding land use</td>
<td>Post mined lands – pasture; Post mined lands – woodland; Offset Areas; Non operational lands; and Final Void</td>
<td>Consistency of final land use with surrounding land uses</td>
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<tr>
<td></td>
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<td>Final land use takes into account local and regional initiatives</td>
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<tr>
<td></td>
<td></td>
<td>Final land use is compatible with surrounding land function and land use requirements</td>
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<td></td>
<td></td>
<td>Final land use addresses the limitations of land capability and growing media</td>
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<tr>
<td>Incorporate land use in terms of optimal social and economic benefit to the local and wider community</td>
<td>Post mined lands – pasture; Post mined lands – woodland; Offset Areas; Non operational lands; and Final Void</td>
<td>Landuse is aligned to adjoining land usage – present and likely future</td>
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<td></td>
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<td>Landuse is planned to provide social and economic value to the local and wider community whilst not negatively impacting on the biodiversity or environmental values.</td>
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<td></td>
<td></td>
<td>Landuse will be aligned to the relevant land zonings as per the current Muswellbrook Local Environment Plan</td>
</tr>
<tr>
<td>Encourage sustainability and diversity of land use</td>
<td>Post mined lands – pasture; Post mined lands – woodland;</td>
<td>Sustainability and diversity are attained by assessment of vegetation type, land use type and suitability to final landform</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ongoing management requirements</td>
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<tr>
<td></td>
<td></td>
<td>Post mining land ownership is aligned to post mining land use</td>
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<tr>
<td></td>
<td></td>
<td>Ecosystem resilience, health and composition are monitored in rehabilitated and established landscapes</td>
</tr>
</tbody>
</table>
**Goal: Post-mining land use compatible with surrounding land uses and provides optimal environmental and community benefits**

<table>
<thead>
<tr>
<th>Objective</th>
<th>Domain</th>
<th>Completion Criteria</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>• Offset Areas; and • Non operational lands.</td>
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</table>
6.0 Review of the Strategy

The following Section provides the Protocol for periodic review of the Rehabilitation Strategy. Reviews are conducted to assess the effectiveness of the procedures against the objectives of Rehabilitation Strategy.

The Rehabilitation Strategy will be revised within three months of the submission of an:

- annual review which has been undertaken as per Condition 3 of the Approval;
- incident report which has been undertaken as per Condition 7 of the Approval;
- audit which has been undertaken as per Condition 9 of the Approval; and
- any modification to the conditions of the Approval.

The Rehabilitation Strategy may also be revised due to:

- deficiencies being identified;
- results from the Monitoring and Review Program;
- recommendations resulting from the Monitoring and Review Program;
- changing environmental requirements;
- improvements knowledge or technology becomes available;
- change in legislation;
- where a risk assessment identifies the requirement to alter the plan;
- change in the activities or operations associated with MAC; and

Any major amendments to the Rehabilitation Strategy that affect its application will be undertaken in consultation with the appropriate regulatory authorities and stakeholders. Minor amendments to the Rehabilitation Strategy, such as formatting edits, may be made with version control on the MAC website.
7.0 References


Hansen Bailey (2009), Mt Arthur Coal Consolidation Project Environmental Assessment. Prepared for Hunter Valley Energy Coal Pty Ltd.

NSW Department of Planning (Sept 2010) Project Approval 09_0062 Hunter Valley Energy Coal Pty Ltd


Muswellbrook Shire Council (Aug 2011). *Draft Mining Rehabilitation Policy (Policy No. M40/1)*
## 8.0 Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>AEMR</td>
<td>Annual Environmental Management Report</td>
</tr>
<tr>
<td>CCC</td>
<td>Mt Arthur Coal Community Consultative Committee</td>
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<tr>
<td>CHPP</td>
<td>Coal Handling Preparation Plant</td>
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<tr>
<td>DoP</td>
<td>NSW Department of Planning</td>
</tr>
<tr>
<td>DPI</td>
<td>NSW Department of Planning and Infrastructure</td>
</tr>
<tr>
<td>DTIRIS</td>
<td>NSW Department Trade &amp; Investment, Regional Infrastructure &amp; Services</td>
</tr>
<tr>
<td>EA</td>
<td>Environmental Assessment titled Mt Arthur Coal Consolidation Project Environmental Assessment (6 volumes), dated November 2009, including the Response to Submissions</td>
</tr>
<tr>
<td>EMS</td>
<td>Environmental Management System</td>
</tr>
<tr>
<td>HVEC</td>
<td>Hunter Valley Energy Coal Pty Ltd</td>
</tr>
<tr>
<td>I&amp;I NSW</td>
<td>NSW Department of Industry and Investment - formally NSW Department of Primary Industries</td>
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<tr>
<td>MACC</td>
<td>Mt Arthur Coal Complex</td>
</tr>
<tr>
<td>MAN</td>
<td>Mt Arthur North</td>
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<tr>
<td>MOP</td>
<td>Mining Operations Plan</td>
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<tr>
<td>REMP</td>
<td>Rehabilitation and Environment Management Plan</td>
</tr>
</tbody>
</table>
Appendix 1

Alignment to Project Approval Conditions
<table>
<thead>
<tr>
<th>Project Approval Condition</th>
<th>Requirement</th>
<th>Section/s of the Rehabilitation Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>38</td>
<td>The Proponent shall ensure that the offset strategy and/or rehabilitation strategy is focused on the reestablishment of:</td>
<td>Sections 3 and 4</td>
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<td></td>
<td>(a) significant and/or threatened plant communities, including:</td>
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<td></td>
<td>• Upper Hunter White Box – Ironbark Grassy Woodland;</td>
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<td></td>
<td>• Central Hunter Box – Ironbark Woodland;</td>
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<tr>
<td></td>
<td>• Central Hunter Ironbark – Spotted Grey-Gum Box Forest;</td>
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<td></td>
<td>• Narrabeen Footslopes Slaty Box Woodland;</td>
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<td></td>
<td>• Hunter Floodplain Red Gum Woodland Complex;</td>
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<td></td>
<td>(b) significant and/or threatened plant species, including:</td>
<td>Sections 3 and 4</td>
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<td></td>
<td>• Lobed Blue-grass (<em>Bothriochloa biloba</em>);</td>
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<tr>
<td></td>
<td>• Tiger Orchid (<em>Cymbidium canaliculatum</em>);</td>
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<tr>
<td></td>
<td>• Weeping Myall (<em>Acacia pendula</em>); and</td>
<td></td>
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<td></td>
<td>(c) habitat for significant and/or threatened animal species</td>
<td>Sections 3 and 4</td>
</tr>
<tr>
<td>42</td>
<td>The Proponent shall prepare a Rehabilitation Strategy for the project to the satisfaction of the Director-General. This strategy must:</td>
<td></td>
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<tr>
<td></td>
<td>(a) be prepared by a team of suitably qualified and experienced persons whose appointment has been endorsed by the Director-General, and be submitted to the Director-General for approval by the end of September 2011;</td>
<td>Section 1.4</td>
</tr>
<tr>
<td></td>
<td>(b) be prepared in consultation with relevant stakeholders, including I&amp;I NSW, Council and the CCC;</td>
<td>Section 2</td>
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<td></td>
<td>(c) investigate options for the future use of disturbed areas including voids upon the completion of mining;</td>
<td>Section 3</td>
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<td></td>
<td>(d) describe and justify the proposed rehabilitation strategy for the site, including the final landform and use;</td>
<td>Section 4</td>
</tr>
<tr>
<td></td>
<td>(e) define the rehabilitation objectives for the site, as well as the proposed completion criteria for this rehabilitation; and</td>
<td>Section 5</td>
</tr>
<tr>
<td>Project Approval Condition</td>
<td>Requirement</td>
<td>Section/s of the Rehabilitation Strategy</td>
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<td>----------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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<td>(f)</td>
<td>provide for at least 30% of the disturbance area for open cut operations at the Mt Arthur mine complex to be rehabilitated to woody vegetation.</td>
<td>Sections 3 and 4</td>
</tr>
<tr>
<td>Note:</td>
<td>The strategy should build on the concept strategy depicted in Appendix 8.</td>
<td></td>
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<tr>
<td>43</td>
<td>The Proponent shall:</td>
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<tr>
<td>(a)</td>
<td>carry out rehabilitation progressively, that is, as soon as reasonably practicable following disturbance (particularly on the face of emplacements that are visible off-site); and</td>
<td>Sections 3 and 4</td>
</tr>
<tr>
<td>(b)</td>
<td>achieve the rehabilitation objectives in the Rehabilitation Strategy (see condition 42), to the satisfaction of the Director-General of I&amp;I NSW.</td>
<td>Sections 3 and 4</td>
</tr>
<tr>
<td>44</td>
<td>The Proponent shall prepare and implement a Rehabilitation Management Plan for the project to the satisfaction of the Director-General of I&amp;I NSW. This plan must:</td>
<td></td>
</tr>
<tr>
<td>(b)</td>
<td>be prepared in accordance with the relevant I&amp;I NSW guideline, and be consistent with the Rehabilitation Strategy (see condition 42);</td>
<td>This document</td>
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<tr>
<td>5.4</td>
<td><strong>Revision of Strategies, Plans and Programs</strong></td>
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<td></td>
<td>Within 3 months of the submission of an:</td>
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<td>(a)</td>
<td>annual review under condition 3 above;</td>
<td>Section 6</td>
</tr>
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<td>(b)</td>
<td>incident report under condition 7 below;</td>
<td></td>
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<tr>
<td>(c)</td>
<td>audit under condition 9 below; and</td>
<td></td>
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<tr>
<td>(d)</td>
<td>any modification to the conditions of this approval, the Proponent shall review, and if necessary revise, the strategies, plans, and programs required under this approval to the satisfaction of the Director-General.</td>
<td></td>
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<tr>
<td>Note:</td>
<td>This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the project</td>
<td></td>
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<tr>
<td>Project Approval Condition</td>
<td>Requirement</td>
<td>Section/s of the Rehabilitation Strategy</td>
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<td>----------------------------</td>
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<tr>
<td>5.11</td>
<td>ACCESS TO INFORMATION</td>
<td>As per the HVEC website – <a href="http://www.bhpbilliton.com">http://www.bhpbilliton.com</a></td>
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<td></td>
<td>From the end of December 2010, the Proponent shall:</td>
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<td></td>
<td>(a) make the following information publicly available on its website:</td>
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<td></td>
<td>• a copy of all current statutory approvals for the project;</td>
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<td>• a copy of the current environmental management strategy and associated plans and programs;</td>
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<td></td>
<td>• a summary of the monitoring results of the project, which have been reported in accordance with the</td>
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<td>various plans and programs approved under the conditions of this approval;</td>
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<td>• a complaints register, which is to be updated on a monthly basis;</td>
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<td>• a copy of the minutes of CCC meetings;</td>
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<td>• a copy of any Annual Reviews (over the last 5 years);</td>
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<td>• a copy of any Independent Environmental Audit, and the Proponent’s response</td>
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<td>to the recommendations in any audit;</td>
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<td>• any other matter required by the Director-General; and</td>
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<td></td>
<td>(b) keep this information up to date, to the satisfaction of the Director-General.</td>
<td></td>
</tr>
<tr>
<td>Statement of Commitments -15</td>
<td>The mine rehabilitation program will focus on the re-establishment of 500 ha White Box, Yellow Box,</td>
<td>Sections 3 and 4</td>
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<tr>
<td></td>
<td>Blakely’s Red Gum Woodland</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 2

Correspondence Records
Dear Ms McNaughton

Mt Arthur Coal (09_0062)
Approval of Rehabilitation Strategy Team

I refer to your letter dated 7 June 2011, seeking endorsement for the appointment of the following team experts to prepare a Rehabilitation Strategy for the Mt Arthur project, in accordance with the requirements of Condition 42 of Schedule 3 of the project approval.

Neil Nelson (Agronomist, Agvice Pty Ltd)
Mark Burns (Global Soil Systems)
Nicholas Bugosh (Hydrologist, GeoFluv)
Rod Eckels (Surveyor, Landforma)

The Department has reviewed the information provided and as a result is satisfied that the proposed team is suitably qualified and experienced to develop a Rehabilitation Strategy.

Consequently, I wish to advise you that the Director-General approves the appointment.

David Kitto
Director
Mining & Industry Projects
as delegate for the Director-General
Consultation with MSC

Meeting held with MSC in relation to the Draft Rehabilitation Strategy on 6 September 2011.

MSC comments were provided in a letter addressed to the Department of Planning and Infrastructure and Mt Arthur Coal dated 11 April 2012.

Consultation with the Mt Arthur Coal Community Consultative Committee (CCC)

The Draft Rehabilitation Strategy was discussed at the CCC meetings on the following dates:

- 3/8/11
- 8/9/11
- 23/9/11
- 5/10/11

Consultation with Infrastructure & Investment NSW

Meeting held with I&I NSW in relation to the Draft Rehabilitation Strategy on 4 August 2011.
Dear Mr White,

Mt Arthur Coal Mine – PA 09_0062
Environmental Monitoring and Management Plans

Thank you for forwarding the following management plans required under project approval 09_0062 for the Department’s consideration:

- Blast Management Plan (Condition 17 of Schedule 3);
- biodiversity and Rehabilitation Management Plan (Condition 40 & 44 of Schedule 3);
- Rehabilitation Strategy (Condition 42 of Schedule 3).

The Department has reviewed these plans (as amended following previous correspondence) and is satisfied that they generally address the requirements set out in the relevant conditions of the project approval. Consequently, I would like to advise you that the Director-General has approved the plans.

Could you please forward finalised copies of the above plans for the Department’s records at your earliest convenience.

Should you have any enquiries on this matter please contact me on (02) 6575 3402.

Ben Harrison
A/Team Leader Compliance

As Nominee for the Director-General