MAULES CREEK COAL MINE

MINE SITE REHABILITATION PLAN

(EPBC 2010/5566)

Whitehaven Coal Limited and Maules Creek Coal Pty Ltd
on behalf of Aston Coal 2 Pty Ltd ACN 139 472 567

Edition	Rev.	Comments	Date
1	0	Draft for internal review	22 November 2014
1	1	Initial Revision for submission and approval by DotE	16 December 2014
1	2	Incorporation of DotE Comments	1 December 2015
1	3	Incorporation of DotE Comments	1 August 2016
2	0	Revision for consistency with the MCCM Rehabilitation Management Plan for NSW Resources Regulator requirements and alignment with Commonwealth MCCM Box Gum Woodland Research Project Plan.	October 2025
2	1	Incorporation of DCCEEW Comments	2nd April 2026

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LIST OF ABBREVIATIONS AND ACRONYMS

Acronym	Description
ASC	Australian Soil Classification
BBAM	Biobanking Assessment Method
BBS	Brigalow Belt South Interim Biogeographic Regionalisation for Australia Bioregion
BC Act	Biodiversity Conservation Act 2016
BCS	Biodiversity, Conservation and Science Group within NSW DCCEEW
BCT	Biodiversity Conservation Trust
BOA	Biodiversity Offset Area
BOMP	Biodiversity Offset Management Plan
BOS	Biodiversity Offset Strategy
CA	Conservation Agreement
Cth DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water (formerly Department of Agriculture, Water and the Environment [DAWE])
CEEC	Critically Endangered Ecological Community
DAWE	Former Commonwealth Department of Agriculture, Water and the Environment, now Commonwealth Department of Climate Change, Energy, the Environment and Water (CDCCEEW)
DNG	Derived Native Grassland
DPE	Former NSW Department of Planning and Environment, now NSW Department of Planning, Housing and Infrastructure (DPHI) and NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW)
EEC	Endangered Ecological Community
EP&A Act	NSW Environmental Planning and Assessment Act 1979
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
GSG	Greater Soil Group
ha	Hectares
HTE	Hight Threat Exotic
IBRA	Interim Biogeographic Regionalisation for Australia
KTP	Key Threatening Process
LGA	Local Government Area
NAN	Nandewar Interim Biogeographic Regionalisation for Australia Bioregion
Maules offset area	Encompassing the Offset Areas Subject to this Biodiversity Management Plan in Table 4-1
NCM	Narrabri Coal Mine
NCO	Narrabri Coal Operations Pty Limited
NET	New England Tablelands Interim Biogeographic Regionalisation for Australia Bioregion
NPWS	NSW National Parks and Wildlife Service
NSW	New South Wales
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
NSW DPHI	NSW Department of Planning, Housing and Infrastructure (formerly Office of Environment and Heritage [OEH])
NWRSWMP	North West Regional Strategic Weed Management Plan 2017 – 2022
OEH	Former Office of Environment and Heritage, now NSW Department of Planning, Housing and Infrastructure (DPHI)
OMP	Offset Management Plan
PCT	Plant Community Type
RBOS	Revised Biodiversity Offset Strategy
SSD	State Significant Development
TEC	Threatened Ecological Community
VCM	Vickery Coal Mine
VZ	Vegetation Zone
WHC	Whitehaven Coal Limited
WoNS	Weeds of National Significance

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1 INTRODUCTION

1.1 BACKGROUND

The purpose of this document is to address the requirements for a Mine Site Rehabilitation Plan (MSRP) as specified in Conditions 25 to 27 in the Maules Creek Coal Mine (MCCM) Commonwealth approval (i.e. EPBC 2010/5566) issued under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Its particular emphasis is the rehabilitation of mine landforms to effectively restore potential habitat for the Regent Honeyeater (*Anthochaera phrygia*), the Swift Parrot (*Lathamus discolour*), the Greater Long-eared Bat (*Nyctophilus corbeni*) (referred to herein as the Corben's Long-eared Bat as per the contemporary common name for the species) and the White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and derived Native Grassland Critically Endangered Ecological Community (referred to herein as the Box-Gum Woodland CEEC).

This MSRP will be periodically reviewed and updated during the life of the MCCM in order to incorporate details of the planned progressive rehabilitation activities, and improvements to soil management measures and rehabilitation practices including latest information from the MCCM Box Gum Woodland Research Project Plan (BGWRPP) or its latest version. In the meantime, Annual Review reports will be prepared and provided to the Commonwealth Department of Climate Change, Energy, and the Environment and Water (DCCEEW). These reports will describe the management actions undertaken during the reporting period, the outcome of the actions, and the mechanisms to be used to facilitate continuous improvement.

1.1.1 Changes in 2025 Review

Key revisions in Edition 2 of this MSRP include:

- Entire document updated to be consistent with the MCCM RMP (2023).
- Section 4 updated to be consistent with the MCCM Soil Management Protocol (Revision E).
- Alignment with MCCM BGWRPP latest version (dated 2025).

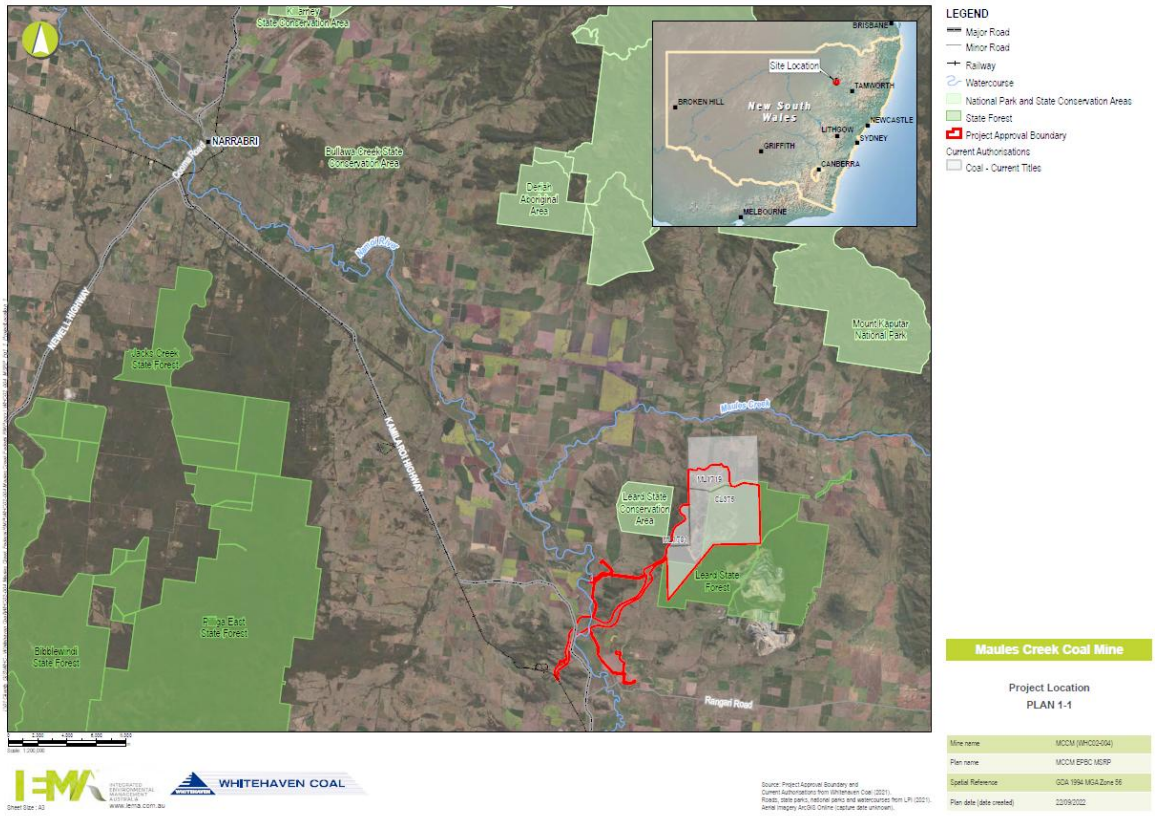
Refer to **Section 1.4** for more detail on the relationship with MCCM management plans related to rehabilitation.
The purpose of this Mine Site Rehabilitation Plan (MSRP) is to provide a consolidated plan for the management of rehabilitation within the MCCM Project Boundary associated with the construction of the MCCM coal mine including the main potential and realised impacts of the approved action that require for those Matters of National Environmental Significance (i.e. White Box—Yellow Box—Blakely's Red Gum Grassy Woodland and Derived Native Grassland critically endangered ecological community, Regent Honeyeater, Swift Parrot and Corben's Long-eared Bat) to have management strategies documented in this MSRP.

This MSRP addresses the relevant requirements outlined in the in the Commonwealth EPBC Act Approval 2010/5566 (as varied). Upon its approval by the Commonwealth Department of Climate Change, Energy, the Environment and Water (Cth DCCEEW), this MSRP will replace the existing MSRP dated 1 August 2016.

1.2 LOCATION, OWNERSHIP AND OVERVIEW OF MCCM ENVIRONMENTAL APPROVALS

The MCCM is located on the northwest slopes and plains of New South Wales (NSW), approximately 18 kilometres (km) north-east of Boggabri. Further afield are the regional centres of Narrabri and Gunnedah which are situated approximately 35 km and 55 km from the MCCM respectively. **Figure 1-1** shows the regional location of the MCCM.

Figure 1-1 Project Location



The management of the MCCM responsibility lies with Maules Creek Coal Pty Ltd (MCC), on behalf of the joint venture between Aston Coal 2 Pty Limited (wholly owned subsidiary of Whitehaven Coal Limited [Whitehaven]) (75%), ITOCHU Coal Resources Australia Maules Creek (ICRA MC) (15%) and J-Power Australia Pty Limited (10%).

An Environmental Assessment for the Maules Creek Coal Project (referred to herein as the Project EA) was prepared by Hansen Bailey (2011) and was assessed under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) in 2012 and 2013. The NSW Planning Assessment Commission (PAC), as a delegate for the NSW Minister for Planning and Infrastructure, issued the State environmental approval for the MCCM on 23 October 2013 (i.e. Project Approval PA 10_0138). The Commonwealth environmental approval (i.e. EPBC 2010/5566) was granted on 11 February 2013 by the Commonwealth Minister for Sustainability, Environment, Water Population and Communities (herein referred to as 'the Minister'). A summary of Modifications to the Project Approvals is provided in **Section 1.3**.

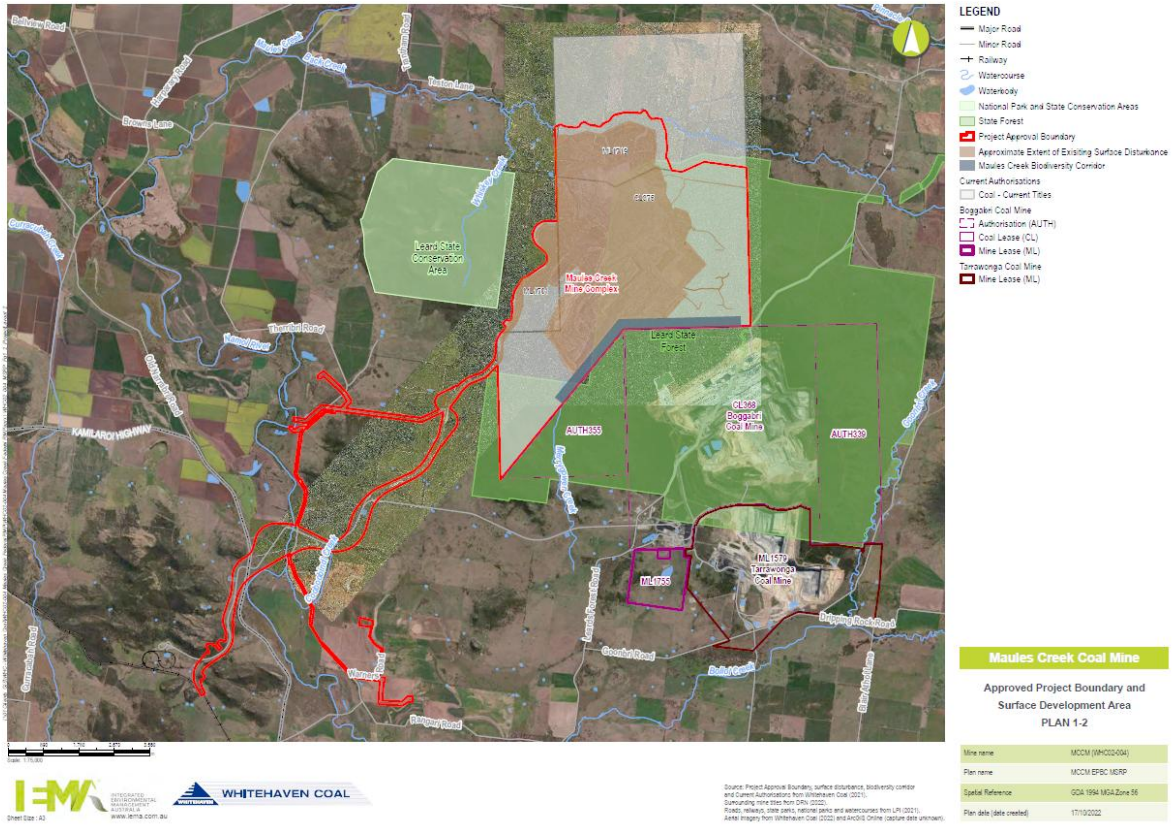
1.3 PROJECT OVERVIEW

The environmental approvals for the MCCM allow for the construction and operation of an open cut coal mine until the end of December 2034. In particular, the approvals authorise the following activities:

- Construction and operation of an open cut mining operation extracting up to 13 million tonnes per annum (Mtpa) run-of-mine (ROM) coal to the Templemore Seam;
- Open cut mining fleet including excavator/shovels and fleet of haul trucks, dozers, graders and water carts using up to 470 permanent employees;
- Construction and operation of a Coal Handling and Preparation Plant (CHPP) with a throughput capacity of 13 Mtpa ROM coal;
- Construction and operation of a Tailings Drying Area;
- Construction and operation of a rail spur, rail loop, associated load-out facility and connection to the Werris Creek to Mungindi Railway Line;
- Construction and operation of a Mine Access Road;
- Construction and operation of administration, workshop and related facilities;
- Construction and operation of water management infrastructure including a water pipeline, pumping station and associated infrastructure for access to water from the Namoi River;
- Installation of supporting power and communications infrastructure; and
- Construction and operation of explosive magazine and explosives storage areas.

The Project Boundary (as defined by PA 10_0138), the Maules Creek Project surface development extent, and the neighbouring mines, Boggabri Coal Mine and Tarrawonga Coal Mine, are shown in **Figure 1-2**.

Figure 1-2 Approved Project Boundary and Surface Development Area



Construction of the MCCM commenced in December 2013 and was substantially completed in 2015. The operations phase of the MCCM commenced in June 2014, and coal was first transported from the MCCM via the rail spur in December 2014.

A modification application was submitted in April 2013 seeking approval for the construction and operation of a 132 kilovolt (kV) transmission line, a 132 kV Switch Station and minor realignment of the CHPP, and associated facilities. As a result, the Project Approval was modified in July 2013.

A second modification application was lodged in February 2014 to adjust the location of the raw water pipeline and associated pump station. As a result, the Project Approval was modified on 10 March 2014.

A third modification application was approved in 2017 modifying employee transport condition related to bus use.

A fourth modification to PA 10_0138 was lodged in September 2017 to remove sound power specific conditioning. This modification has been withdrawn.

A fifth modification to PA 10_0138 was approved on 20 December 2019 to allow for the continued use of the Olivedene pipeline and associated infrastructure to convey water to the MCCM to meet operational water demands.

A sixth modification to PA 10_0138 was also approved on 20 December 2019 to allow for the use of the Roma and Brighton water supply pipeline and associated infrastructure to convey water to the MCCM to meet operational demands.

A seventh modification to PA_10_0138 was approved on 24 August 2021 to allow for the extension of the Northern Emplacement footprint, and an increase to the maximum height of a section of the Northern Emplacement by 1 meter, incorporating macro and micro relief.

An eighth modification to PA_10_0138 was approved on 19 January 2022. This allows for the use of mobile coal sizing equipment in the existing ROM coal stockpile area and the open cut pit, mobile rock crushing equipment in the Northern Emplacement Area, and disposal of used heavy vehicle tyres in waste rock emplacement areas.

A ninth modification to PA_10_0138 was approved on 20 March 2023 to allow the offsets required under the Commonwealth approval to align with the Project Approval and a minor extension of the Project Approval boundary to include an electricity transmission line.

Figure 1-3 represents the current operational status of MCCM as of December 2024. **Figure 1-4** shows the proposed final rehabilitation and post-mining land use at the conclusion of the 21 year mine life, as depicted in the RMP and approved in the Final Landform and Rehabilitation Plan (FLRP) by the Resources Regulator on 13 October 2023. **Figure 1-5** depicts the final landform contours to be achieved at the end of rehabilitation also approved as part of the FLRP on 13 October 2023. The forecast disturbance and rehabilitation for MCCM is depicted in the MCCM Forward Program which is published the MCCM website on an annual basis.

Figure 1-3 Current Status of Disturbance and Rehabilitation (December 2023)

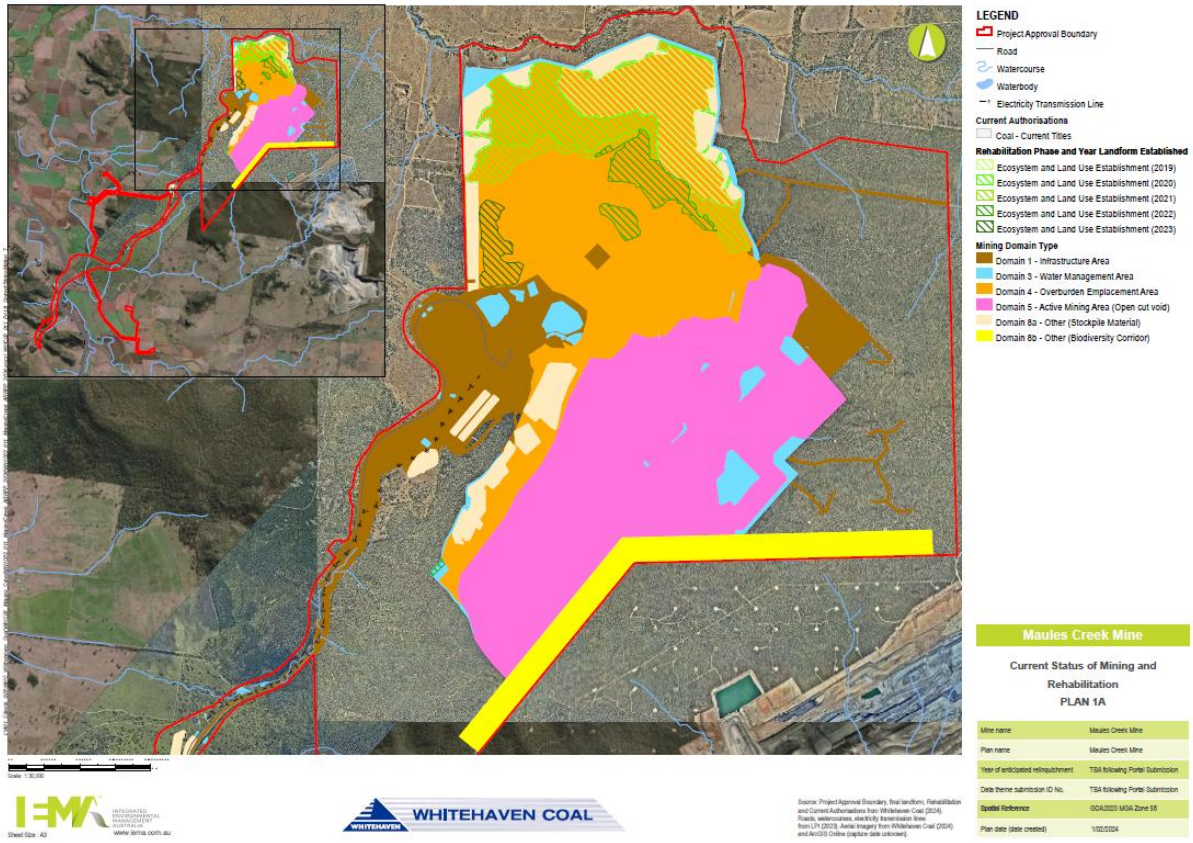


Figure 1-4 Final Rehabilitation Plan and Landform Features

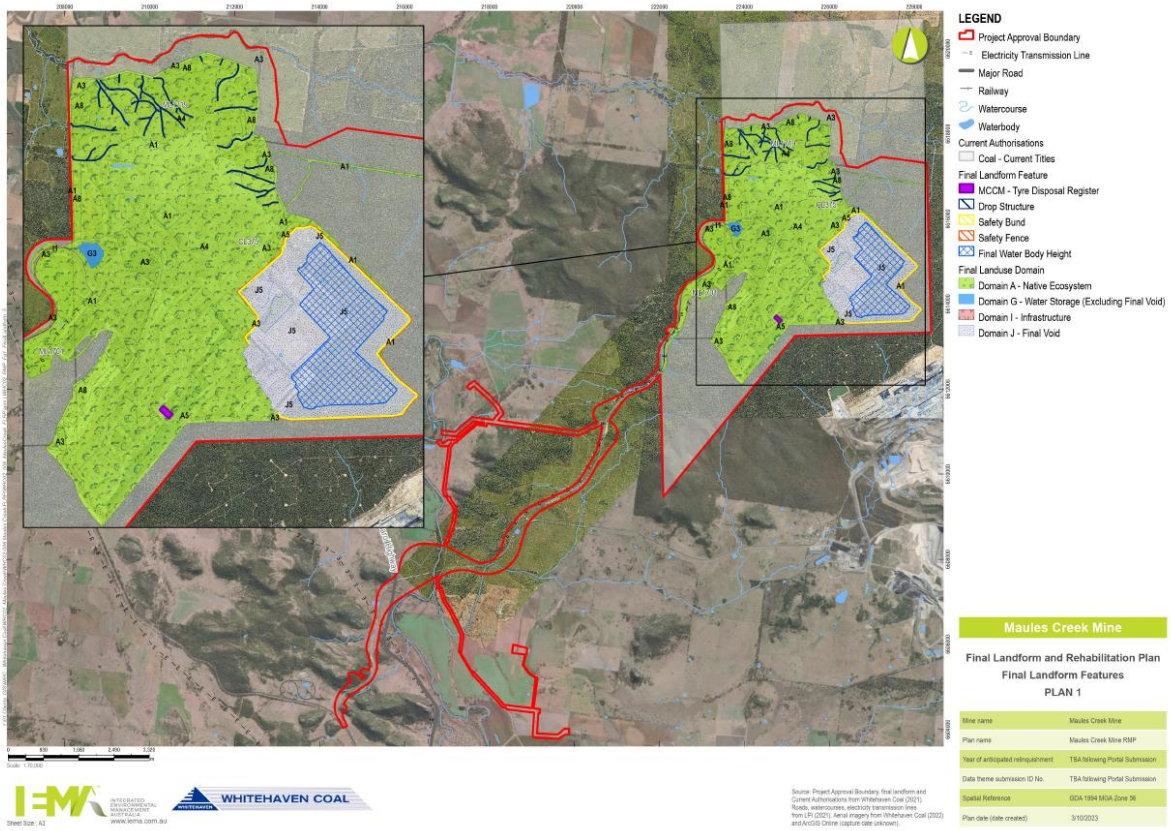
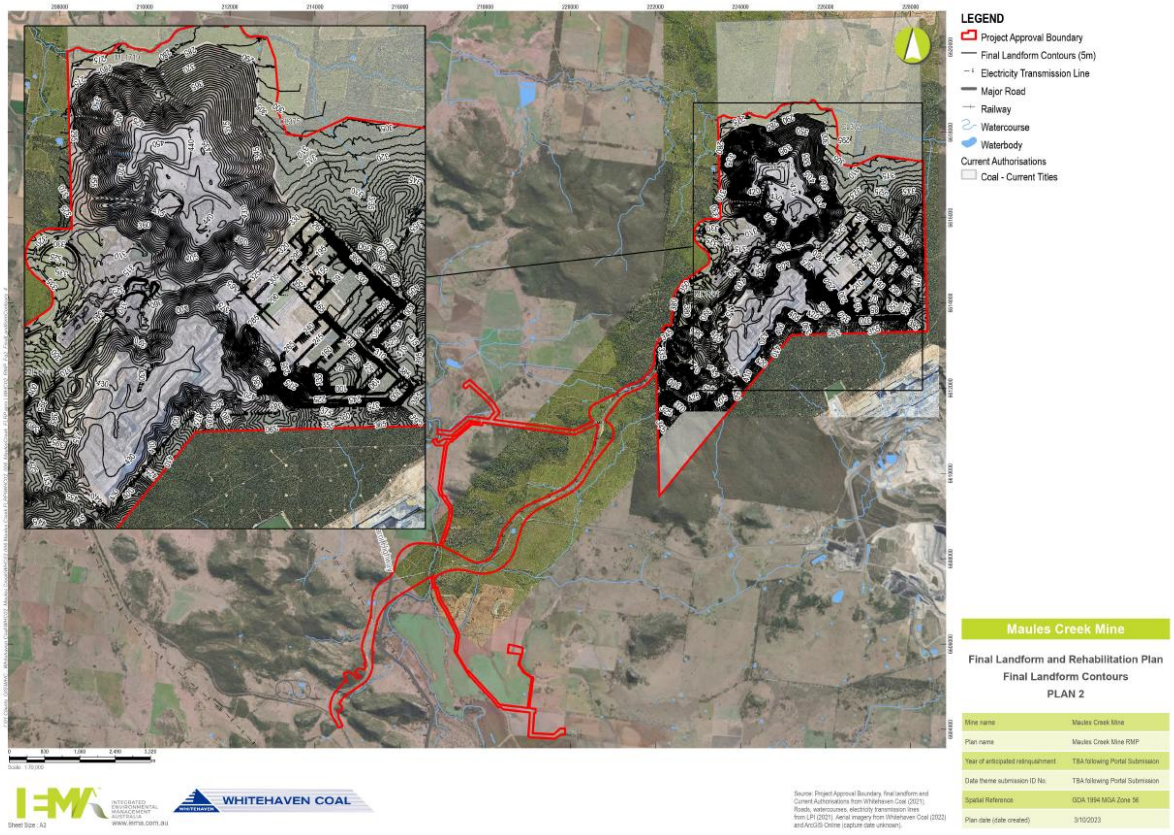


Figure 1-5 Final Rehabilitation and Post Mining Land Use and Contours



1.4 RELATIONSHIP BETWEEN THIS DOCUMENT AND OTHER MCCM DOCUMENTS

This MSRP has been specifically prepared to satisfy the requirements of Conditions 25 and 27 of Commonwealth approval EPBC 2010/5566. These conditions, and other relevant conditions, are discussed further in Section 2. This MSRP was not prepared to address requirements of the State approval PA 10_0138.

In accordance with Condition 73 of Schedule 3 of MCCM's State approval PA 10_0138, a Rehabilitation Management Plan will be prepared and implemented. The initial RMP (i.e. Edition 1, Revision 1) was prepared by MCCM and provided to the DRE in April 2013. Subsequently, and at the request of DRE, the content of the initial draft RMP was transferred across into the MOP.

After the Mining Amendment (Standard Conditions of Mining Leases – Rehabilitation) Regulation 2021 under the *Mining Act 1992* was introduced in July 2021, MCCM prepared a Rehabilitation Management Plan (RMP) to satisfy requirements from Mining Leases as well as conditions of the State Project Approval PA 10_0138. The MCCM RMP replaced the Mining Operations Plan (MOP) previously required by Mining Leases (prior to July 2022). The MCCM RMP aims to satisfy Conditions 71 to 74 of Schedule 3 of PA 10_0138.

This MSRP has been updated to be consistent with the RMP. However as described previously this MSRP is a stand-alone document that is primarily designed to satisfy the requirements of Commonwealth approval EPBC 2010/5566.

This MSRP has also been designed to closely integrate with the MCCM Biodiversity Management Plan (BMP 2025) (required under Condition 53 of Schedule 3 of State approval PA 10_0138) and the Offset Management Plan (required under Condition 17 of EPBC 2l010/5566). The focus of this MSRP is the rehabilitation of mining areas within the Project Boundary. The focus of the BMP/Offset Management Plan is to provide a consolidated plan for the management of flora and fauna within the Project Boundary and the conservation management of the MCCM biodiversity offset areas having been recently updated to incorporate the PA10_0138 MOD9 revised Biodiversity Offset Strategy and reflect securement of all Offset Areas by Conservation Agreements that was approved by DPHI on 7 March 2025 and DCCEEW on 5 June 2025.

Now that the MCCM BMP has been approved, this allows MCCM the opportunity to align this MSRP with the MCCM BGWRPP latest version (dated 2025). The BGWRPP has been updated to reflect the progress of Box Gum Woodland Rehabilitation research completed to date as well as updating the final use of the Adaptive Research to prepare a Final Overarching Report on research outcomes. This MSRP contains summaries and/or references to these other plans and documents where appropriate.

1.5 RESPONSIBILITIES

MCC is responsible for monitoring, reviewing and implementing the MSRP and responsible for biodiversity management on the mine site. The key MCCM site contact responsible for managing, monitoring and implementing the rehabilitation management activities identified in this MSRP and emergency contacts details are as follows:

MCCM Mine Site Key Contact
Attention: MCC Superintendent - Environment mccenvironment@whitehavencoal.com.au and 0447 908 585

1.6 INDEPENDENT REVIEW OF THIS DOCUMENT

Condition 28 of Commonwealth approval EPBC 2010/5566 requires the MSRP to be subject to an independent review by a qualified ecologist prior to being submitted to the Minister for approval. Edition 1 of this MSRP was independently reviewed by Dr David Freudenberger of ANU Enterprise Pty Ltd. For MSRP Edition 2, the independent review was conducted by Cool Burn Pty Ltd. A copy of the findings of the review of this MSRP is contained in **Appendix A**. Also contained in Appendix A, is a table outlining the minor edits made to this MSRP to begin to address the independent review recommendations for future editions.

1.7 STRUCTURE OF THIS DOCUMENT

The structure of this plan is as follows:

- Section 1 Provides background information on the MCCM including its location and ownership, a project overview, and discusses the relationship between this MSRP and other management plans.
- Section 2 Discusses the EPBC Conditions applicable to this MSRP.
- Section 3 Describes the rehabilitation strategy and objectives for the MCCM as outlined in the Project EA. Also references the objectives and final land use outcomes described in the MCCM RMP.
- Section 4 Describes the soil management procedures that will be adopted at the MCCM during the operation and rehabilitation of the mine site.
- Section 5 Provides details of the vegetation communities to be rehabilitated and the timing of progressive rehabilitation.
- Section 6 Provides an outline of risk assessment methodology and summary of rehabilitation risks, including weed invasion. Refers to Section 5 to relate those management measures to identified risks.
- Section 7 Describes the rehabilitation monitoring process that will be adopted to enable adaptive management and continuous improvement aligned with MCCM BGWRPP.
- Section 8 Describes the process that will be used to report, audit and review the implementation of this MSRP during the life of the MCCM.
- Section 9 Provides a list of references contained in this MSRP.

2 APPROVAL CONDITIONS RELATED TO MCCM REHABILITATION

2.1 COMMONWEALTH

EPBC 2010/5566 conditions that are relevant to the rehabilitation of the MCCM are presented in Table 2-1. Where applicable, cross references are provided to the relevant section of this MSRP (or separate document) where the requirements of the conditions have been addressed. Note, the State Approval PA 10_0138 requirements are addressed under the RMP. Refer to **Section 2.2** for more information on the NSW Approval.

Table 2-1 EPBC Act Rehabilitation-Related Approval Requirements

Applicable Condition	Requirement	Comment
Condition 15	***Indirect Offsets*** *To compensate for the loss of the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland critically endangered ecological community and habitat for the regent honeyeater, swift parrot and greater long-eared bat the person taking the action must submit to the Minister for approval, within 2 years of the date of this approval, a project plan to invest $1 million for research that will identify effective methodologies for achieving rehabilitation and restoration of functioning White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland endangered critically ecological community on mining sites. The research must be undertaken by a third party and be available to industry and governments generally. The approved project plan must be implemented.*	Section 7 and MCCM BGWRPP
Condition 25	***Mine site rehabilitation*** *To mitigate the impacts to the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland and the habitat of the regent honeyeater, swift parrot and greater long-eared bat, the person taking the action must, within 12 months of the commencement of construction, submit to the Minister for approval a mine site rehabilitation plan for the progressive rehabilitation and revegetation of no less than 1665 ha of native forest and woodland (less the portion included in the biodiversity corridor identified in condition 3) in the project area including 544 ha using species consistent with a White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland Ecological Community. This approved mine site rehabilitation plan must be implemented.*	This MSRP
Condition 26	*The person taking the action must:* *a. Rehabilitate the site to be consistent with the proposed rehabilitation strategy as provided in the Environmental Assessment and, as required under the NSW State Government approval dated 23 October 2012 (Application 10_0138); and* *b. Not replace top soil and sub soil layers at a depth less than the minimum depths determined through pre-stripping soil surveys as described in condition 27(c).* *Note: the NSW state government Project Approval dated 23 October 2012 (application number 10_0138) conditions require pre-stripping soil surveys and inventories to inform the availability, rehandling, stockpiling and management of soils, and maximising the salvaging of soil to be used, in the rehabilitation of the site.*	Section 3 Section 4
Condition 27	*The mine site rehabilitation plan must include, at a minimum, the following information:* *a. targets and performance indicators to achieve effective restoration of potential habitat for the regent honeyeater, swift parrot and greater long-eared bat and White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland ecological community, including weed management;*	Section 3.5, Section 7 Section 5

Applicable Condition	Requirement	Comment
	b. details of the vegetation communities to be rehabilitated and the timing of progressive rehabilitation (commencing as soon as practicable following disturbance);	Section 4
	c. detailed soil depths surveys and analysis to inform the effective placement and restoration of soils across the disturbance sites and soil sampling at no less than one sample point per 20 ha of each soil type identified. Sampling must identify; type, depth, water holding capacity, structure and physio-chemical properties of each of the soil and subsoil layers;	Section 4
	d. processes and methodology for the removal, storage and re-layering of the top soil and sub layers underlying the disturbed sites being prepared for rehabilitation. These processes and methodologies must ensure the replacement of top soil and sub soil layers: • *meet the minimum depth requirements determined from sampling outcomes as identified in condition 27(c); and* • *replicate other existing soil parameters including, but not limited to, soil type, water holding capacity, structure and physio-chemical properties.*	Section 8
	e. a process to report annually to the department the rehabilitation management actions undertaken and the outcome of those actions, and the mechanisms to be used to identify the need for improved management;	Sections 5, 8, and Appendix B
	f. a description of the potential risks to successful management and rehabilitation on the project site, including weed invasion, and a description of the contingency measures that would be implemented to mitigate these risks;	Sections 5.2 .12 and 7
	g. details of long-term management and protection of the mine site, including details of the commitment of funds to achieve this.	
Condition 28	*The mine site rehabilitation plan must be subject to an independent review by a qualified ecologist prior to being submitted to the Minister for Approval. The findings of the independent review must be published on the proponent's website.*	Section 1.5 and Appendix A.
Condition 29	***Final Landform*** *Note: for consistency, the person taking the action may develop a single mine rehabilitation plan to align with the requirements, including timing of reporting, of the NSW State Government approval dated 23 October 2012 (Application 10_0138) and this approval. The Offset Management Plan and the Rehabilitation Management Plan need to be substantially integrated for achieving biodiversity objectives for the rehabilitated mine-site.* *The person taking the action must undertake rehabilitation to ensure that final landform provides the optimum opportunity for the successful restoration of native forest and woodland including the critically endangered White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland ecological community.* *Note: for consistency, the proponent may develop a single mine rehabilitation plan to align with the requirements of the NSW Government and this approval. The Offset Management Plan and the Rehabilitation Management Plan need to be substantially integrated for achieving biodiversity objectives for the rehabilitated mine-site.*	Section 3.3
Condition 30	*The person taking action must undertake rehabilitation to ensure the final void and landform minimises the extent of any resulting pit lake, avoids salt scalding and ensures that drained waters do not adversely affect the downstream environment and avoids any impacts on matters of national environmental significance.* *Note: the State approval conditions for the project 10_0138 require the preparation and implementation of an updated Final Void and Mine Closure Plan that considers interactions with the adjoining mines, including interaction between final voids, opportunities for integrated mine planning with adjoining mines to minimise environmental impacts, all reasonable and feasible landform options for the final void (including filling) and predicted hydrochemistry and hydrogeology (including long-term groundwater recovery and void groundwater quality).*	Sections 1 and 7.4

2.1.1 Matters of National Environmental Significance

A description of each Matter of National Environmental Significance referenced in Conditions 25 and 27 of Commonwealth approval EPBC 2010/5566 is provided below.

Regent Honeyeater

The Regent Honeyeater (*Anthochaera phrygia*, previously *Xanthomyza phrygia*) has not been previously recorded in Leard State Forest. The nearest record of this species is approximately 20 kilometres (km) to the south-east of the MCCM within the Boonalla Aboriginal Area (Office of Environment and Heritage [OEH], 2015aThe Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia (DotE, 2016; OEH, 2016). This species can undertake large-scale nomadic movements in the order of hundreds of kilometres (OEH, 2016). In NSW the distribution is very patchy, and the species may use different areas in different years depending on food resources (DotE, 2016).

Most records of this species come from box-ironbark associations, but it also occurs in forests and woodlands of yellow gum, swamp mahogany and riverine woodlands (DotE, 2016). It has a particular preference for blossoming Eucalypts and Mistletoe which provide nectar flows (DotE, 2016). The Regent Honeyeater is a generalist forager, which mainly feeds on the nectar from a wide range of Eucalypts and Mistletoes (DotE, 2016; OEH, 2016). It also feeds on arthropods, occasionally supplemented with fruit (DotE, 2016). When nectar is scarce; lerp and honeydew comprise a large proportion of the diet (OEH, 2016). Insects make up about 15% of the total diet and are important components of the diet of nestlings (OEH, 2016).

There are four known key breeding areas, three of them in NSW – Capertee Valley, Hunter Valley and Bundarra-Barraba regions (DotE, 2016).

Swift Parrot

In August 2022, monitoring engaged by Boggabri Coal Mine recorded the Swift Parrot in Leard State Forest (Idemitsu Australia, 2023). Further, there have been Swift Parrots recorded on MCCM Offset Areas of Wirradale (2018 and 2022), Bimbooria (2021 and 2022), Wollandilly (2022 and 2025) and Louenville (2022). Additionally Swift Parrot records more broadly across Whitehaven land holdings include Narrabri Mine in 2021 and a Tarrawonga Mine Offset Area in 2019.

The Swift Parrot breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland (Commonwealth of Australia, 2024). Swift Parrots mostly occur on the coast and south-west slopes in NSW (Commonwealth of Australia, 2024; Saunders and Tzaros, 2011; OEH, 2016).

The Swift Parrot is dependent on flowering resources across a wide range of habitat in its wintering grounds in NSW (Saunders and Tzaros, 2011). On the mainland they occur in areas where Eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations (Commonwealth of Australia, 2024; Saunders and Tzaros, 2011; OEH, 2016).

Corben's Long-eared Bat

The Greater Long-eared Bat (south-eastern form) (*Nyctophilus timoriensis*) is now known as the Corben's or South-eastern Long-eared Bat (*Nyctophilus corbeni*).
The Corben's Long-eared Bat is known to occur in the locality of the MCCM. The distribution of the Corben's Long-eared Bat coincides approximately with the Murray Darling Basin with the Pilliga Scrub region being a distinct stronghold for this species (OEH, 2016). Overall, the distribution of the Corben's Long-eared Bat spans the western slopes and plains of NSW with the exception of the Darling Riverine Plains Bioregion, the Hay Plains in the Riverina Bioregion and the north-western semi-arid corner of NSW (Turbill and Ellis, 2006).

The Corben's Long-eared Bat inhabits dry woodlands and the River Red Gum communities of major watercourses (Van Dyck and Strahan, 2008). The species is quite flexible in its roost selection, but has a predilection for tree hollows, exfoliating bark or dense foliage (Lunney *et al.,* 1988).

The Corben's Long-eared Bat forages for large moths and beetles over water or in arid habitats (Hall and Richards, 1979; Richards, 1983). It may use the understorey to hunt non-flying prey (especially caterpillars and beetles) or hunt on the ground (OEH, 2016).

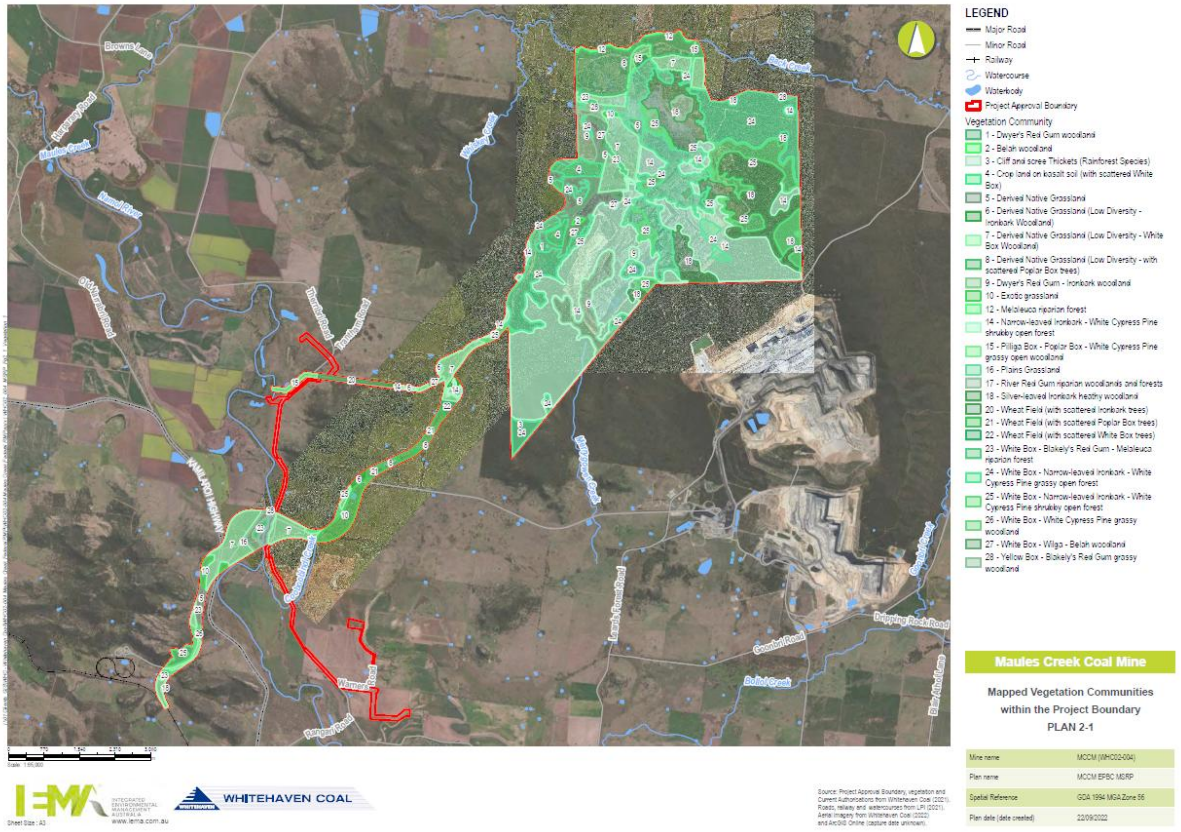
Box-Gum Woodland CEEC

The Box-Gum Woodland CEEC is represented in the MCCM Project Boundary by the following vegetation communities (Cumberland Ecology, 2011):

- White Box – Narrow-leaved Ironbark – White Cypress Pine grassy open forest;
- White Box – White Cypress Pine grassy woodland;
- Yellow Box – Blakely's Red Gum grassy woodland;
- White Box – Wilga – Belah woodland;
- White Box – Blakely's Red Gum – Melaleuca riparian forest; and
- Derived Native Grasslands.

Many of the threatened fauna species relevant to MCCM's BMP use Box-Gum Woodland as habitat. **Figure 2-1** shows the location of these, and other non-threatened vegetation communities, in the Project Boundary as mapped during the Project EA flora surveys (Cumberland Ecology, 2011).

Figure 2-1 Mapped Vegetation Communities within the Project Boundary



2.2 STATE

State Approval PA 10_0138 includes several conditions relevant to the rehabilitation and closure of the MCCM. As described in **Section 1.4**, this MSRP has been prepared to be consistent with the rehabilitation component of the MCCM RMP, however, is a stand-alone document that is primarily designed to satisfy the requirements of Commonwealth approval EPBC 2010/5566. The MCCM RMP is purposed to satisfy requirements of the State Approval PA 10_0138.

2.3 RELEVANT ENVIRONMENTAL MANAGEMENT PLAN GUIDELINES

As stated above, this MSRP was prepared in consideration of the *Environmental Management Plan Guidelines* (Cth DCCEEW, 2024). The relevant environmental management plan guidelines are presented in Table 2-2.

Table 2-2 Environmental Management Plan Guidelines

Guideline	Relevant MSRP Section
GENERAL PRINCIPLES FOR THE PREPARATION OF AN ENVIRONMENTAL MANAGEMENT PLAN	
Key principles	
An environmental management plan should:	
• *be balanced, objective and concise*	Throughout this MSRP
• *state any limitations that apply, or should apply, to the use of the information in the environmental management plan*	None
• *identify any matter in relation to which there is a significant lack of relevant information or a significant degree of uncertainty*	None
• *include adaptive management strategies for managing uncertainty*	Section 7.3
• *be written in a way that is easily understood by other parties*	Throughout this MSRP
• *clearly present how conclusions about risks have been reached*	Section 6 and Appendix B
• *ensure that the person taking the action takes full responsibility for the content and commitments contained in the plan.*	Section 1.5
Including commitments in management plans	
• *All commitments must be specific and auditable with measurable outcomes and clear timeframes.*	Throughout this MSRP
• *To ensure readability, write clearly and avoid long sentences with complex clauses.*	
• *Always use the terms 'will' and 'must', rather than 'should' or 'may' when committing to carry out management actions.*	
• *Avoid use of ambiguous terminology such as 'where possible', 'as required', 'to the greatest extent possible'. If it is necessary to include ambiguous terminology, it should be explained and examples given.*	
• *Clearly explain any technical terms or acronyms used, and/or define them in a glossary.*	
It is also important that commitments or statements within the management plan are consistent with other relevant management plans or conditions of approval.	

Table 2-2 (Continued) Environmental Management Plan Guidelines

Guideline	Relevant MSRP Section
GENERAL PRINCIPLES FOR THE PREPARATION OF AN ENVIRONMENTAL MANAGEMENT PLAN (Continued)	
Cross-referencing	
Where the plan refers to material in other documents, it should include cross-references that are clear, complete and that specify the document version and date. Use tables, diagrams and maps where their inclusion would provide a better understanding and implementation of the management plan. Link all tables, diagrams and maps into the text through cross-referencing.	Throughout this MSRP and Section 1.4
CONTENT OF THE ENVIRONMENTAL MANAGEMENT PLAN	
Cover page and declaration of accuracy	
Cover page detailing:	Cover Page
• *EPBC number*	
• *project name*	
• *proponent /approval holder and ACN or ABN*	
• *the proposed/approved action*	
• *location of the action*	
• *date of preparation of the environmental management plan*	
• *person accepting responsibility for the environmental management plan – signed declaration (see below).*	Section 1.5
Document version control	
The document version control should be a simple system that ensures that details of all key changes to the document over time are properly recorded. Identified changes should include details of timings, persons responsible and reasons for changes.	Cover Page
Table of contents	
Table of contents page detailing:	Table of Contents
• *all section headings and page numbers*	
• *all figures, tables, plans and maps (should be numbered)*	
• *all appendixes (with meaningful titles, including for sub-appendixes if any). If the appendixes contain a collation of data, include summary of the contents.*	
Executive summary or introduction	
The executive summary should note the key elements of the project, the purpose of the document, the main potential impacts and the primary strategies planned to address these impacts.	Section 1.1
Conditions of approval reference table	
When an environmental management plan is prepared after the project has been approved under the EPBC Act, the management plan should include a table detailing the information noted below:	
• *The EPBC Act approval condition requirements the plan is intended to address. These are best presented broken down into each of the individual actions that the conditions require.*	Table 2.1
• *The section and page numbers which address the approval conditions.*	Section 2.1
• *A summary of the key commitments relating to each of the approval conditions.*	Section 2.1

Table 2-2 (Continued) Environmental Management Plan Guidelines

Guideline	Relevant MSRP Section
CONTENT OF THE ENVIRONMENTAL MANAGEMENT PLAN (Continued)	
Project description	
The environmental management plan should provide a description of the project as this provides context for the plan. The location of all project actions should be described and a map showing their location provided. Basic information on the environment at these locations should also be included as this helps provide the environmental context to which the environmental management plan applies. The plan should include a description of the activities that will be undertaken as part of the project including project details relevant to any approval conditions and with potential impacts on matters protected under the EPBC Act. The plan should distinguish between construction and operational activities, if relevant. A schedule of intended commencement and completion dates should be provided. Projects undertaken in stages should identify each stage in the schedule. Contingency schedules can also be included along with examples of events that could result in the use of the contingency schedules.	Section 1
Objectives	
The environmental outcomes of the plan should be defined. These should be tailored to the environmental issues outlined in the plan.	Section 1.1
Environmental management roles and responsibilities	
Once an action is approved, the approval holder is responsible for complying with the conditions of approval, including the commitments made in environmental management plans. The plan should define the roles and responsibilities of personnel in charge of the environmental management of the project. The roles and responsibilities of each relevant position should be documented, including the responsibilities of subcontractors. The names of the responsible personnel do not need to be included. Identification of the position titles, roles and responsibilities is sufficient. If the roles and responsibilities are expected to change over time the long-term variations should also be documented.	Section 1.5
Reporting	
An environmental management plan will usually require reporting arrangements for two purposes. Reporting arrangements assist with effective implementation and with external reporting. External reports may include reports on environmental incidences to the regulator, reports to stakeholders, reports to inform reviews of the plan and reports to meet the reporting requirements of the conditions of approval.	Sections 8.2
The description of reporting requirements should include:	
• *a list of required reports including where appropriate monitoring, environmental incidents, non-compliance, corrective action and auditing*	
• *a description of the standard report content*	
• *the schedule or triggers for preparing a report*	
• *who the report is provided to*	
• *document control procedures.*	
Reporting commitments should also be consistent with any reporting to us required by the conditions of approval.	
Environmental Training	
All people involved with the project should receive relevant environmental training to ensure they understand their responsibilities when implementing the environmental management plan. People to be trained include those at the site/s of all project activities and operations, including contractors, subcontractors and visitors. The training should be tailored to the role of the individual in the project.	Sections 8.4

Table 2-2 (Continued) Environmental Management Plan Guidelines

Guideline	Relevant MSRP Section
CONTENT OF THE ENVIRONMENTAL MANAGEMENT PLAN (Continued)	
Environmental Training (Continued)	
The environmental management plan should describe the training to be implemented and could include: • *site inductions* • *identification of key points of environmental value and any relevant matters of national environmental significance* • *understanding the requirements of the environmental management plan and the individual's role* • *environmental incident emergency response procedures* • *site environmental controls* • *an outline of the potential consequences of not meeting their environmental responsibilities.*	Section 8.4
Records of all training conducted should be maintained and include: • *the person receiving the training* • *the date the training was received* • *the name of the person conducting the training* • *a summary of the training.*	
Emergency contacts and procedures	
The environmental management plan should identify the key emergency contacts responsible for managing environmental emergencies associated with the project and their contact details. These personnel should have the power to stop and direct works so that they can manage emergencies effectively. In addition, the plan should establish procedures for managing environmental emergencies and ensure that those procedures are implemented and maintained.	Sections 1.5
Potential environmental impacts and risks	
Threats to matters protected under the EPBC Act *The environmental management plan should summarise all the identified threats to matters protected under Part 3 of the EPBC Act in the management plan. The matters protected by the EPBC Act include:* • *the 9 matters of national environmental significance (listed in Appendix A)* • *the environment in general (for actions by Commonwealth agencies or actions on Commonwealth land) or the environment on Commonwealth land (for actions outside Commonwealth land).*	Section 6 Section 2.1.1 Appendix B
The plan should refer to relevant information provided in the EPBC Act assessment documentation, such as an environmental impact statement or preliminary documentation. If the project has already been approved, the plan should detail all new information relevant to the conditions placed on the approval. The key sensitivities of the environmental values potentially impacted by the action should be identified.	
Potential impacts *The potential impacts section of the plan should focus on identifying, locating and quantifying the potential impacts (direct and indirect) of the project on the matters protected by the EPBC Act. It should discuss:* • *the relevant impacts of the project* • *the nature and extent of the potential short-term and long-term effects* • *any uncertainties regarding the predicted impacts.*	

Table 2-2 (Continued) Environmental Management Plan Guidelines

Guideline	Relevant MSRP Section
CONTENT OF THE ENVIRONMENTAL MANAGEMENT PLAN (Continued)	
Potential environmental impacts and risks (Continued)	
This may include a summary of any relevant information previously provided in assessment documentation, such as an environmental impact statement or preliminary documentation.	Appendix B
Impacts from relevant stages of the action (for example, pre-construction, construction and operation) should be delineated in this section and should reflect the relevant conditions of approval. It may be necessary to divide the potential impacts into subsections reflecting the stages of the project.	
Risk assessment *Once the potential impacts of the proposal are clearly identified a risk assessment should be undertaken for each potential impact. This means that the likelihood and consequences of each potential impact need to be estimated. An example of a methodology for risk assessment is at Evaluating risk.* *The function of the risk assessment is not to repeat or supersede the original assessment of a project or its conditions of approval. Rather it is to ensure that these risks are effectively translated into actual mitigation and management actions. Impacts with higher risk ratings usually require more management actions and controls. This minimises the likelihood of the risk occurring and reduces the consequences to acceptable levels.*	
Environmental management measures	
The environmental management plan should clearly state how the potential impacts of the proposal will be managed and this information usually forms the bulk of the content of the plan. For each potential impact, the plan should address: • *environmental management activities, controls and performance targets* • *environmental management maps and diagrams* • *monitoring programs with trigger values for corrective actions* • *corrective actions and non-compliance reporting* • *environmental schedules*	Section 5
These topics are described in more detail below. It is helpful if management plans present the information on these topics for one potential impact at a time. This ensures that all the management measures for each potential impact are in the same section of the document and easy to locate.	
Environmental management activities, controls and performance targets *The environmental management plan should describe all the environmental management activities and control measures that will be implemented to avoid or minimise environmental impacts. The description of each measure should also specify the timeframes for implementation and the performance targets or outcomes to be achieved. The timing of measures is often best presented in a timetable. Performance targets and outcomes should be quantitative and auditable.*	Section 5
Environmental management maps and diagrams *Environmental management maps and diagrams are useful visual tools that aid in environmental management activities. Maps can provide useful spatial information about areas that require environmental management. Diagrams can illustrate the design of environmental control measures and the flow of environmental management procedures. For example, a map could be used to show:* • *environmentally sensitive areas on or near a project site* • *vegetation that requires protection* • *buffer zones or 'no-go zones'* • *monitoring locations.*	Figures throughout the MSRP

Table 2-3 (Continued) Environmental Management Plan Guidelines

Guideline	Relevant MSRP Section
CONTENT OF THE ENVIRONMENTAL MANAGEMENT PLAN (Continued)	
Environmental management measures (Continued)	
Environmental monitoring *The environmental management plan should specify how the effectiveness of environmental management measures will be monitored. It should include the methodology, frequency and duration of monitoring activities. It should also include trigger values or conditions under which corrective actions are taken. The plan should also specify if, and when, follow up action is required and how monitoring records will be maintained.*	Section 7
Corrective actions *The environmental management plan should include procedures for addressing:* • *monitoring results which exceed the trigger values for corrective action* • *potential corrective actions* • *reporting non-compliance with approval conditions to the relevant authority* • *environmental incidents and emergencies.*	Section 7.4 Section 6
The plan should also identify who is responsible for implementing the above procedures. Auditable systems should be developed for recording the implementation of these procedures and their outcomes.	Section 1.5
Audit and review	
Environmental auditing *The environmental management plan should include the schedule or triggers for auditing the implementation and effectiveness of the plan. It should address both internal and external audit requirements including who is responsible for undertaking the audits and reporting the results.*	Section 8.3
Environmental management plan review *The environmental management plan should specify the schedule or triggers for reviews of the plan. A review should assess whether the plan is achieving its objectives and the requirements of any relevant approval conditions. A review should take into account environmental monitoring records, corrective actions and the results of any audits. The plan should also identify who will be responsible for undertaking the review. During the review process, any reasons for varying the environmental management plan should be documented.*	Section 8.1
Review of an environmental management plan would typically be undertaken: • *following significant environmental incidents* • *when there is a need to improve performance in an area of environmental impact* • *periodically for actions undertaken over long timeframes such as one, two or five years.*	Section 8.1
However, if the person taking the action wishes to carry out any activity other than in accordance with the approved management plan specified in the approval conditions, the person taking the action is usually required to submit to us for the Minister's written approval a revised management plan. In these cases, the varied activity should not commence until the Minister has approved the varied management plan in writing. As a guiding principle, the Minister will not approve a varied management plan unless the revised management plan would result in an equivalent or improved environmental outcome over time.	Section 8.1
Glossary	
This should include any acronyms, all terms which are open to different interpretations or terms which are not in common use. Terms which are defined in the approval conditions should retain the same meaning as that used in the conditions.	Page vii

Table 2-3 (Continued) Environmental Management Plan Guidelines

Guideline	Relevant MSRP Section
EVALUATING RISK	
The following section sets out a qualitative risk assessment methodology that can be applied to the environmental risks associated with a wide range of projects. It is provided as an example of one approach to risk assessment and the Department does not require that this particular approach be used when preparing an environmental management plan. Further guidance on evaluating and managing risk can be found in AS ISO 31000:2018 Risk management – Guidelines (Standards Australia 2018).	Section 6 and Appendix B
Likelihood and consequence	
Each environmental risk should be given a rating in terms of likelihood and consequence using the criteria in the table 1 and table 2 below. These ratings are then combined using the risk rating table to generate a risk rating of low, medium, high or severe.	Appendix B

Table 1 Likelihood

Qualitative measure of likelihood	***How likely is it that this event/issue will occur after control strategies have been put in place***
Highly likely	*Is expected to occur in most circumstances*
Likely	*Will probably occur during the life of the project*
Possible	*Might occur during the life of the project*
Unlikely	*Could occur but considered unlikely or doubtful*
Rare	*May occur in exceptional circumstances*

Table 2 Consequences

Qualitative measure of consequences	***What will be the consequence/result if this issue does occur rating***
Minor	*Minor incident of environmental damage that can be reversed*
Moderate	*Isolated but substantial instances of environmental damage that could be reversed with intensive efforts*
High	*Substantial instances of environmental damage that could be reversed with intensive efforts*
Major	*Major loss of environmental amenity and real danger of continuing*
Critical	*Severe widespread loss of environmental amenity and irrecoverable environmental damage*

Risk rating	
You should give each of your risks a likelihood rating and a consequence rating. Using the rating table below you can determine whether your risk is low, medium, high or severe.	Appendix B
The risk rating generated using the above table can be used as a guide to the amount of time and resources that will be required to manage each risk. Risks with 'low' risk ratings will usually require significantly less management than 'medium', 'high' and 'severe' risks.	
This is usually reflected in the environmental management plan where issues with higher risk ratings require more detailed information regarding:	
• *the description of the risk*	
• *the measures and commitments to minimise and manage the risk*	
• *the performance objectives and monitoring programs*	
• *trigger values for additional action, review and reporting.*	

Table 2-3 (Continued)
Environmental Management Plan Guidelines

<table>
<tr><th>Guideline</th><th>Relevant MSRP Section</th></tr>
<tr><td colspan="2">EVALUATING RISK (Continued)</td></tr>
<tr><td colspan="2">Risk rating (Continued)</td></tr>
<tr><td>Table 3 Risk Rating
<table>
<tr><th></th><th colspan="5">Consequence</th></tr>
<tr><th></th><th>Minor</th><th>Moderate</th><th>High</th><th>Major</th><th>Critical</th></tr>
<tr><td>Highly Likely</td><td>Medium</td><td>High</td><td>High</td><td>Severe</td><td>Severe</td></tr>
<tr><td>Likely</td><td>Low</td><td>Medium</td><td>High</td><td>High</td><td>Severe</td></tr>
<tr><td>Possible</td><td>Low</td><td>Medium</td><td>Medium</td><td>High</td><td>Severe</td></tr>
<tr><td>Unlikely</td><td>Low</td><td>Low</td><td>Medium</td><td>High</td><td>High</td></tr>
<tr><td>Rare</td><td>Low</td><td>Low</td><td>Low</td><td>Medium</td><td>High</td></tr>
</table></td><td>Appendix B</td></tr>
<tr><td colspan="2">FORMAT OF SUBMISSIONS</td></tr>
<tr><td colspan="2">General</td></tr>
<tr><td>Each page of the environmental management plan should include the name of the project, the date of the environmental management plan and sequential page numbering. An environmental management plan can be submitted via standard post or electronically. Submissions should be titled ‘Environmental Management Plan’ with the project name and EPBC approval number.</td><td>Header and Footer of each page</td></tr>
<tr><td>General requirements for maps, plans and sections</td><td rowspan="7">Figures throughout the MSRP</td></tr>
<tr><td>All maps and sections should conform to the following standards.</td></tr>
<tr><td>• Scale – an appropriate standard metric scale should be chosen to best represent the information required (for example 1:25 000, 1:10 000 and 1:5000).</td></tr>
<tr><td>• Datum – plans and cross sections should refer to Australian Height Datum.</td></tr>
<tr><td>• Title Block – plans should have a title block in the lower right-hand corner of the sheet with the following information:
– EPBC number and project name
– title and number of the plan
– author
– scale
– date
– source and date of data</td></tr>
<tr><td>• Legend – plans should have a clear and comprehensive legend to identify the symbols and colours used.</td></tr>
<tr><td>• Maps, plans, figures, images and sections should also:
– use metric measurements throughout
– show a graphic bar scale
– show any local grid lines and standards
– have a north point or orientation of sections
– include a key.</td></tr>
<tr><td>Maps may also be submitted in ESRI Shapefiles containing ‘.shp’, ‘.shx’ and ‘.dbf’ files.</td></tr>
</table>

3 REHABILITATION STRATEGY

3.1 OVERVIEW

The Rehabilitation Strategy for the MCCM is described in Section 7.16 of the Project Environmental Assessment (Hansen Bailey, 2011). The State and Commonwealth approvals both specify that the rehabilitation of the MCCM must be consistent with the Rehabilitation Strategy (i.e. Condition 26 of EPBC 2010/5566 and Condition 71 of Schedule 3 of PA 10_0138). The Rehabilitation Strategy includes a description of the following elements:

- Rehabilitation objectives;
- Rehabilitation techniques;
- Final landform and rehabilitation domains;
- Decommissioning;
- Rehabilitation completion criteria; and
- Management and mitigation.

PA 10_0138 Modification 7 (Landform Modification) approved the final landform to incorporate a geomorphic design. Geomorphic design introduces macro- and micro-relief (i.e. undulating surfaces) to replicate natural drainage systems and improve integration with the surrounding environment. A conceptual geomorphic final landform design was developed by Golder Associates expanding upon those trialled on part of the Northern Emplacement.

Section 4.1, Soil Management Protocol, summarises the key elements of the Rehabilitation Strategy from Section 7.16 of the Project EA.

3.2 OBJECTIVES

As outlined in Section 7.16 of the Project EA, MCCM is to establish native forests and woodlands with a conservation final land use. Condition 25 of Commonwealth approval EPBC 2010/5566 requires rehabilitation within the Project Boundary to include no less than 1,665 ha of native forest and woodland in the project area (less the portion included in the biodiversity corridor), including 544 ha using species consistent with a Box-Gum Woodland CEEC.

It will also consider the *National Recovery Plan for White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* (SEWPaC, 2010).Condition 71 of Schedule 3 of State Approval PA 10_0138 includes a table (Table 7-1), which lists the overall rehabilitation objectives for the MCCM. These are repeated below in **Table 3-1**.

Table 3-1 Rehabilitation Objectives (Condition 71 of PA 10_0138)

Feature	Objective
Mine Site	• Safe, stable and non-polluting. • Constructed landforms drain to the natural environment.
Final Void	• Minimise the size and depth of the final void as far as is reasonable and feasible. • Minimise the drainage catchment of the final void as far as is reasonable and feasible.
Surface Infrastructure	• To be decommissioned and removed, unless the Resources Regulator agrees otherwise.
All land, other than the final void	• Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of: – local native plant species; and – a landform consistent with the surrounding environment
Community	• Ensure public safety. • Minimise the adverse socio-economic effects associated with mine closure.

Note: Appropriate non-native short lived pioneer species may be used for stabilisation and dust suppression purposes on a temporary basis, if required.

The approved FLRP for MCCM is included above as **Figure 1-4** and **Figure 1-5**, and included in Section 5 of the RMP. The broad final landform and rehabilitation concept for the MCCM is shown on the Project EA however the FLRP should be referred to for MCCM's most up-to-date version. The FLRP is consistent with the rehabilitation outcomes depicted in the Project EA, State Approval PA 10_0138, and EPBC 2010/5566. Overall, the key goal of the rehabilitation activities is to create landforms that are safe, stable, provide adequate post-mining drainage, and have a shape that is consistent with the types of naturally occurring landform features that occur in the region.

3.3 FINAL LANDFORM AND REHABILITATION DOMAINS

The MCCM Rehabilitation Strategy contained a description of the final landform concept, including a description of the major rehabilitation 'domains' that will be created over the mine life. The domains were identified based on their physical characteristics, location and proposed post-mining land use.

In preparing the MCCM RMP, the site was refined into the following Final Land Use Domains and Mining Domains (**Table 3-2**). It is intended that details surrounding the Native Ecosystem final land use domain will be provided in subsequent revisions of the RMP, including details in regards to the Box-Gum Woodland CEEC. The domains for the MCCM as of December 2024 are shown on **Figure 1-3**.

Table 3-2: MCCM Final Land Use Domains and Mining Domains

Final Land Use Domain	Code	Mining Domain	Code
Native Ecosystem	A	Infrastructure Area	1
Water Management Areas	F	Water Management Area	3
Water Storage (Excluding Final Void)	G	Overburden Emplacement Area	4
Infrastructure	I	Active Mining Area (Open Cut Void)	5
Final Void	J	Other (Stockpiled Material and Biodiversity Corridor)	8

Source: MCCM Rehabilitation Management Plan (2023).

3.4 REHABILITATION PHASES

The rehabilitation and final land use objectives for MCCM will be achieved through the series of conceptual stages listed here:

- **Active Mining** – The RMP Form and Way (NSW Resources Regulator, 2021) document states in the context of rehabilitation, land associated with mining domains considered 'active' for the period following disturbance until the commencement of rehabilitation.
- **Stage 1: Decommissioning** – includes the removal of infrastructure associated with mining activities including preparation plants, hard stand areas, buildings, contaminated materials, hazardous materials. The RMP Form and Way document states that this phase of rehabilitation may also include studies and assessments associated with decommissioning and demolition of infrastructure or works carried out to make safe or 'fit for purpose' built infrastructure to be retained for future use(s) following lease relinquishment.
- **Stage 2: Landform Establishment** – consists of the processes and activities required to construct the approved final landform (as per the development consent and, for large mines, the approved Final Landform and Rehabilitation Plan). In addition to profiling the surface of rehabilitation areas to the approved final landform profile this phase may include works to construct surface water drainage features, encapsulate problematic materials such as tailings (none at MCCM), and prepare a substrate with the desired physical and chemical characteristics (that is, rock raking or ameliorating sodic materials). The landform design and construction part of this phase incorporates gradient, slope, aspect, drainage, substrate material characterisation and morphology.
- **Stage 3: Growing Media Development** – consists of activities required to establish the physical, chemical and biological components of the substrate required to establish the desired vegetation community (including non-native short-lived pioneer species). This phase may include spreading the prepared landform with topsoil and/or subsoil and/or soil substitutes, applying soil ameliorants to enhance the physical, chemical and biological characteristics of the growth media, and actions to minimise loss of growth media due to erosion. Additional characterisation of materials e.g. subsoils, topsoils, organic additives and overburden surface is usually required in this phase to cross check data from the earlier phases.

- **Stage 4: Ecosystem and Land Use Establishment –** consists of the processes to establish the approved final land use following construction of the final landform. For vegetated land uses, this rehabilitation phase includes establishing the desired vegetation community (e.g. seeding or planting seedlings) and implementing land management activities such as weed control. This phase of rehabilitation may also include habitat augmentation such as installation of nest boxes.
- **Stage 5: Ecosystem and Land Use Development –** consists of the activities to manage maturing rehabilitation areas on a trajectory to achieving rehabilitation objectives, completion criteria and the Final Landform and Rehabilitation Plan. Completion criteria for this phase will include components of floristic structure, nutrient cycling recruitment and recovery, community structure and function which are the key elements of a sustainable landscape.
- **Stage 6: Rehabilitation Completion** – The final phase of rehabilitation occurs where a rehabilitation area has achieved the final land use for the mining area as stated in the approved rehabilitation objectives and the approved rehabilitation completion criteria and spatially depicted in the approved Final Landform and Rehabilitation Plan. Rehabilitation areas may be classified as complete when the NSW Resources Regulator has determined in writing that rehabilitation has achieved the final land use following submission of the relevant application by the lease holder.

3.5 REHABILITATION PERFORMANCE INDICATORS AND COMPLETION CRITERIA

The Project EA (Hansen Bailey, 2011) included a table of preliminary rehabilitation criteria, and indicated that the criteria will be further developed and agreed in consultation with the relevant government agencies and community. It also stated that these criteria will continue to be revised and developed to demonstrate that the rehabilitation objectives have been achieved, and that the achievement of the completion criteria will be monitored and reported to relevant stakeholders. These preliminary rehabilitation completion criteria were reviewed and revised to consider Commonwealth and State approvals issued for the MCCM.

Condition 27 (a) of Commonwealth approval EPBC 2010/5566 requires targets (completion criteria) and performance indicators for restoration of habitat and weed management. The Rehabilitation Objectives and Rehabilitation Completion Criteria are provided at Table 3-3

Table 3-3
Rehabilitation Performance Indicators and Completion Criteria (Targets)

Domain Objective	Performance Indicator	Completion Criteria
Phase – Decommissioning of Infrastructure		
All mine-related infrastructure removed from the site and disposed of at an appropriate facility, relocated to another Whitehaven site, or sold.	Communications, power supply, water supply, and water management services and infrastructure removed.	All infrastructure components dismantled and/or removed from the site unless otherwise agreed with the Administering Authority and landholder.
	Offices, workshops and other buildings removed.	
	Fuel, chemical, explosive storage tanks and containers removed.	
	Roads and rail infrastructure removed.	
All hazardous materials removed and contaminated areas remediated.	Hazardous materials such as hydrocarbons, chemicals and explosives removed from site.	All hazardous materials removed from the site and appropriately disposed of.
	Areas where hazardous materials have been stored or transferred have been assessed for contamination and remediated if required.	Land contamination assessments and remediation (if necessary) conducted in accordance with the relevant legislative requirements.
Groundwater bores and piezometers decommissioned and sealed if no longer required for monitoring or water supply purposes.	Groundwater bores and piezometers stand pipes removed and sealed.	Bentonite seal installed, standpipe and piezometer 'cap' removed and cement grout installed to the surface.
Phase – Landform Establishment		
Mine landform integrates and generally blends in with surrounding landscape and is stable.	Minimal active erosion.	Absence of gullies > 300 mm wide or deep, or gullies stable.
	Minimal active erosion.	Absence of tunnel erosion intake or outlets points.
		Landform has an overall slope of 10 degrees and trial areas applying geomorphic landform design.
Water quality non-polluting and appropriate for conservation end land use.	Water quality.	Oil/grease ≤ 10 milligrams per litre (mg/L).
		EC < 600 micro Siemens per centimetre (µS/cm).
		pH between 6.5 and 8.5 as per the EPL.
		TSS < 50 mg/L.
Phase – Growth Medium Development		
Develop a growth media that will support a mixture of native vegetation	Soils ameliorated to sustain native ecosystems.	The depth and layering of respread subsoil and topsoil equal the results of the pre-disturbance soil testing program.
		Soil based criteria equal analogue sites (to be determined based on sampling results). Will include: 1. pH; 2. Organic matter; and 3. Phosphorous.

communities including grassy woodland, shrubby woodland/ open forest.	Absence of dispersive soil and spoil.	Greater than 75% of soil samples will have an Exchangeable Sodium Percentage ≤ 6%.

Phase – Ecosystem Establishment		Time since Initial Revegetation	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Woodland rehabilitation revegetation for White Box grassy woodland (BVT 226 and PCT 1383) and Narrow-leaved Ironbark - cypress pine - White Box shrubby open forest (BVT 316 and PCT 592) as consulted with OEH September 2018	BVT 226 and PCT 1383 Native Species Richness	**Mean Target**	1	2	3	4	5	5
		Minimum Target	1	1	2	3	3	4
	BVT 226 and PCT 1383 Native Overstorey Cover	**Mean Target**	1%	3%	4%	5%	6%	8%
		Minimum Target	0%	0%	0%	0%	0%	0%
	BVT 226 and PCT 1383 Native Mid-storey Cover	**Mean Target**	0%	1%	1%	1%	1%	2%
		Minimum Target	0%	0%	0%	0%	0%	0%
	BVT 226 and PCT 1383 Native Groundcover (Grasses)	**Mean Target**	2%	4%	6%	8%	10%	12%
		Minimum Target	2%	3%	5%	6%	8%	9%
	BVT 316 and PCT 592 Native Species Richness	**Mean Target**	1	2	4	5	6	7
		Minimum Target	1	2	3	4	5	6
	BVT 316 and PCT 592 Native Overstorey Cover	**Mean Target**	2%	4%	6%	8%	10%	12%
		Minimum Target	0%	0%	0%	0%	0%	0%
	BVT 316 and PCT 592 Native Mid-storey Cover	**Mean Target**	1%	3%	4%	5%	6%	8%
		Minimum Target	0%	1%	1%	1%	2%	2%
	BVT 316 and PCT 592 Native Groundcover (Grasses)	**Mean Target**	2%	3%	5%	6%	8%	9%
		Minimum Target	1%	2%	3%	4%	5%	6%

Domain Objective	Performance Indicator	Completion Criteria				
Phase – Ecosystem Sustainability		**Benchmarks**	**RBS* (80%) BVT NA 226**	**BVT NA 226**	**PCT BBS 1383****	**Local Reference**
Woodland rehabilitation revegetation for White Box grassy woodland (BVT 226 and PCT 1383) and Narrow-leaved Ironbark - cypress pine - White Box shrubby open forest (BVT 316 and PCT 592) as consulted with OEH September 2018	BVT 226 and PCT 1383 Native Species Richness	**Mean Target**	18	23	33	60
		Minimum Target	13	18	28	55
	BVT 226 and PCT 1383 Native Overstorey Cover	**Mean Target**	Not Applicable	25%	17%	13%
		Minimum Target	Not Applicable	6%	Not Applicable	Not Applicable
	BVT 226 and PCT 1383 Native Mid-storey Cover	**Mean Target**	Not Applicable	5%	2%	4%
		Minimum Target	Not Applicable	0%	Not Applicable	Not Applicable
	BVT 226 and PCT 1383	**Mean Target**	Not Applicable	40%	45%	38%

Domain Objective	Performance Indicator	Completion Criteria				
	Native Groundcover (Grasses)	**Minimum Target**	Not Applicable	30%	Not Applicable	Not Applicable
		Benchmarks	**RBS* (80%) BVT NA 316**	**BVT NA 316**	**PCT BBS 592****	**Local Reference**
	BVT 316 and PCT 592 Native Species Richness	**Mean Target**	24	30	35	Not Applicable
		Minimum Target	19	25	30	Not Applicable
	BVT 316 and PCT 592 Native Overstorey Cover	**Mean Target**	Not Applicable	40	59	Not Applicable
		Minimum Target	Not Applicable	25	Not Applicable	Not Applicable
	BVT 316 and PCT 592 Native Mid-storey Cover	**Mean Target**	Not Applicable	25	30	Not Applicable
		Minimum Target	Not Applicable	6	Not Applicable	Not Applicable
	BVT 316 and PCT 592 Native Groundcover (Grasses)	**Mean Target**	Not Applicable	30	22	Not Applicable
		Minimum Target	Not Applicable	20	Not Applicable	Not Applicable
Phase – Relinquishment						
Unrestricted fauna movement across the rehabilitation.	Presence of a range of fauna assemblages throughout the rehabilitation.	A consistently observed increase in fauna species richness and/or abundance within each rehabilitation domain across at least half of the monitoring sites in that domain.				

* Leard Forest Regional Biodiversity Strategy Stage 2 (Umwelt, 2017) Table 2.3 Strategic Biodiversity Performance Measures and Preliminary Completion Criteria on Page 31 for Active Revegetation

** Based on OEH (2017) Visual Information Database for Export of Plant Community Types (PCT) Benchmarks for Brigalow Belt South (BBS) 1383 White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions and 592 Narrow-leaved Ironbark - cypress pine - White Box shrubby open forest in the Brigalow Belt South Bioregion and Nandewar Bioregion.

Regent Honeyeater, Swift Parrot, Corben's Long-eared Bat and the Box-Gum Woodland CEEC

The completion criteria are also relevant to the re-establishment of potential habitat for the Regent Honeyeater, Swift Parrot and Corben's Long-eared Bat and the Box-Gum Woodland CEEC. The Regent Honeyeater, Swift Parrot and Corben's Long-eared Bat all use woodland and forest habitats that will be established on the post-mine landforms in accordance with Condition 25 of Commonwealth approval EPBC 2010/5566. Of the 1,665 ha of woodland and forest habitats that will be established on the post-mine landforms, 544 ha will be revegetated with species consistent with Box-Gum Woodland CEEC in accordance with Condition 25 of Commonwealth approval EPBC 2010/5566.

4 SOIL MANAGEMENT

4.1 SOIL MANAGEMENT PROTOCOL

Soil management procedures have been developed and are documented in the MCCM Soil Management Protocol. These procedures enable soil resources within disturbance areas to be characterised, stripped, stockpiled and reused appropriately.

The soil management procedures have been developed to meet the requirements of the State and Commonwealth approvals for the MCCM. In particular, the requirements of Condition 39 of Schedule 3 of PA 10_0138 (i.e. preparation of a soil management protocol), and Conditions 26(b), 27(c) and 27(d) of EPBC 2010/5566 (refer to **Table 2-1**).

A summary of the procedures/management measures contained in the MCCM Soil Management Protocol is provided below. In the event of an inconsistency between this MSRP and the Soil Management Protocol, the latest version of the Protocol should be used.

- **Soil Profile**: Nine soil types/groups were identified within the Project Boundary as part of the baseline soil surveys conducted for the Project EA (Hansen Bailey, 2011). The Soil Management Protocol lists the nine types, their key constraints, and the specific management measures to be adopted for each type, including recommended stripping depths, and suggested soil amelioration and fertiliser rates.
- **Soil Testing Procedure**: Prior to stripping, soil will be sampled to:
  - identify the soil resource prior to stripping;
  - assist with the preparation of a soil balance/inventory to assist with rehabilitation planning; and
  - to determine if the soil requires amelioration.

  The soil sampling will be undertaken at a minimum sampling frequency of one sample point per 20 ha of each soil type identified, and will include an assessment of soil depth and analysis of soil characteristics.
- **Soil Balance**: The amount and type of soil stripped from each area will be documented. This information will be recorded in a centralised inventory. The soil balance for the MCCM will be updated and reviewed regularly as progressive stripping and rehabilitation is undertaken.
- **Clearing and Grubbing**: Vegetation clearing will be undertaken using the management practices contained in the BMP (refer to WHC_PRO_MC_Material Salvage Protocol and WHC_PRO_MC_Clearing Operations). Records of salvaged vegetation (particularly hollow trunks) and large rocks will be retained, and, where suitable, these materials will be used in rehabilitation areas to provide fauna habitat opportunities. The clearing window is between 15 February to 30 April each year.
- **Soil Amelioration**: The soil testing results will be used to determine if physical and/or chemical amelioration is required, and the rates and method of application. The Soil Management Protocol provides indicative ameliorant application rates for the nine main soil types/groups

found at the MCCM. Additional soil testing following revegetation will be undertaken to determine further amelioration requirements and rates.

- **Soil Stripping**: Soil will be stripped depending on the soil types/groups. The Soil Management Protocol provides recommended soil stripping depths for the nine main soil types/groups found at the MCCM. As described in the Soil Management Protocol, subsoil stripping is not recommended for six of the nine soil types found at the MCCM due to their physical and/or chemical limitations. The subsoils of the three soil types that are suitable will be stripped and reused underneath the corresponding stripped topsoil where appropriate and practicable.

  Earthmoving plant operators will be supervised to ensure that stripping operations are conducted in accordance with the stripping plan and in situ soil conditions. The process summarised below for stripping topsoil should be followed:

  - The area to be stripped of soil will be clearly demarcated and surveyed.
  - Soil will not be stripped during excessively wet or dry conditions.
  - Where practical, stripped material will be placed directly onto reshaped overburden and spread immediately (if mining sequences, equipment scheduling, and weather conditions permit) to avoid the requirement for stockpiling and costs with double handling.

As part of the planning process, sufficient area for stockpiling, placement or burial of soil will have been identified and these areas will be accessible.

- As part of the planning process, temporary drainage, sediment control and structures to prevent erosion will be developed for each area if required.

- **Soil Stockpiling**: The Soil Management Protocol requires a description of the soil stockpiling requirements for each area to be cleared (e.g. stockpile locations, methods, depths and reporting requirements). The following general process for soil stockpiling will be followed:
  - Where possible, stockpiles will be located in areas away from drainage lines and/or drainage will be diverted around stockpiles to prevent erosion.
  - If required, sediment controls will be installed downstream from stockpiles to prevent contamination of clean water.
  - Stockpile height will be limited to the practicable minimum.
  - New stockpiles will be continually created and old ones will be used in order of age.
  - More erodible materials will be placed on flatter areas to minimise the potential for erosion.
  - The surface of soil stockpiles shall be contour scarified in order to promote infiltration and minimise erosion until vegetation is established.
  - When necessary, stockpiles will be seeded with native grasses, tree or shrub species to protect the stockpile from raindrop splash erosion, aerate the soil to reduce anaerobic conditions, enhance organic carbon levels and suppress weeds.

- **Characterisation**: Characterisation of subsoil for erosion (primarily dispersion) and agronomic parameters (pH, EC, Cation Exchange Capacity [CEC] and metals) will be undertaken. Sampling will determine if the subsoil is suitable for rehabilitation use or if it requires amelioration or selective handling and placement. The Soil Management Protocol provides the parameters and limits that will be used to classify the suitability of subsoil.

  If not able to be ameliorated, unsuitable subsoil and spoil, including Potentially Acid Forming (PAF) material, will be capped with a minimum of 5 m of suitable inert spoil (compacted depth) or, more appropriately, capped to a depth greater than the minimum rooting depth of the vegetation. The Soil Management Protocol will identify where unsuitable spoil and subsoil has been placed for each stripping area.

- **Soil Respreading**: Stockpiled soil will be assessed for weed infestation prior to re-spreading. If determined to be unsuitable, stockpiled soil will be buried as mentioned above. If reusable, stockpile soil re-spreading will be undertaken with the following measures:

  - When planning soil re-spreading, MCCM will consider the information contained in the stockpile inventory (i.e. amount, age, type), climatic conditions, the location and distance of the stockpile from the area to be rehabilitated, the pre-mining vegetation communities (i.e. what communities were growing in the area prior to stripping), and the vegetation communities and final land use proposed for the rehabilitation area.
  - During the removal of soils from the stockpiles, care will be taken to minimise structural degradation of the soils.
  - Material will be spread in even layers at an appropriate thickness, and will consider the soil depth information obtained through the pre-stripping soil sampling. During the life of the MCCM monitoring and BGWRPP research studies will be undertaken to refine the soil depth used in for each soil type and rehabilitation application.
  - All soils will be lightly ripped prior to seeding. This will be conducted on the contour and will be managed to minimise the potential for unsuitable spoil material being ripped up to the surface.
  - Where necessary, slow-release fertiliser application will be conducted prior to seeding while the surface is being lightly scarified to create an optimal seed bed. The application rates and types of fertiliser used will be selected to minimise the potential for weed invasion.

- **Monitoring, Responsibility and Reporting**: Implementation of the various stages of soil stripping, stockpiling and reuse will be monitored and periodically reviewed. Where appropriate, management practices will be revised and updated based on operational experience and where improved performance/outcomes are identified.

  All staff and contractors have a responsibility to follow the processes and procedures for managing soils, as outlined in the Soil Management Protocol. All staff and contractors must ensure that they have the necessary permits and approvals in place prior to undertaking works which will disturb soils.

  Soil stripping and placement activities for each work area will be documented. Soil stripping and placement will be planned based on soil testing and updated following stripping activities.

The confirmed location of either stockpiled material or the direct placement of material will be recorded.

Soil stockpiling and rehabilitation will be assessed and reported annually as part of the MCCM Annual Review.

4.2 SUMMARY OF AVAILABLE SOIL SURVEY AND STRIPPING INFORMATION

Soil Survey

In accordance with the Soil Management Protocol, MCCM conducted a soil survey and developed a growth media inventory for the mine landform areas (Landloch Pty Ltd, 2014). Soil surveys of the remaining areas of the planned MCCM disturbance footprint will be conducted progressively over the mine life prior to the commencement of each stage of land clearing (i.e. as summarised in Section 4.1 and described in detail in the Soil Management Protocol).

The soil survey conducted by Landloch (2014) covered a 392 ha area and included the initial development area of the open cut, the initial out-of-pit overburden emplacement area, and associated mine infrastructure (e.g. haul roads, stockpiles and water management infrastructure). The soil survey was undertaken at a density of at least one sample point per 20 ha of each soil type identified. **Figure 4-1** shows the sample locations and the five soil landscapes that were identified (i.e. Leard, Blue Vale Slopes, Blue Vale Footslopes, Blue Vale Flats and Hartfell).

Each soil profile class was described, classified and quantified for the purpose of evaluating soil layers as plant growth media for rehabilitation. Soil samples were taken and their physical and chemical properties were analysed. The soil survey report (**Appendix C**) provides detailed descriptions of each soil profile class that was identified, including an analysis of the observation and laboratory data, and a discussion of the key features and potential management issues to be considered when salvaging soils for re-use as plant growth media.

Soil Stripping

Soil stripping and stockpiling activities have been conducted at the MCCM since construction and development of the mine commenced. The main soil striping areas have been located in the initial open cut development area and the overburden emplacement area.

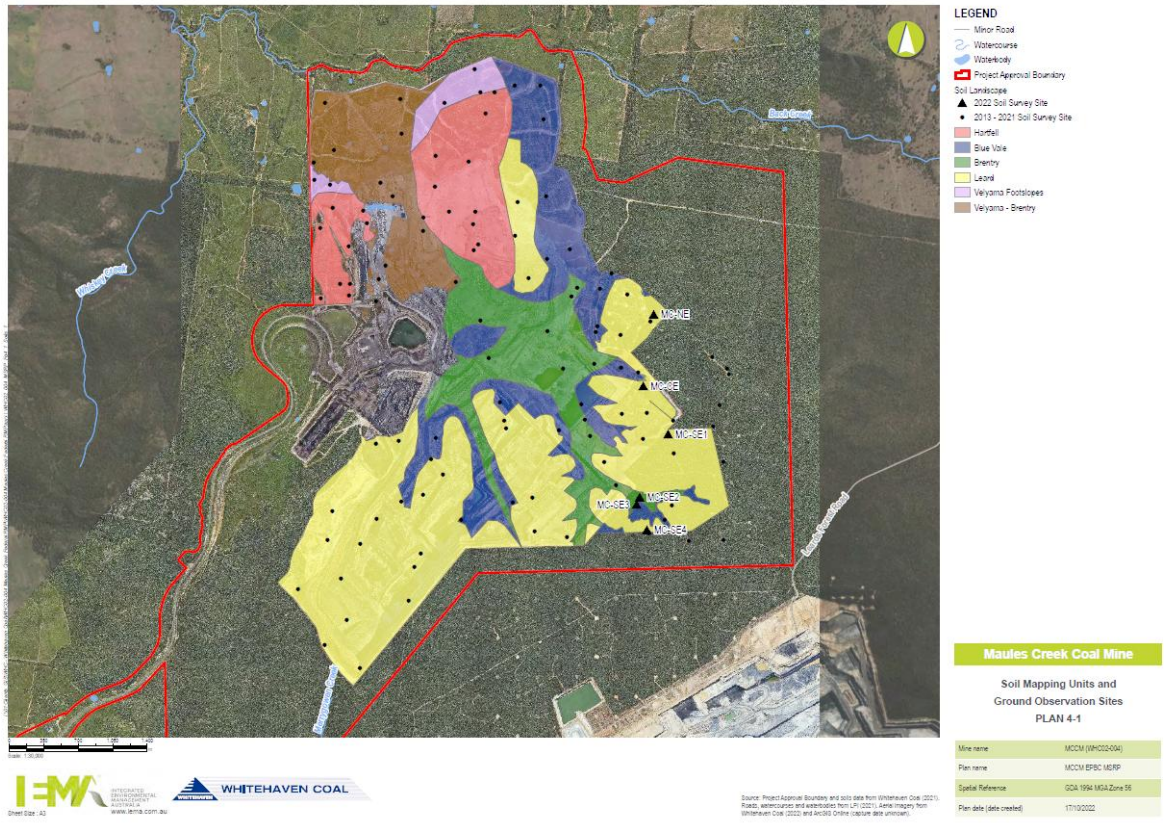
Table 4-1 summarises the volume and type of soil that has been stripped and stockpiled from the main mine disturbance areas.

As per the approved BMP, vegetation clearing at the MCCM will be conducted annually in campaigns during the period from 15 February to 30 April each year, except under exceptional circumstances agreed to by the Secretary of the DP&E (DPHI at time of publishing). The amount of land cleared each year will be restricted to the practicable minimum required for the safe and efficient operation of the MCCM. Soil stripping of the cleared areas will occur when required and following completion of the necessary pre-stripping soil surveys.

Table 4-1
Summary of Soil Types and Areas Stripped and Stockpiled at the MCCM

Topsoil Balance (M^3)											
Area	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**Total**
MIA / Construction	539,166	145,990	-	-	-	-	-	-	-	-	685,156
Mining Operations	252,490	349,928	852,524	762,718	251,075	225,173	127,086	72,000	92,029	178,670	3,163,693
Still to clear / Strip	-	-	-	-	-	-	-	-	-	-	381,909
Totals	791,656	495,918	852,524	762,718	251,075	225,173	127,086	72,000	92,029	178,670	4,230,757
EA Total for Rehab	-	-	-	-	-	-	-	-	-	-	2,368,000
Net difference	-	-	-	-	-	-	-	-	-	-	1,862,757

Figure 4-1 Soil Mapping Units and Ground Observation Sites



5 REHABILITATION MANAGEMENT

5.1 REHABILITATION PROGRAM

As described in **Section 1.4**, the Maules Creek RMP covers the rehabilitation management measures to be undertaken during active mining rehabilitation of the site and into subsequent rehabilitation phases.

A schedule of proposed rehabilitation is presented in the MCCM Annual Rehabilitation Report and Forward Program on an annual basis. The Annual Rehabilitation Report summarises the rehabilitation activities undertaken at MCCM in the previous 12 months. The Forward Program outlines proposed activities spanning a forecast three-year period and provides a description of the scheduled rehabilitation activities. Detailed figures will be prepared as part of the Forward Program, with these outlining activities over the next three years. The Annual Rehabilitation Report and Forward Program is published annually on the MCCM website for public access and the schedule is shown pictorially.

Detailed mine planning is completed annually and outlines proposed mining/disturbance and rehabilitation areas. Beyond the mine planning shown in Forward Program forecast years, mine planning remains conceptual.

5.2 REHABILITATION METHODOLOGY

5.2.1 Mine Landform Reshaping and Design

The final outer surfaces of the mine landforms will be designed to be safe, stable, provide an adequately drained post-mining landform, and have a shape that is consistent with the types of naturally occurring landform features in the region. They will also be designed to provide a final surface that facilitates revegetation and growth of species that occurred in the native woodland and forest communities that were present prior to the commencement of mining.

In some instances, parts of the mine landforms will be constructed in their final configuration from the outset (e.g. some batters of the out-of-pit overburden emplacement and some cut and fill areas associated with the mine-related infrastructure). However, for the majority of the out-of-pit overburden emplacement area and the open cut, the working batters and berms will need to be pushed back/down (or in-filled with overburden in the case of the open cut) to form the final mine landform surface. Micro-relief features and permanent water management structures (e.g. drop structures between batters and final bunds) will also be installed as part of this process.

The designs of final landforms will be refined as part of the overall mine planning process, in a manner that is consistent with the overall rehabilitation and mine closure concept for the MCCM. The RMP will provide detailed descriptions and plans of the landform reshaping activities and final designs throughout the life of the MCCM.

Further detail on the methods of final landform design and construction at MCCM can be found in Section 6.2.3 of the RMP.

5.2.2 Surface Preparation

Surface preparation activities will be undertaken during the landform establishment and growth media phases of rehabilitation. Rehabilitation of the MCCM will involve replacement of soil in areas where it has been stripped, and surface conditioning in areas where the soil was left *in situ*.

Prior to topsoil being respread over subsoil or overburden, the subsoil or overburden will be shaped, as described in the previous section. If determined to be required based on soil testing results, ameliorants such as gypsum will be incorporated into the topsoil. Subsoil and/or topsoil will then be spread over the ripped area. The depth and layering of respread soil will be based on the results of the pre-disturbance soil testing program (refer to **Section 4.1**).

The surface of the topsoil will be ripped along the contour or cross-ripped to reduce compaction.

It is expected that the best results will be obtained when ripping of the replaced soil is undertaken when the soil is moist, and when it is undertaken immediately prior to sowing. The respread soil surface will be scarified prior to, or during seeding.

5.2.3 Amelioration of Growing Media

Some soils and mine spoils may have physical and chemical characteristics that will otherwise limit plant establishment and have a high potential for erosion. The pre-disturbance soil testing program will be used to determine whether these materials can be ameliorated (and the required application rates), or whether they should be left and buried within the overburden emplacement areas. As per the BGWRPP (Section 7.3); a research project investigated the root architecture of revegetation within overburden regolith. The outcomes and results of the BGWRPP will be incorporated into future MSRP updates.

Mine soil and spoils will typically be ameliorated with one or more of the following if required:

- Agricultural gypsum (i.e. To treat dispersion, calcium to magnesium ratio, and improve structure and water holding capacity);
- Vegetation mulch generated on site (i.e. To increase organic carbon, and improve the soils water holding capacity and soil biota levels); and/or
- Fertiliser (e.g. slow-release native plant fertiliser where possible).

Some soils may also contain soil microbes, such as rhizobia bacteria, which assist leguminous species such as *Acacias* and peas to grow and eventually contribute to increasing the nitrogen content of the system, which is often the most growth limiting nutrient in spoil (UoN, 2012).

Where topsoil is unavailable or of insufficient quality, subsoil or mine spoil may be able to be ameliorated to form a suitable growing media. The pre-disturbance soil testing program (**Appendix C**) and the

rehabilitation monitoring and BGWRPP research activities will be used to determine whether subsoil amelioration is practicable.

5.2.4 Erosion Control

Erosion control measures will be used at the MCCM rehabilitation areas in order to manage dispersive soils and spoils, provide soil surface cover, and to minimise the creation of concentrated surface water flow conditions. Erosion control works will include but are not necessarily limited to the measures listed below.

- Amelioration of dispersive spoil to minimise the risk of rill, gully and tunnel erosion and to allow the infiltration of surface water (reduce the amount and velocity of surface water). This will be determined during the soil testing program outlined in the Soil Management Protocol.
- Contour scarification of compacted surfaces to encourage infiltration and surface roughness.
- Use of cover crops including salt tolerant sterile annual grasses, native grasses and native legumes to minimise raindrop and sheet erosion of reshaped areas.
- Use of inert rock mulches of appropriate stone sizes and cover where effective and appropriate.
- Vehicle access will be predominantly restricted to designated tracks on mine landforms that have been revegetated to minimise ground disturbance (e.g. erosion and/or compaction).
- Sediment dams and sediment control structures will be designed in accordance with *Managing Urban Stormwater: Soils and Construction* Volume 2E – Mines and Quarries (DECC, 2008) and *Managing Urban Stormwater, Soil and Construction* (Landcom, 2004). Sediment basins and other water storages will not be located on overburden emplacement areas in order to reduce the potential for tunnel erosion.
- Structural erosion controls may be used on overburden emplacement areas if necessary until vegetation cover is sufficient to provide adequate erosion protection.
- In the larger drainage systems such as clean water drains and modified natural drainage systems, erosion control methods such as cross vanes, rock vanes and J-hook vanes will be used to provide channel bed and bank protection.
- The use of contour banks in regular intervals on non-geofluvial landforms.
- Minimising runoff from the active dump reporting to the downslope rehabilitated landform.
- Avoiding placement of topsoil stockpiles on formed drainage lines.

The management of erosion and sediment control for all mining and associated disturbances is detailed further in the MCCM Water Management Plan, and for initial clearing activities via the Land Disturbance Protocol, which is contained in the BMP. For further detail regarding erosion and sediment control in rehabilitation activities refer to Section 6.2.1.10 of the RMP.

5.2.5 Timing of Revegetation Works

Rehabilitation will commence as soon as practicable following disturbance in accordance with Condition 27b of Commonwealth approval EPBC 2010/5566 to minimise the potential for erosion and weeds. The mechanism for planning the timing and schedule of rehabilitation activities is outlined in **Section 8.2**. Rehabilitation works can be carried out at any time of the year.

MCCM carry out rehabilitation and revegetation works in accordance with the WHC-STD-ENV-Climate Adaption Protocol. The protocol provides employees and contractors with the required knowledge to identify risks and develop responses associated with rehabilitation activities in changing climatic conditions.

Livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).

5.2.6 Vegetation to be Established

All of the remnant native vegetation communities that were mapped in the Project Boundary prior to mining provide potential habitat resources for the Regent Honeyeater, Swift Parrot and Corben's Long-eared Bat as these species all use woodland and forest habitats (Cumberland Ecology, 2011). Condition 25 of Commonwealth approval EPBC 2010/5566 requires no less than 1,665 ha of woodland and forest to be established on the post-mine landforms. Woodlands and forests to be established may include, but are not necessarily limited to the following vegetation communities that occur in the Project Boundary (as mapped by Cumberland Ecology, 2011):

- White Box – White Cypress Pine Grassy Woodland (associated with White Box-Yellow Box-Blakely's Red Gum Grassy Woodland CEEC);
- Silver-leaved Ironbark Heathy Woodland;
- White Box – Narrow-leaved Ironbark – White Cypress Pine Grassy Open Forest (associated with the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland CEEC);
- White Box – Narrow-leaved Ironbark – White Cypress Pine Shrubby Open Forest; and
- Dwyer's Red Gum – Ironbark Woodland.

No less than 544 ha of the post-mine landforms will be revegetated with species consistent with Box-Gum Woodland CEEC in accordance with Condition 25 of Commonwealth approval EPBC 2010/5566. The Box-Gum Woodland CEEC is represented in the Project Boundary by the vegetation communities listed in **Section 2.1**. As per the BGWRPP (Section 7.3); a trial of optimum revegetation seed mixes will be undertaken as a research project to better inform management decisions on the methods used to undertake revegetation of Box Gum Woodland on mine rehabilitation. The outcomes and results of the BGWRPP will be incorporated into future MSRP updates.

The placement of these vegetation communities will depend on final slopes, drainage and subsoil and topsoil characteristics. Suitably qualified specialists will be commissioned to provide direction about the rehabilitation and restoration of the Box-Gum Woodland CEEC, where appropriate.

As described in **Section 5.1**, future versions of the RMP will include specific details of the locations and composition of the vegetation communities to be established in rehabilitated areas once the necessary mining planning and design processes have been undertaken. At a minimum, revegetated communities will be at least 80% of the analogue sites at the time of relinquishment.

5.2.7 Soil Seed Bank Management

One of the key steps in the successful rehabilitation of native species is the management of the soil seed resource. For example, surveys of rehabilitated areas at the adjacent Boggabri Coal Mine have demonstrated natural regeneration of native species from the topsoil (Boden & Associates, 2011; Parsons Brinckerhoff, 2011). Further BGWRPP (Section 7.3); another research project investigated the soil seed bank at MCCM to better inform management decisions on soil seedbank management. The outcomes and results of the BGWRPP will be incorporated into future MSRP updates.

The topsoil seed bank is an important reserve of indigenous plant seeds and soil microflora, which will assist with the preservation of local genetic material and the reestablishment of a similar range and mix of species of the original vegetation in the rehabilitation area. Soil stripping and topsoil procedures will aim to maximise the integrity of the seed bank in stripped material.

5.2.8 Plant Species Selection for Revegetation

It is anticipated that natural seed germination from the soil seed bank will need to be assisted with direct seeding. Planting of tube-stock will also be used to supplement natural regeneration from the seed bank and direct seeding as required. In particular, tube-stock may be necessary to ensure the appropriate composition and density of long-lived woody vegetation needed for threatened fauna. A combination of all three techniques is likely to be used in order to achieve the rehabilitation objectives in certain areas. As per the BGWRPP (Section 7.3); a trial of optimum revegetation seed mixes will be undertaken as a research project to better inform management decisions on the methods used to undertake revegetation of Box Gum Woodland on mine rehabilitation. The outcomes and results of the BGWRPP will be incorporated into future MSRP updates.

Seed and tube-stock used in revegetation will include a wide variety of grasses (including tussock grass species), herbs, forbs, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.

Local endemic species will be preferentially used, however consideration will be given to the use of a high-quality seed sourced further from the site over a low quality more local seed source.

Revegetation species will include the main strata species of each vegetation community and species to assist in the initial development of the ecosystem including short lived *Acacia* species to contribute nitrogen to the developing system but not at excessive densities (UoN, 2012). *Acacia* species to be incorporated in the seed mix from vegetation communities include *Acacia decora,* and *A. cheelii*, and will consist of both tree and shrub varieties.

Section 6.2.5 of the RMP provides a species list of those main strata species of each vegetation community.

Temporary Cover

Temporary or interim rehabilitation will be used where required to provide cover to minimise erosion and dust impacts, as well as inhibiting the establishment of weeds. This will involve the application of a temporary sterile cover crop for short term uses, and native grasses for longer term requirements. The species that are used will be selected so as to not be likely to impede the final revegetation of native vegetation, particularly the Box-Gum Woodland CEEC.

5.2.9 Seed Collection, Application and Storage

Native seed collection will be undertaken in the areas to be cleared where practicable, and from the remainder of the MCCM mining tenements as well as regionally providence seed sourced away from the region considering climate resilience and the potential impacts of climate change. Seed will also be collected from the offset properties (where suitable), as required to meet future revegetation needs as per the MCCM BMP (2025) and ensure that seed is utilised from more than one population to maintain viability (UoN, 2012).
Seed collection, management and storage will be undertaken in consideration of Greening Australia (various dates) *Florabank Guidelines* and as described in Rawlings *et al.* (2010) for local and regional provenance seed collection includes:

- collection of seed from several source sites with similar rainfall, soil, altitude, aspect and slope position to the revegetation site to ensure they are most adapted to the landscape and
- environmental conditions;
- collection of seed from between 20-50 plants of each species for genetic diversity; and
- collection of seed from plants spaced approximately three plant-heights apart to prevent collection
- of too many closely related seeds.

The seed species, location of collection, volume of seed and storage methods will be documented appropriately as part of the reporting requirements for the RMP.

If seed collection campaigns are undertaken some considerable time prior to sowing, or if there is remaining seed after sowing, the seed will be stored prior to use to maintain germination rates and seed vigour. The length of time that the seed is stored will be kept to a minimum as seed vigour and germination rates can deteriorate over time. High temperature and humidity are the primary causes of seed deterioration over time.

Further details on the management of seed are outlined in Section 6.2.5 of the RMP.

Seed collection and propagation will be undertaken as per Section 3.3 of the BMP (2025).

Seed Preparation and Application

Pre-treatment of seed is often required to mimic the natural process that creates optimal conditions for seed germination.

The rate and depth of seed application will be calculated based on the planned target plant density and species mix. The establishment percentage under field conditions can be affected by temperature, moisture, soil type, sowing depth, insects and disease. The establishment rate of directly sown seed is highly variable (i.e. can be less than 2%) and varies according to field conditions and the sowing operations employed.

5.2.10 Habitat Creation for Matters of National Environmental Significance

The rehabilitation of the MCCM will include fauna habitat resources to encourage fauna use. The MCCM's management measures to maximise biological resources for habitat creation are detailed in the BMP as well as Section 6.2.6 (Ecosystem and Land Use Development) of the RMP. Habitat creation begins at the active mining phase through pre-clearing surveys and will continue into the ecosystem and land use development phase as rehabilitation matures.

Regent Honeyeater

The Regent Honeyeater is a generalist forager, which mainly feeds on the nectar from a wide range of Eucalypts and Mistletoes. In consideration of the potential foraging habitat requirements of the Regent Honeyeater, a variety of box, ironbark and gum eucalypt species will be established on the post-mine landforms, including, but not limited to, White Box (*Eucalyptus albens*), Yellow Box (*E. melliodora*), Blakely's Red Gum (*E. blakelyi*), Mugga Ironbark (*E. sideroxylon*), Allocasuarina and Casuarina species.

Swift Parrot

In consideration of the potential habitat requirements of the Swift Parrot, a variety of winter-flowering box, ironbark and gum eucalypt species will be established on the post-mine landforms, including, but not limited to, White Box (*E. albens*) and Mugga Ironbark (*E. sideroxylon*).

Corben's ***Long-eared Bat***

The Corben's Long-eared Bat forages on insects and roosts in tree hollows in the locality surrounding MCCM (**Section 2.1**). In the short to medium term, the proposed revegetation of box, ironbark and gum eucalypt species can provide potential sources of prey.

Hollow limbs salvaged during vegetation clearance at the mine will be installed in select trees without hollows (once the revegetation is sufficiently mature to hold the hollow limb) providing a potential roosting resource.

The success of this hollow salvage program for the Corben's Long-eared Bat will be assessed as part of the ongoing rehabilitation monitoring program.

Other Habitat Creation

Fallen logs, wood ground debris, and large flat or creviced rocks will be relocated to rehabilitation areas before, during and after clearing as per the Land Disturbance Protocol. More information on the management and use of biological resources in rehabilitation is found in Section 6.2.1.11 of the RMP.

5.2.11 Rehabilitation Maintenance and Contingency Measures

Active management in response to monitoring and BGWRPP research activities in the rehabilitation areas will be completed as required to address any issues of concern identified during monitoring.

Maintenance activities will be developed in response to rehabilitation which is not performing on a case-by-case basis to ensure that these activities are focussed toward the achievement of rehabilitation objectives and targets. Maintenance works may include the following activities:

- Supplementary seeding or planting of vegetated areas;
- Application of soil ameliorants;
- Weed and pest control;
- De-silting or repair of drainage structures and sedimentation dams; and
- Infilling, regrading and revegetation of eroded areas.

Supplementary Seeding

Supplementary seed broadcasting, or re-seeding, will be undertaken in areas where revegetation success is considered to be sub-optimal. The sufficiency of vegetation establishment will be determined based on monitoring results and the comparison against the appropriate rehabilitation objective and/or completion criteria and their analogue sites. Seed for broadcasting will be treated where necessary prior to broadcasting to maximise germination rates.

Application of Soil Ameliorants

Soil testing will be undertaken to determine if additional amelioration is required. Additional applications of ameliorants may be required to ensure an optimum growing medium. It is generally not possible to correct soil deficiencies by a single application of fertiliser. It is possible, however, to slowly build up a bank of available elements in the soil from which vegetation is able to draw and which is replenished by the eventual death and decay of the plants (i.e. the nutrients are continually recycled through the soil and the vegetation). Since many of the available nutrients are held in the organic soil fraction, this recycling condition cannot be achieved until adequate levels of organic matter have accumulated in the soil (Hannan, 1995).

Soil will be collected and managed on-site in accordance with the Soil Management Protocol in order to maximise the preservation of the soil seed bank and soil microbes.

Weed and Pest Control

Condition 27a of the Commonwealth approval EPBC 2010/5566 requires this MSRP to include weed management measures to ensure effective rehabilitation of Box-Gum Woodland CEEC.

Weed management will include the following actions:

- Vehicles and equipment minimise the transport of weed seed;
- Areas will be inspected regularly for the presence of weed species;
- Relevant personnel will be provided with pictures and descriptions of known weed species and asked to report incidental sightings;
- Treatment of entire infestations where possible;
- Re-treatment of recurring infestations at regular intervals;
- Mapping of key weed infestations following monitoring to track progress and focus control activities where necessary; and
- Prompt rehabilitation of land post disturbance.

Weed infestation on rehabilitated areas are managed in accordance with the Maules Creek Weed Management Procedure. Weeds are monitored by MCCM Personnel; staff are required to complete biannual weed inspections of all areas within the MCCM's project boundary. Key information is recorded on field sheets and logged into MCCM's environmental data management system. The location of identified weeds will also be logged into MCC's GIS records. This spatial data will be used to help guide and plan weed control campaigns and monitor and review MCCM's performance in weed management.

Pest control actions will be undertaken with reference to the appropriate Code of Practice and Standard Operating Procedures (these documents are available on the DCCEEW website).

Livestock Management

Livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding) and all those areas with a Land Capability Class unsuitable for grazing (i.e. Classes VI and VII).

5.2.12 Rehabilitation and Mine Closure Financial Provisioning

This section outlines the commitment to provision funds for the long-term management and protection of the mine site, as per Condition 27g of the EPBC 2010/5566.

Whitehaven has a mine site rehabilitation and mine closure provisioning process which is used to estimate the liabilities associated with rehabilitating each of its operations in accordance with the operating approvals, mining lease conditions, applicable mine closure plan and relevant guidelines. This is done using the NSW Resources Regulator's Rehabilitation Cost Estimation (RCE) tool. The cost estimate includes consideration of mobilisation costs, project management costs, monitoring costs and a contingency. It also includes indexation for inflation where appropriate. The degree of existing disturbance and the status of rehabilitation at the site is factored into the consideration of rehabilitation and mine closure liability.

A rehabilitation cost estimate is undertaken in line with MCCM's requirements under CL 375, ML 1701, and ML 1719. The resultant rehabilitation security is held by the NSW Resources Regulator.

MCCM will regularly review and revise its rehabilitation and mine closure provisioning for the MCCM during the life of the project, and will provide the necessary security deposits as required by the operating approvals for the mine.

6 RISK ASSESSMENT OF REHABILITATION-RELATED ASPECTS

Condition 27 of Commonwealth approval EPBC 2010/5566 requires the MSRP to provide a description of the potential risks to successful management and rehabilitation on the project site, including weed invasion, and a description of the contingency measures that will be implemented to mitigate these risks.

The aspects and hazards associated with rehabilitation of the MCCM were identified through a review of the conceptual closure design, relevant approval conditions for the MCCM, the baseline studies and environmental impact assessment conducted for the Project EA (Hansen Bailey, 2011) and rehabilitation methods and performance in the Industry and at Whitehaven's other mines.

On 19 April 2022, MCCM undertook a Rehabilitation Risk Assessment for the purpose of assessing the low, medium, and high risks to rehabilitation across phases as per the Rehabilitation Management Plan Form and Way (NSW Resources Regulator, 2021). This Rehabilitation Risk Assessment was developed to satisfy requirements of the Rehabilitation Reforms as well as Condition 27f of EPBC 2010/5566.

For the purposes of this MSRP, the Rehabilitation Risk Assessment (2022) methodology is summarised here. The full Rehabilitation Risk Assessment including Treatment Plans as key contingency measures can be found in Appendix A of the RMP (the link to which is in **Appendix B** of this MSRP). The Rehabilitation Risk Assessment is current as of December 2024, however the RMP published on the MCCM website should be referred to for the latest risk ratings.

The Rehabilitation Risk Assessment was undertaken in accordance with the AS/NZS ISO 31000:2018 Risk Management Guidelines and Rehabilitation Risk Guideline (NSW Resource Regulator, 2021). The Rehabilitation Risk Assessment used the Whitehaven Group Qualitative Risk Assessment Template, including its Risk Matrix and Risk Guide. The Risk Guide defines the type and duration of potential impacts based on five categories of consequence (minor, moderate, serious, major and critical). Similarly, there are five categories of likelihood of an event causing a particular impact. The Risk Matrix is presented below in **Table 6-1**. According to the MCCM Risk Matrix, Treatment Plans must be considered for those risks rated as medium to high. Risks rated as critical must have an associated Treatment Plan developed immediately.

Table 6-1 Risk Matrix

		Consequence Rating				
		1. Negligible	2. Minor	3. Medium	4. Major	5. Catastrophic
Likelihood	5. Almost certain	M5	H10	H15	C20	C25
	4. Likely	L4	M8	H12	H16	C20
	3. Possible	L3	M6	M9	H12	H15
	2. Unlikely	L2	L4	M6	M8	H10
	1. Rare	L1	L2	L3	L4	M5

Sections 4 and **5** of this MSRP describe the rehabilitation methodologies which reflect the risk ratings in the Rehabilitation Risk Assessment.

7 MONITORING PROGRAM

The MCCM rehabilitation monitoring program will involve the gathering of information and data, systematic record keeping of all management inputs, regular review and analysis of the data, assessment of compliance with rehabilitation and mine closure criteria, and to drive continuous improvement. Further detail is included in Section 8 of the RMP.

7.1 ANALOGUE SITE BASELINE MONITORING

A number of permanent transects will be established within rehabilitated areas. Corresponding transects will also be established in adjacent undisturbed (analogue) communities. The information obtained will be used to track the rehabilitation progress, predict self-sustainable values and compare the rehabilitation and analogue sites. Remedial management strategies will be implemented where necessary. The results of analogue site monitoring will inform the refinement of Completion Criteria over the active mining phase of rehabilitation.

The rehabilitation completion criteria in the RMP have been developed based on benchmark data for the White Box grassy woodland (BVT 226 and PCT 1383) and Narrow-leaved Ironbark - Cypress Pine - White Box shrubby open forest (BVT 316 and PCT 592).

The following vegetation structural parameters below will be measured at each plot and will be compared against the rehabilitation completion criteria for the relevant PCTs/BVTs:

- Native species richness;
- Native overstorey cover;
- Native mid-storey cover; and
- Native groundcover (grasses).

Additional parameters will also be monitored to evaluate the condition of the rehabilitation areas and ongoing management measures:

- Erosion type and severity; and
- Fauna species richness and/or abundance.

Over time (as revegetation develops and matures) additional monitoring parameters may be included in the monitoring program to inform revegetation condition and development (e.g. plant fertility status [fruiting/flowering], woody species density and tree stem diameter and height) and determine requirement of management measures (e.g. thinning).

As agreed with the OEH (now BCD), MCCM proposes to use the benchmark data for the relevant PCTs/BVTs as interim rehabilitation completion criteria until appropriate analogue/reference sites have been determined, which are representative of the target vegetation communities for rehabilitation of the MCCM.

7.2 REHABILITATION ESTABLISHMENT MONITORING

Visual monitoring of revegetation will be conducted on a regular basis to assess whether vegetation is establishing and to determine the need for any maintenance and/or contingency measures (such as the requirement for supplementary plantings, erosion control and weed control). Visual assessments within the MCCM rehabilitation monitoring program allow for the rapid application of remedial actions where necessary.

The quality of rehabilitation will be monitored annually using Ecosystem Function Analysis (EFA) or a similar systems-based approach. EFA is a CSIRO developed method used to provide indicators of rehabilitation success and allows the assessment of ecosystem sustainability through the plotting of development trajectories. EFA aims to measure the progression of rehabilitation towards a self-sustaining ecosystem through the assessment of landscape function, vegetation dynamics and habitat complexity (http://www.csiro.au/Organisation-Structure/Divisions/Ecosystem-Sciences/EcosystemFunction Analysis.aspx). EFA is divided into the following three modules/components: the LFA component; the vegetation composition and dynamics component; and the habitat complexity component.

The LFA Soil Surface Analysis component of EFA provides an effective quantitative tool for assessing ecosystem function. Data recorded as part of LFA monitoring is based on landscape processes and focuses on the dynamics of resource mobilisation, transport, deposition, use and loss of soil condition. Parameters assessed as part of LFA monitoring typically include:

- Soil cover;
- Perennial grass basal cover and canopy cover;
- Litter cover, origin and incorporation;
- Cryptogam cover;
- Crust condition;
- Erosion type and severity;
- Amount of deposited material;
- Micro-topography (surface roughness);
- Surface resistance to disturbance; and
- Soil type (slake and texture tests).

The vegetation composition and dynamics component of EFA monitoring provides a quantitative assessment of species composition, density and cover. The habitat complexity component of EFA provides an index of the development of available habitats for fauna and includes measurements of vegetation cover, ground habitat (litter, logs and rocks) and the availability of water. The monitoring of habitat complexity is based on the assumption that more environmental niches for fauna develop as the diversity of vegetation and ground cover (e.g. litter) increases.

A number of permanent transects will be established within rehabilitated areas. Corresponding transects will also be established in adjacent undisturbed (analogue) communities. The information obtained will be used to track the rehabilitation progress, predict self-sustainable values and compare the rehabilitation and analogue sites. Remedial management strategies will be implemented where necessary. These methods will provide quantitative data that measures changes in:

- Floristic diversity including species area curves and growth forms;
- Ground cover diversity and abundance;
- Vegetation structure and habitat characteristics (including ground cover, cryptogams, logs, rocks, litter, projected foliage cover at various height increments);
- Understorey density and growth (including established shrubs, direct seeding and tube-stock plantings and tree regeneration);
- Overstorey characteristics including tree density, health, and survival; and
- Other habitat attributes such as the presence of hollows, mistletoe and the production of buds, flowers, and fruit.

As the amount of rehabilitation at the MCCM increases, the requirement for monitoring will also increase. Further details of the rehabilitation monitoring program will be provided in subsequent revisions of this MSRP and the RMP as the site rehabilitation develops.

7.3 REHABILITATION RESEARCH AND ADAPTIVE MANAGEMENT AT THE MCCM

This MSRP has been updated to align with the latest version of the MCCM BGWRPP (dated 2025). The BGWRPP reflects the progress made with the Box Gum Woodland Rehabilitation research completed to date as well as updating the final use of the Adaptive Research to prepare an Overarching Final Report on research outcomes. Summary of the BGWRPP research projects are:

- Structured Review of Rehabilitation of Grassy Box Woodland (COMPLETE)
- Soil Stockpile Management
- Overburden Regolith
- Box Gum Woodland Rehabilitation Establishment Systems
- Final Overarching Box Gum Woodland Rehabilitation Research Report

Rehabilitation research activities will also be conducted as necessary for non-Box Gum Woodland aspects of MCCM rehabilitation. Where practicable and appropriate they will be conducted in collaboration with other nearby mining operations, landholders, Government agencies, interest groups or research/academic organisations. Research activities may cover a broad range of rehabilitation-related activities. The scope of the research activities will be summarised in the RMP and Forward Program, and a summary of the findings will be provided in the Annual Review.

In the event that the monitoring and rehabilitation research programs identify that rehabilitation results are sub-optimal and/or improvements can be made, further investigation to establish a cause and

appropriate remediation strategy(s) will be undertaken. Aspects that may be considered as part of the investigation may include, but are not necessarily limited to the following:

- Nutrient availability;
- Ph, salinity and metal toxicity;
- Shallow root depth;
- Other soil limitations;
- Plant diseases;
- Insect attack;
- Lack of nitrogen fixing legumes;
- Insufficient density and diversity of long lived plants (e.g. Overstorey trees);
- Lack of organisms involved in litter breakdown (e.g. Fungal fruiting bodies) and nutrient cycling (e.g. Puff balls);
- Predation;
- Evidence of drought effects or storm damage;
- In appropriate plant species density and diversity;
- Poor soil and/or landscape preparation; and
- Weed competition and/or competition with other species in the seed / tube-stock mix.

The composition and structure of revegetated areas will also be compared with the target vegetation community characteristics at the analogue monitoring sites. In cases where the performance is sub-optimal, additional management measures will be implemented (e.g. replanting, causing disturbance through grazing and/or fire).

A trigger action response plan (TARP) for rehabilitation at the MCCM has been developed for Section 10 of the RMP. The RMP should be referred to for the most up-to-date TARP.

7.4 QUALITY ASSURANCE PROCESS

MCCM will maintain detailed records of the mining operations and rehabilitation activities at the MCCM in order to provide a record of the various activities and processes that occur at the site over the life of the mine. These records will allow MCCM to identify areas and/or activities that may impact/influence the success of future rehabilitation and mine closure activities. The following table outlines the MCCM rehabilitation quality assurance process divided into rehabilitation phases.

Table 7-1

Rehabilitation Quality Assurance Process

Phase	Key Quality Assurance Steps	Current Record Status (In place/still required)	Maules Creek Procedures/Documentation
Active Mining	Records of competent personnel for active mining and rehabilitation.	Records in place.	Position descriptions
	Up to date mine plans.	RMP, Rehabilitation Report and Forward Program.	Mining planning procedures
	Documentation of pre-clearance surveys (covering all key environmental aspects).	Records in place.	Maules Creek Procedure - Clearing Operations Specific environmental management plans
	Maintenance of a topsoil inventory to document stripped, stockpiled and re-spread resources.	Location of soils stockpiles are known	Whitehaven Maules Creek Coal Mine - Topsoiling Protocol.
	Regular inspections of erosion and sediment controls.	Inspections currently being completed.	Water Management Plan
	Regular inspections to identify potential weed infestations. Details of weed status included in rehabilitation monitoring.	Inspections currently being completed	Biodiversity Management Plan
	Weed management spraying records	Current records kept for weed spraying.	Biodiversity Management Plan
	Regular inspections to review spontaneous combustion	Currently being completed.	Whitehaven Maules Creek Rejects Management Procedure
	Overburden and reject material testing to determine PAF	Drillhole sampling for PAF Known locations of PAF Sign off process when inert material is placed over the PAF/rejects.	Whitehaven Maules Creek Rejects Management Procedure
	Soil testing	Completed annually.	Whitehaven Maules Creek Coal Mine - Topsoiling Protocol. Annual Soil results.
Decommissioning	Inspections and demolition reports to confirm all	Still required prior to closure.	To be covered in the Final Void and Mine Closure Plan

Phase	Key Quality Assurance Steps	Current Record Status (In place/still required)	Maules Creek Procedures/Documentation
	infrastructure has been removed.		closer to closure (Draft, final to be prepared by 2026).
	Removal of waste.	Waste records	
	validation testing to ensure any contamination/hazardous substances has been appropriately remediated and/or removed.	Still required prior to closure. To be covered in Final Closure Plan.	
	Public safety risks are assessed during decommissioning.	Fencing, signage, security. To be covered in Final Closure Plan.	
Landform Establishment	Landform establishment and survey process. Quality assurance signoff of constructed landforms including slopes, landforms and water drainage structures.	Currently in place	Whitehaven Maules Creek Landform Design Protocol Whitehaven Maules Creek Landform Construction Protocol Whitehaven Maules Creek Corrective Actions Protocol Whitehaven Maules Creek Progressive Rehabilitation Procedure Preparation of the Annual Rehabilitation Plan.
	Records of reject capping depth at site. Covered by 15 metres of overburden that is not PAF.	Currently in place	Whitehaven Maules Creek Rejects Management Procedure
	Recording depths of ripping of rehabilitation areas.	Currently in place	Whitehaven Maules Creek Landform Design Protocol Whitehaven Maules Creek Landform Construction Protocol Whitehaven Maules Creek Corrective Actions Protocol Whitehaven Maules Creek Progressive Rehabilitation Procedure Preparation of the Annual Rehabilitation Plan. Final Void and Mine Closure Plan (Draft, final to be prepared by 2026).

Phase	Key Quality Assurance Steps	Current Record Status (In place/still required)	Maules Creek Procedures/Documentation
	Slopes, geotechnical and stability assessment required for the Final Closure Plan	Regularly reviewed but to be covered in more detail in the Final Void and Mine Closure Plan.	Whitehaven Maules Creek Landform Design Protocol Whitehaven Maules Creek Landform Construction Protocol Whitehaven Maules Creek Corrective Actions Protocol Whitehaven Maules Creek Progressive Rehabilitation Procedure Preparation of the Annual Rehabilitation Plan.
	Void Water Management Assessment completed as part of Final Closure Plan.	To be covered in Final Void and Mine Closure Plan.	Final Void and Mine Closure Plan (Draft, final to be prepared by 2026).
Growth Medium Establishment	Soil assessment for existing rehabilitation areas.	Covered in rehabilitation monitoring.	Whitehaven Maules Creek Coal Mine - Topsoiling Protocol.
	Soil assessment for future rehabilitation areas.	Required prior to future rehabilitation.	Whitehaven Maules Creek Coal Mine - Topsoiling Protocol.
	Register of topsoil and subsoil for future rehabilitation.	Location of soils stockpiles are known	Whitehaven Maules Creek Coal Mine - Topsoiling Protocol.
	Records of identification and management of actual acid forming, potentially acid forming (PAF) and non-acid forming (NAF) material and ongoing monitoring.	Records in place	Whitehaven Maules Creek Coal Mine - Topsoiling Protocol.
Ecosystem and Landuse Establishment	Documentation of seeding or planting activities undertaken including: • Date of planting; • Weather conditions; • Seed mix; • Seeding rate (kg/ha) and/or planting rate (tube-stock/ha); • Fertiliser rate (kg/ha); • Records of the salvage of all rehabilitation resources including suitable capping materials,	Records in place. To be recorded for future monitoring programs.	Whitehaven Maules Creek Seed Selection and Fertiliser Protocol Whitehaven Maules Creek Progressive Rehabilitation Procedure Preparation of the Annual Rehabilitation Plan Whitehaven Maules Creek Corrective Actions Protocol

Phase	Key Quality Assurance Steps	Current Record Status (In place/still required)	Maules Creek Procedures/Documentation
	topsoils/subsoils, seeds, habitat structures (e.g. tree hollows and rocks) for use in rehabilitation.		
	Regular site inspections of rehabilitated areas to allow early identification of any emerging threats to rehabilitation.	Monthly inspections completed	
	Rehabilitation monitoring in accordance with the RMP to monitor the success of rehabilitation.	Records of existing and proposed rehabilitation monitoring.	
	Continuation of environmental monitoring program.	Ongoing. To be reviewed closer to final closure.	
	Weed and feral animal infestations; and Documentation of all weed management and eradication programs and follow-up inspections.	Current weed management records kept.	
Ecosystem and Land Use Development	Rehabilitation monitoring in accordance with the RMP to monitor the success of rehabilitation.	Criteria assessed in the annual rehabilitation monitoring.	Whitehaven Maules Creek Progressive Rehabilitation Procedure Preparation of the Annual Rehabilitation Plan Whitehaven Maules Creek Corrective Actions Protocol
	Regular site inspections of rehabilitated areas to allow early identification of any emerging threats to rehabilitation.	Monthly inspections.	
	Weed and feral animal infestations; and Documentation of all weed management and eradication programs and follow-up inspections.	Current records kept.	

8 REVISION, AUDITING AND REPORTING OF THE MSRP

The MSRP will be subject to reporting procedures and regularly audited in order to demonstrate compliancy with approval conditions, review the implementation progress of management actions, and to review the adequacy of the document. Recommendations made available through the auditing and reporting procedure will be used to update rehabilitation, decommissioning and mine closure practices at MCCM.

8.1 REVISION

The MSRP may be reviewed and revised from time to time. In accordance with Condition 36 of the Commonwealth approval EPBC 2010/5566, if MCCM wishes to carry out any activity otherwise than in accordance with the MSRP (as it pertains to Commonwealth approval EPBC 2010/5566), MCCM will submit a revised MSRP to DCCEEW for the Minister's written approval.

8.1.1 Revision of this MSRP to be consistent with the RMP and BGWRPP

This MSRP has been prepared to be consistent with the MCCM RMP and aligned with the latest version of the MCCM BGWRPP (dated 2025).. MCCM will review and revise this MSRP as necessary during the life of the mine to ensure that it is consistent with the RMP and the BGWRPP. Each revision of the MSRP will be submitted to the DCCEEW for the Minister's written approval.

Refer to **Section 1.4** for more detail on how this MSRP relates to the other MCCM Management Plans.

8.1.2 Other Triggers for Revisions to the MSRP

In accordance with Condition 37 of Commonwealth approval EPBC 2010/5566, if the Minister believes that it is necessary or convenient for the better protection of listed threatened species and communities or listed migratory species to do so, the Minister may request MCCM to make specified revisions to the MSRP and submit the revised plan for the Minister's written approval.

8.2 REPORTING

In accordance with Condition 40 of Commonwealth approval EPBC 2010/5566, the MSRP will be published on Whitehaven's website. Any revisions to the MSRP will be published on the website within one month of being approved.

In accordance with Condition 28 of Commonwealth approval EPBC 2010/5566, the findings of the independent review of this MSRP (**Section 1.5**) will be published on the website.

8.2.1 Maules Creek Project Annual Review

An Annual Review will be submitted by the end of March under Condition 4 of Schedule 5 of State approval PA 10_0138, which outlines the environmental performance of the MCCM over the preceding year.

The Annual Review will discuss environmental performance, environmental management, and any non-compliance issues. This will include identifying trends in monitoring results, comparisons to Project EA (Hansen Bailey, 2011) predictions and statutory requirements, and a description of measures that will be implemented over the following year. One section of the Annual Review will summarise the outcomes of management actions undertaken as part of the MCCM rehabilitation program and will collate documentation to demonstrate compliancy with the RMP and this MSRP. A copy of the Annual Review will be provided to the DCCEEW each year. All stakeholders will have access to this document via Whitehaven's website.

8.2.2 Mining Lease Annual Rehabilitation Report

In addition to the Annual Review and as of 2023, MCCM is required under Mining Lease requirements (Schedule 8A Part 2, Division 3-13 of the Mining Act) to prepare an Annual Rehabilitation Report (ARR). Like the Annual Review, the ARR will report on the rehabilitation activities performed in the preceding 12 months and be published on the MCCM website. MCCM's initial ARR was prepared in March 2023. The ARR is required to be available on Whitehaven's website.

8.2.3 Commonwealth Approval Compliance Reports

A report pertaining to the annual compliance with Commonwealth approval EPBC 2010/5566 will be published on Whitehaven's website by the end of March each year after the commencement of the MCCM in accordance with Condition 34 of the Commonwealth approval EPBC 2010/5566. Non-compliance with any of the conditions will be reported to DCCEEW at the same time as the compliance report is published.

8.2.4 Recording Survey Data and Other Information

In accordance with Condition 31 of the Commonwealth approval EPBC 2010/5566, survey data will be recorded so as to conform to data standards notified from time to time by DCCEEW. When requested by the DCCEEW, MCCM will provide all species and ecological survey data and related survey information from ecological surveys undertaken for Matters of National Environmental Significance. This survey data will be provided within 30 business days of request, or in a timeframe agreed to by DCCEEW in writing.

In accordance with Condition 39 of the Commonwealth approval EPBC 2010/5566, MCCM will maintain accurate records substantiating all activities and outcomes associated with or relevant to Commonwealth approval EPBC 2010/5566, including measures taken to implement this MSRP, and make them available upon request to the DCCEEW.

8.3 AUDITING

In accordance with Condition 35 of the Commonwealth approval EPBC 2010/5566, upon the direction of the Minister, MCCM will ensure that an independent audit of compliance with the conditions of the Commonwealth approval is conducted and a report submitted to the Minister. The independent auditor

will be approved by the Minister prior to the commencement of the audit. Audit criteria will be agreed to by the Minister and the audit report will address the criteria to the satisfaction of the Minister.

8.4 INDUCTIONS AND STAFF EDUCATION

Inductions for staff, contractors and visitors to the mine site will be conducted to make them aware of the ecological issues present in the MCCM Project Boundary and their role and responsibilities for the protection and/or minimisation of impacts to all native biodiversity.

Inductions will address the location of sensitive flora and fauna and the mitigation measures being implemented to protect the biodiversity values present on the MCCM Project Boundary.

Additional targeted and specific inductions/training will be provided for contract and operational staff directly involved in clearing of native vegetation in relation to the two-staged clearing protocols, exclusions zones, types of flora and fauna, in particular threatened species.

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APPENDIX A INDEPENDENT ECOLOGIST REVIEW REPORT (2025)

Table A-1: Comments on 2025 Independent Ecologist Review recommendations for future editions

Recommendations for Future Editions (2025)	MCCM Comment and Amendments to Edition 2 following Independent Review
Section 2.1.1 Matters Of National Environmental Significance – Relevant species information should be updated in each revision. The Regent Honeyeater has now been recorded approximately 5km from the mine, and the Swift Parrot has now been recorded in the Leard State Forest in close proximity to the mine. Noting that this information may not materially transform the MSRP, it may be relevant to, and better inform, habitat creation for MNES (section 5.2.10), research and adaptive management (section 7.3), or other plans that work interactively with the MSRP (e.g. Species composition described within the RMP used in future rehabilitation).	Noted. Minor updates made to Section 2.1.1 and references to reflect current information on the Regent Honeyeater and Swift Parrot.
Section 5.2.9 Plant Species Selection For Rehabilitation – seed or plants sourced away from the region should consider climate resilience and the potential impacts of climate change.	Noted. Section 5.2.9 includes seed sourced away from the region should consider climate resilience and the potential impacts of climate change..
Section 5.2.10 Habitat Creation For MNES – Nest box installation for the swift parrot isn't considered necessary as the swift parrot is known to only breed in Tasmania.	Noted.
Section 6 Risk Assessment of Rehabilitation Related Aspects – Whilst this section outlines the risk assessment methodology including the risk matrix and acknowledging reference to the complete risk assessment within the RMP, the MSRP would benefit from having relevant risks to MNES summarised within this document (condition 27f).	NOTED. The RMP risk assessment considers risks to ecosystem and land use establishment and development rehabilitation phases which take into account MNES.
Consolidation - Ideally, the MSRP and RMP would be consolidated, as permitted under condition 29. This consolidation would make the document review more effective by, for example, assessing the efficacy of the targets and performance indicators.	Noted. MCCM may consider consolidating documents in future. This MSRP edition reviewed rehabilitation documentation and made updates for consistency.
Resilience - The MSRP would benefit from the inclusion of bushfire mitigation measures (summarised) or provide reference to a bushfire management plan that addresses the risk of loss, or impact to, rehabilitation efforts from bushfires or fire originating from mining activities.	Noted. Bushfire risk is addressed through the Rehabilitation Objectives of the RMP. Section 6.13 of the Biodiversity Management Plan outlines bushfire risk management and response.

APPENDIX B REHABILITATION RISK ASSESSMENT