

Upper Hunter Mining Dialogue

Final and Temporary Rehabilitation Principles and Commitments

2021 Results and Commentary

REPORT BY MALABAR RESOURCES (Maxwell
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Final and Temporary Rehabilitation Principles and Commitments

Introduction

The nine coal producing companies of the Upper Hunter, through the Upper Hunter Mining Dialogue (the Dialogue), have agreed to this set of principles and commitments regarding final and temporary rehabilitation. The Rehabilitation Principles and Commitments have been developed with advice and guidance from the Dialogue's Joint Environment Working Group, which comprises industry, local and state government, interest groups, and community stakeholders.

The Upper Hunter Mining Dialogue has two goals regarding land management:

- *Goal 1 - To decrease the time that disturbed areas are left without final or temporary cover, recognising that different mining operations are at different points in rehabilitation.*
- *Goal 2 - To achieve a consistent level of best practice, quality, integrated rehabilitation – both within the industry and with future land uses - across the Upper Hunter and to be a responsible steward of the land.*

The primary focus of the Rehabilitation Principles and Commitments is to contribute to Goal 1. Several other projects are underway to progress Goal 1. The industry participants in the UHMD acknowledge the importance of clear goals for rehabilitation developed through consultation with community and regulators, continuing to improve rehabilitation techniques and sharing innovative and successful rehabilitation techniques within the industry. Projects under Goal 2 focus on continuous improvement of rehabilitation practices.

Principles and Commitments

The Upper Hunter coal producers will publicly report against the Principles and Commitments on an annual basis. The reporting will be aggregated by the NSW Minerals Council and shared with the community. Table 1 sets out the six principles and provides a description of how each will be reported against. Contextual information is also sought from industry regarding variations in their annual reporting, as well as an opportunity to provide commentary on their future rehabilitation targets for the years ahead.

Table 1 – Principles and Commitments

Principle	Reporting
<p>Principle 1 – Include rehabilitation planning in mine planning</p>	<p><i>Narrative</i> – how has this been done in the last period</p>
<p><i>Planning for rehabilitation should be integrated into the mine planning process and should include allocating adequate and dedicated resources to achieve the planned rehabilitation outcomes.</i></p>	<p>Maxwell Ventures (Management) Pty Ltd, a wholly owned subsidiary of Malabar Resources Limited (Malabar) owns and operates the Maxwell Underground Coal Mine Project (Maxwell UG Project). The site is approved to extract a maximum of 8 million tonnes of run-of-mine (ROM) coal per year over a period of 26 years with construction expected to commence during the next reporting period.</p> <p>Rehabilitation at the Maxwell UG Project is managed in accordance with the Biodiversity Management Plan (BMP) and MOP. The BMP was approved by DPE on 20 September 2021 and supersedes the Rehabilitation and Offset Management Plan and Fauna Management Plan for the Maxwell Infrastructure site. The MOP was approved by the Resources Regulator on the 25 June 2021.</p> <p>The post mining land use goal is to deliver a safe, stable, non-polluting and sustainable post-mining landform that is consistent with the surrounding natural topography. As an underground mine, the project would result in minimal changes to existing landforms. Consistent with previous approvals for the Maxwell Infrastructure site, the vision is to create a landscape with areas capable of productive land use, alongside woodland corridors to support biodiversity will be maintained.</p> <p>In accordance with the Maxwell UG Project EIS the design and post-mining land use objectives for the site are as follows:</p> <ul style="list-style-type: none"> • Provide a landscape that is safe, stable and non-polluting. • Minimise potential environmental impacts and liability arising from mine closure. • Remove any waste or potentially hazardous materials from site. • Minimise the potential impacts of decommissioning. • Develop landforms that return land affected by mining to a condition that is suitable for a range of sustainable land uses. • Create a stable post-mining landform that is compatible with the surrounding landscape, and that is capable of productive land use that achieves the nominated land capability. • Establish vegetation that is self-sustaining, is perpetual and provides a sustainable habitat for local fauna and successive flora species. • Create a post-mining landform that enhances the local and regional habitat corridors as presented in the <i>Synoptic Plan: Integrated Landscapes for Coal Mine Rehabilitation in the Hunter Valley of New South Wales</i> (DMR, 1999). • Develop land uses that benefit the future use of the site for the local community. • Develop a landscape that reduces the requirement for long-term monitoring and management.
<p>Principle 2 – Undertake progressive rehabilitation</p>	<p><i>Narrative</i> – how has this been implemented in the last twelve months</p>

Principle	Reporting
<p><i>Companies should undertake rehabilitation progressively, with the objective of ensuring that rehabilitation is as close as possible to active mining.</i></p>	<p>In accordance with the MOP, no new areas of rehabilitation were completed during the reporting period. No buildings or infrastructure were decommissioned or demolished during the reporting period. Rehabilitation activities focussed on enhancing existing areas of rehabilitation. These activities included:</p> <ul style="list-style-type: none"> • infill planting in the woodland rehabilitation corridor to increase species diversity; • installation of nest boxes in appropriately sized canopy trees to assist with fauna husbandry; • targeted weed management across the site for High Threat Exotic weed species; • management of pest animal species in consultation with the Local Land Services and near neighbours; and • continued cattle grazing on pastured rehabilitated paddocks.
<p>Principle 3 – Minimise time that disturbed areas are left without vegetation</p>	<p><i>Narrative</i> – how has this been implemented in the last twelve months</p>

Principle	Reporting
<p><i>Companies should actively seek to minimise the time that land is left without cover during mining. This should include:</i></p> <ul style="list-style-type: none"> ▪ <i>Taking steps to ensure that rehabilitation is commenced within 12 months of land becoming available for rehabilitation</i> ▪ <i>Utilising methods of temporary rehabilitation¹, such as aerial seeding of overburden and other disturbed areas where permanent rehabilitation has not commenced.</i> 	<p>All areas of rehabilitation are within the ecosystem and land use establishment phase. This phase incorporates revegetated lands and habitat augmentation, focusing on species selection, presence and growth, together with weed and pest animal management. Whilst the rehabilitation is progressing, no areas of rehabilitation have been formally signed off as meeting the land use objectives and completion criteria.</p> <p>Two tree planting programs were undertaken during the reporting period. The programs targeted a total of 25 hectares of existing mine rehabilitation within the conceptual woodland corridor. Ground preparation works for optimal tree propagation were undertaken and included:</p> <ul style="list-style-type: none"> • slashing of grass to safely define the work area as well as improve the success of spraying activities to prevent competition to tree growth; • single deep rip lines (minimum 500 mm deep) to break up the surface to allow tube stock to be planted and establish. The rip lines also help capture water, reduce erosion and improve soil moisture levels; and • spraying of rip lines with glyphosate to reduce competition for growth from grass species. <p>Tree and shrub species consistent with the Spotted Gum Ironbark Woodland, Red Gum Woodland and Yellow Box Woodland vegetation communities were planted. A total of 22,556 plants were installed using a growth promoting compound and immediately watered in with a minimum of one litre per plant. Follow-up watering was minimal after installation due to wet conditions in Autumn; the Spring planting campaign required less follow up water due to intermittent rainfall throughout the warmer months.</p> <p>The culling of kangaroos was undertaken during the reporting period to reduce grazing pressure and minimise the impact to native groundcover species from the digging of day beds under trees and shrubs in rehabilitation areas. Programs were targeted prior to planting activities on rehabilitated land.</p> <p>Weed management activities were undertaken during the reporting period in summer, autumn, winter and spring. Primary areas of focus were:</p> <ul style="list-style-type: none"> • offsets and conservation areas; • areas adjacent to private land; • areas of rehabilitation • tree planting areas; • areas of high infestations of weeds of national significance; and • areas identified for weed control in the Ecological Monitoring Report for 2020. <p>Twenty nest boxes were installed in woodland rehabilitation during the reporting period. The nest boxes were installed within the Southern Offset area. Monitoring of nest boxes occurred as part of the ecological monitoring program in Spring 2021</p>
<p>Principle 4 – Prioritise areas of rehabilitation and temporary cover to reduce impacts</p>	<p><i>Narrative – how has this been implemented in the last twelve months</i></p>
<p><i>Companies should prioritise rehabilitation and temporary cover in those areas where leaving land exposed will have the most impact. The following areas should be</i></p>	<p>As above</p>

¹ Temporary rehabilitation describes reshaping, revegetation and other rehabilitation techniques that are used for purposes other than final rehabilitation. This includes such initiatives as seeding overburden emplacement areas to reduce erosion, which are only temporary.

Principle	Reporting
<p><i>considered to have priority:</i></p> <ul style="list-style-type: none"> ▪ <i>Areas that have the greatest impact on visual amenity, such as areas that face townships, residences, or the highway</i> ▪ <i>Areas that have the potential to generate dust leaving the site</i> ▪ <i>Areas that are important for biodiversity, such as rehabilitation adjoining or providing connectivity to remnant vegetation.</i> 	
<p>Principle 5 – Meet target for rehabilitation progress identified in the Mining Operations Plan</p>	<p><i>Quantitative</i> – report MOP target and actual rehabilitation</p> <p><i>Narrative</i> – explanation of performance</p>
<p><i>Each company should meet the annual target for rehabilitation quantity (area) set in the Mining Operations Plans for each of its mines.</i></p>	<p>There were no new areas of rehabilitation completed during the reporting period, in accordance with the MOP. Rehabilitation activities focussed on enhancing existing areas of rehabilitation including, infill planting of over 20,000 trees, weed control management and pest control.</p>
<p>Principle 6 – Set quality targets for rehabilitation in the Mining Operations Plan and implement a monitoring program to measure performance</p>	<p><i>Narrative</i> – summary of quality targets for the various rehabilitation types; and summary of monitoring program scope and status.</p>

Principle	Reporting
<p><i>Each company should include quality targets for the various types of rehabilitation in the Mining Operations Plan for each of its mines. A monitoring program to measure the performance of rehabilitation areas against the quality targets should be implemented at each of its mines.</i></p>	<p>Biodiversity at the Maxwell UG Project is managed in accordance with the Biodiversity Management Plan (BMP) and Mining Operations Plan. The BMP was approved by DPE on 20 September 2021 and supersedes the Rehabilitation and Offset Management Plan and Fauna Management Plan for the Maxwell Infrastructure site.</p> <p>Routine ecological monitoring is conducted across the Maxwell UG Project including the Maxwell Infrastructure offset areas and rehabilitated lands. Ecological monitoring was undertaken during October to December 2021. Monitoring consisted of biometric vegetation sampling, Biodiversity Assessment Methodology (BAM) for remnant woodland reference sites and woodland rehabilitation areas, fauna monitoring, assessment of pest animals, topsoil assessment of monitoring sites, and comparison against the Ecosystem and land use establishment phase performance indicators and completion criteria.</p> <p>Biometric vegetation sampling was undertaken on reference and woodland rehabilitation sites. Sites were representative of Ironbark-Spotted Gum-Grey Box Woodland, Narrow-leaved Ironbark Woodland and Forest Red Gum Woodland.</p> <p>Results showed the reference sites were in good condition and naturally self-sustaining with no direct impact from past mining activities or recent site changes. The reference sites show no evidence of die back or disease, with weed management practices during the previous reporting period having a positive impact with generally low weed cover present. General enhancement of these areas will likely continue to occur naturally with the additional application of weed control when required.</p> <p>The regeneration of species from all structural layers was recorded at all biodiversity offset reference sites (including the Southern Offset area) monitored during the reporting period. The total cover of invasive weeds remained below the closure criteria in the Northern Offset, and Wildlife Refuge area, predominately due to weed control implemented during the reporting period. Invasive weeds remain moderate to high in the Southern Offset Area and the Northern rehabilitation areas, including woodland rehabilitation. An intensive weed control program was established focussing on all offset areas and mine rehabilitation during the reporting period.</p> <p>Woodland rehabilitation monitoring results indicate that the ground cover including foliage coverage and protection from erosion were trending towards the closure criteria. The native tree and shrub species require further management to assist with establishment.</p> <p>The diversity of canopy and mid-storey species, particularly at the Southern Offset area and Northern rehabilitation area were not meeting the completion criteria targets mainly due to pest animals impacting on planting campaigns and weed infestations. To remediate this issue, further development of a canopy and mid-storey cover through infill planting, and appropriate weed control will occur during the next reporting period.</p> <p>Pasture rehabilitation site results show the overall groundcover has established well with a suitable mix of perennial grasses, forbs and legume species. Ecological monitoring demonstrated good cover of perennial grass species in the Eastern rehabilitation area. All pasture rehabilitation sites are trending towards meeting the closure criteria for post mining land use for sustainable grazing.</p> <p>The BAM vegetation sampling was adopted during the 2021 ecological monitoring program to comply with the Biodiversity Management Plan. The BAM provides a direct comparison of sampling results based on attributes such as foliage cover, stem size, tree regeneration, length of logs and litter cover against a Plant Community Type benchmark database providing an Integrity score. The BAM sampling was undertaken at three woodland reference sites and four woodland rehabilitation sites.</p> <p>Results indicate that the woodland reference sites scored an integrity score ranging between 54–75 indicating that these sites are achieving the benchmark conditions for the target Plant Community Type. The woodland rehabilitation sites scored lower at <22, these results are expected given the woodland rehabilitation areas are at early phase of ecosystem succession. Improvements to these ecosystems will establish in time, with the addition of weed management programs, an increase in fauna habitats and planting or seeding of native vegetation cover within the canopy, shrub and groundcover layers.</p> <p>Cattle were rotated between three paddocks of which two were located on mine rehabilitation. The cattle will be sold to market during the next reporting period and the paddocks will be rested and monitored for new vegetation growth and diversity. Results so far are demonstrating that Maxwell can create a post mining landscape that is compatible with the surrounding landscape and capable of sustaining a productive land use.</p>

Contextual information

<p><i>This section provides an opportunity for each company to provide some commentary or contextual information regarding their reported results. Such information could include advice on:</i></p> <ul style="list-style-type: none">- <i>Any material changes to the site (i.e., expansions, acquisitions, or divested assets); or</i>- <i>Why any figures may have changed since the last reporting period?</i>	
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Future rehabilitation priorities

<p><i>This section provides an opportunity for each company to provide details on rehabilitation activities at their site/s for the upcoming year.</i></p>	<p>As outlined in the 2021 AEMR, the following activities will occur during the next reporting period:</p> <ul style="list-style-type: none">• A reduction of pest animals prior to tree planting.• Two tree planting programs with approximately 20,000 tube stock planted on existing mine rehabilitation within the conceptual woodland corridor, and infill planting of the Mine Entry Area visual screen.• A weed control program focussing on High Threat Exotic weed species across the site including the Drayton Wildlife Refuge for prickly pear and the Southern Offset area for Galenia and Golden Wreath Wattle• Installation of nest boxes in appropriately sized canopy trees within remnant vegetation to compare occupation within rehabilitation areas.
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