BHP

Rehabilitation Management Plan Mt Arthur Coal

MAC-ENC-MTP-055

Currently out for consultation with DPE and MSC

17 June 2024

Mt Arthur Lease Block

Mt Arthur Coal Lease Block	
Name of Mine	Mt Arthur Coal (Mt Arthur Coal Pty Limited)
Rehabilitation management Plan Commencement Date	June 2024 Version
Rehabilitation management Plan revision dates and version numbers	Version 1.0
Mining Authorisations (Lease/License No.):	CCL 744 CL 396 ML 1358 ML 1487 ML 1548 ML 1593 ML 1655 ML 1757 ML 1739 MPL 263 A 437 EL 5965, Sublease CL 229 Sublease CL 395
Name of Authorisation / lease Holder(s)	Hunter Valley Energy Coal Pty Ltd Mt Arthur Coal Pty Limited Maxwell Ventures (Management) Pty Ltd. Maxwell Infrastructure (formerly Drayton) (sublease)
Date of Submission	June 2024

Document Authorisation is located in **Appendix 1**.

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Application

This Plan applies to the following:

- All BHP employees and contract staff;
- All Partnering contractor company representatives; and
- All Subcontractor company representatives.

Abbreviations

ARRFP	Annual Rehabilitation Report and Forward Program (ARRFP)
AHMP	Aboriginal Heritage Management Plan
BCD	Department of Planning, Industry and Environment: Biodiversity and Conservation Division
BCM	Bank cubic metres
BioMP	Biodiversity Management Plan
BRMP	Biodiversity and Rehabilitation Management Plan
CCC	Community Consultative Committee
CCL	Consolidated coal lease
CHBI	Central Hunter Box – Ironbark Woodland
CHISG	Central Hunter Ironbark – Spotted Gum Grey-Gum Box Forest
CHPP	Coal handling preparation plant
CL	Coal lease
DoEE	Federal Department of the Environment and Energy
DPIE	NSW Department of Planning, Industry and Environment
DPIE ESS	Environment, Energy and Science (EES) Group (division of DPIE)
DPIE RR	Resources Regulator (division of DPIE)
DSC	NSW Dam Safety Committee approval conditions
EA	Environmental assessment
EL	Exploration licence
EPA	NSW Environment Protection Authority
EP&A Act	Environmental Planning and Assessment Act 1979
EPBC	Environment Protection and Biodiversity Conservation
EPL	Environment Protection Licence
EMS	Environmental management system
FLDP	Future Landscapes Design Project
FY	Financial year
HA	Hectares
HFRG	Hunter Floodplain Red Gum Woodland Complex
HRSTS	Hunter River Salinity Trading Scheme
HSE	Health, Safety and Environment
HVEC	Hunter valley Energy Coal (MT Arthur Coal)
ISO	International Standards Organisation
ITP	Inspection and test plan
LGA	Local government area
MAC	Mt Arthur Coal
MACT	Mt Arthur Coal Terminal
MAC GPA	Mt Arthur Coal Ground Pasture Assessment
ML	Mining lease
MOP	Mining Operations Plan
MPL	Mining purpose lease
MSC	Muswellbrook Shire Council
Mtpa	Million tonnes per annum
NFSB	Narrabeen Footslopes Slaty Box Woodland
NGER	National Greenhouse and Energy Reporting Act 2007
NGO	Non-government organisation
NOW	Former NSW Office of Water

NRAR	Natural Resources Access Regulator
NSW	New South Wales
OEH	Former NSW Office of Environment and Heritage
PIRMP	Pollution Incident Response Management Procedure
ROM	Run of mine
RAP	Remedial Action Plan
UHWB	Upper Hunter White Box – Ironbark Grassy Woodland

Definitions

- **Hunter Valley Energy Coal Pty Ltd -** operates the Mt Arthur Coal Complex which consists of the approved open cut mining operations, a rail loop and associated rail loading facilities (PA 09_0062) and the Mt Arthur Underground Project (PA 06_0091).
- **Future Landscapes Design Project -** The FLDP was a project undertaken to research a landform approach that would align with community expectations and improvements in landform design techniques. A report by Landloch Pty Ltd (2014) was written to capture the findings of the project which have now been incorporated into the geomorphic landform design.
- **Geomorphic Landform Design -** The Adaption of the Geofluvial approach used at Mt Arthur Coal, uses the characteristics of stable natural alluvial landforms as an analogue on which to base the design of mine overburden landforms. Importantly, the approach does not replicate existing landforms, but rather uses the key characteristics that make these landforms stable in the design.
- **The Project Approval -** Project Approval 09_0062 MOD 1 Mt Arthur Coal Mine – Open Cut Modification Project dated 26 September 2014.
- **Annual Rehabilitation Report and Forward Program (ARRFP)** – The Annual Rehabilitation Report and Forward Program meets the requirements of a Mining Operations Plan (MOP) as required by Mt Arthur Coals various Mining and Coal Leases.
- **Rehabilitation Management Plan (RMP) -** The Rehabilitation Management Plan meets the requirements of Schedule 3 Condition 44 of the Mt Arthur Coal Modification Project PA 09_0062 MOD 1 under Section 75W of the Environmental Planning and Assessment Act 1979 (EP&A Act). Condition 44 requires the project proponent to prepare and implement a Rehabilitation Management Plan for the Project.
- **Approval Objective** – The objective of the mine closure process developed in Mt Arthur Coal Mine – Open Cut Modification Project (PA 09_0062 MOD 1).
- **Closure Objective** – More detailed objectives designed to facilitate the alignment of Approval Objectives and detailed SMART Closure Criteria.

1. Introduction

Hunter Valley Energy Coal Pty Ltd (HVEC) operates Mt Arthur Coal, which consists of an approved open cut and former underground mining operation, a rail loop and associated rail loading facilities. The Mt Arthur Coal Mine is located approximately 5 kilometres southwest of Muswellbrook within the Muswellbrook Shire Local Government Area (LGA) in the Upper Hunter Valley of NSW. The location of Mt Arthur Coal is shown in **Figure 1B**Error! Reference source not found..

This RMP meets the requirements of Condition 44 of the Mt Arthur Coal Modification Project PA 09_0062 MOD 1 under Section 75W of the Environmental Planning and Assessment Act 1979 (EP&A Act). Condition 44 requires the project proponent to prepare and implement a Rehabilitation Management Plan for the Project.

For the purposes of this RMP, the Mt Arthur Coal Mine is considered to be classified as a 'Large Mine' (in accordance with the RMP guidelines) due to the project being a large coal mine that was previously approved (PA 09_0062) under Part 3A of the EP&A Act.

This RMP has been prepared in accordance with the *Form and Way Rehabilitation Management Plan for Large Mines* (Resources Regulator, 2021).

1.1 History of Operations

Mt Arthur Coal Mine is an open cut coal mine operating with trucks and shovels to extract Run of Mine (ROM) coal.

Coal mine development at Mt Arthur Coal commenced in the early 1960s in the Bayswater No. 2 Open Cut mining area. Coal production progressively increased and approval to extract coal from the Bayswater No. 3 Open Cut was granted in 1994. To support the expanding development at Bayswater No. 3 and cease coal transport by public road, approval was obtained in November 2000 for the construction and operation of the rail loading facility and spur line. This allows export coal to be transported directly to Newcastle via the Main Northern Railway.

In May 2001, the Mt Arthur North Open Cut operation was approved to extract up to 15 million tonnes of run-of-mine (ROM) coal per annum. The approval also allowed for the construction and use of associated infrastructure and facilities.

Between 2003 and 2006, Saddlers Pit (located in the southern portion of the mine lease area) was maintained on a care and maintenance regime, when mining operations at Bayswater No 3 were effectively suspended. The majority of the work undertaken during the following period involved reshaping and final rehabilitation of several hundred hectares in the vicinity of the Bayswater No 3 open cut operations.

In March 2006, Mt Arthur Coal lodged an application to extend the Mt Arthur North South Pit. The application was approved by the Minister for Planning on 9 January 2008. In September 2006 mining resumed in Saddlers Pit, with overburden removal initially being undertaken by contract miners and coal extraction by Mt Arthur Coal. Mt Arthur Coal assumed responsibility for overburden removal in March 2012.

Also in March 2006, Mt Arthur Coal lodged an application to commence underground mining operations at Mt Arthur Coal Mine. The application was approved by the Minister for Planning on 2 December 2008 (Project Approval 06_0091). The Mt Arthur Underground Project is approved up to 8 million tonnes per annum (Mtpa). Saddlers Pit was utilised for construction of an underground adit associated with that project. The underground project is currently on care and maintenance.

In 2009, Mt Arthur Coal lodged an application under Part 3A of the New South Wales Environment Planning and Assessment Act, 1979 (EP&A Act) to extend open cut operations and consolidate existing approvals for open cut mining operations and surface infrastructure. The application was approved by the Minister for Planning on 24 September 2010 (Project Approval 09_0062). The Project Approval 09_0062 permitted the extraction of up to 32 Mtpa of ROM coal from the open cut.

In accordance with Project Approval 09_0062, a number of project approvals were surrendered by Mt Arthur Coal in 2011 including Mt Arthur North, the Rail Loading Facility and the South Pit Extension and the Bayswater Coal

Preparation Plant. The surrender of the Bayswater No. 3 development consent (210/93) was accepted by the Department of Planning & Environment (now DPIE) on 20 May 2013.

In 2013, Mt Arthur Coal lodged an application to modify the Project Approval 09_0062 under section 75W of the EP&A Act (the Mt Arthur Coal Open Cut Modification [the Modification]). The application was approved by the Planning Assessment Commission (as delegate of the Minister for Planning) on 26 September 2014 (Project Approval 09_0062 MOD 1). The Modification includes the continuation of open cut mining operations at the Mt Arthur Coal Mine for an additional operational life of four years from 2022 to 2026 at the maximum rate of 32 Mtpa, an increase in open cut disturbance areas, additional overburden emplacement areas, duplication of the existing rail loop and various additional infrastructure changes. The Modification Project Approval can be found at http://www.bhpbilliton.com/environment/regulatory-information.

On 2 December 2016, EPBC approval 2014/7377 was granted for the Modification project, aligning the date with the modification approval life to 2026.

1.2 Current Consents, Leases and Licences

Current Development Consents, leases and licenses are listed in **Table 1-1** Error! Reference source not found. below. Lease boundaries are shown in **Figure 1A**.

Table 1-1 Summary of Approvals and Licences

Approval	Issue date	Expiry date	Description
Development consents or project approvals issued by Department of Planning and Environment (DPE)			
Mt Arthur Coal Mine – Open Cut Modification Project (PA 09_0062 MOD 1)	26/09/2014	30/06/2026	A modification (MOD 1) was granted on 26 September 2014 to facilitate: • The continuation of open cut mining to 2026 (maximum extraction rate of 32 Mtpa); • Increase in open cut disturbance areas; • Use of existing conveyor corridor between Mt Arthur Coal and Maxwell Infrastructure for overburden emplacement; • Duplication of the existing rail loop; • Increase maximum number of train movements per day to 30; • Relocation of the overland conveyor load point which delivers coal to Macquarie Generation's Bayswater Power Station; • Relocation and upgrade of the explosives storage, magazine and associated facilities; and • Construction of additional offices, a control room and extension to the ROM coal stockpile footprint.
Mt Arthur Coal Mine – Underground Project	02/12/2008	31/12/2030	Description PA # required
Mining leases and exploration licences issued by the Resources Regulator			
ML 1358	21/09/1994	21/09/2036	ML held by Hunter Valley Energy Coal Pty Ltd
ML 1487	13/06/2001	12/06/2022	ML held by Hunter Valley Energy Coal Pty Ltd
ML 1548	31/05/2004	30/05/2025	ML held by Hunter Valley Energy Coal Pty Ltd
ML 1593	30/04/2007	29/04/2028	ML held by Hunter Valley Energy Coal Pty Ltd
ML 1655	03/03/2011	03/03/2032	ML held by Hunter Valley Energy Coal Pty Ltd
ML1739	25/07/2016	25/07/2037	ML held by Hunter Valley Energy Coal Pty Ltd
ML 1757	7/07/2017	7/07/2038	ML held by Hunter Valley Energy Coal Pty Ltd
MPL 263	17/10/1990	17/10/2032	MPL held by Mt Arthur Coal Pty Limited
A 437	04/03/1991	04/03/2020	Mt Arthur Coal Pty Limited

EL 5965T	15/07/2002	14/07/2017	Exploration Licence (EL) EL held by Hunter Valley Energy Coal Pty Ltd
CCL 744	03/07/1989	21/01/2028	CCL held by Mt Arthur Coal Pty Limited
CL 396	23/06/1992	03/02/2024	CL held by Mt Arthur Coal Pty Limited
CL 229	03/02/1982	02/02/2024	CL held by Maxwell Ventures (Management) Pty Ltd. Maxwell Infrastructure (formerly Drayton) (sublease).
CL 395	23/06/1992	21/01/2029	CL held by Maxwell Ventures (Management) Pty Ltd. Maxwell Infrastructure (formerly Drayton) (sublease).
EPL issued by the EPA			
EPL 11457	09/10/2001 (last updated on 1/03/2021)	Not specified	EPL for the following scheduled activities: • Chemical Storage, 5 to 100 tonnes generated or stored; • Coal Works, > 500,000 tonnes handled; and • Mining for Coal, > 5,000,000 tonnes produced.
EPBC approval issued by the DPE			
EPBC 2011/5866	30/04/2012	30/06/2026	Conditional approval for development of five new open cut extension areas (within designated areas).
EPBC 2014/7377	05/12/2016	30/06/2026	Continuation of the open cut mining operations of approximately 128 million tonnes of ROM coal within HVEC's existing mining tenements and application rea – ML548, ML 1358, ML1548, Sublease CL 229, ML 1655 and ML 1739.
General Water Licences			
WAL 917 (20AL201126), WAL 918 (20AL201127), WAL 1296, WAL 18141, WAL 18247, WAL 41495, WAL 41556, WAL 41557 and WAL 18175.			

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MT ARTHUR MINE

Figure 1A - Operations Leases

Drawn: B. Lang	Date: 14/08/2023	Revision: 13
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MUSWELLBROOK

ML1757
ML1487
ML1655
ML1548
ML1739
ML1358
ML1593
MPL263
CCL744
CL396
CL395
CL229
AUTH 437
AUTH437
EL5965

DENMAN ROAD
THOMAS MITCHELL DRIVE
Quarry Creek
Whites Creek
Ramrod Creek
Muddie Creek
Proposed Diversion Drain
Saddlers Creek

300000
6420000

LEGEND
- Mining Lease (1992 Act)
- Exploration Lease (1992 Act)
- Coal Lease (1973 Act)
- Consolidated Coal Lease (1973 Act)
- Exploration Authority
- Coal Lease (Sub-Leases)

1.3 Land Ownership and Land Use

Land ownership and land within and surrounding Mt Arthur Coal is shown on **Figure 1B** and **1C**, with details provided in **Table 1-2** below.

The Mt Arthur Coal Mine is situated within the Upper Hunter region which has a long history of rural land use for a variety of agricultural and industrial activities, predominantly livestock grazing and coal mining. Mt Arthur Coal is located within lands that have been largely disturbed by previous agricultural activities, particularly cultivation and grazing.

The dominant land uses within and adjacent to the existing mining lease boundaries include open cut coal mining, power generation and industrial activities, agriculture, rural residential and residential areas. Other land uses include equine industries and viticulture. Where possible, rehabilitation planning at Mt Arthur Coal Mine will attempt to maximise opportunities for a diverse post-mining landscape and range of land uses. It is proposed that final land uses will include agricultural (grazing) and native ecosystem, consistent with PA09-0062.

Mt Arthur Coal or its subsidiaries own or manage the majority of land within the Mt Arthur Coal mining tenements including operational areas and adjacent properties to the north-east, north and west, which are maintained as buffer land or biodiversity offset areas. Areas within the lease not owned by Mt Arthur Coal include: Crown land, road reserves, private freehold property and the Maxwell Infrastructure sublease area in the southeast of the mine site.

Maxwell infrastructure Pty Ltd owns the majority of land to the immediate east and south of Mt Arthur Coal mining tenements, including the Maxwell Infrastructure (Drayton) sublease Area. Land further to the southeast owned by Macquarie Generation. The Bengalla Joint Venture owns the land on which Bengalla Mine operates and to which its mining tenements apply, to the immediate north of the Mt Arthur Coal.

Table 1-2 Land Ownership within Project Approval

Owner	Approximate Area of Ownership within Project Approval (PA 09_0062)
Mt Arthur Coal Pty Limited	508 ha
Hunter Valley Energy Coal Pty Ltd	6276 ha
Maxwell Infrastructure (formerly Drayton) (sublease)	298 ha

Appendix 2 includes the Schedule of Lands.

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MT ARTHUR MINE

Figure 1B - Land Ownership

Drawn: B. Lang	Date: 14/08/2023	Revision: 13
Checked: J. Decon	Filename: 20230808-7.mxd	

Land intersecting Mt Arthur Leases

Ownership

- Anglo American Metallurgical Coal Pty Ltd
- Blakefield
- Crown Land
- Laws
- M.H. and R.E. Wolfgang
- Malabar Coal Pty Ltd
- Hunter Valley Energy Coal Pty Ltd
- Mt Arthur Coal Pty Ltd
- P.M. Wolfgang
- P.R. and M. Burgmann
- Rosebrook Australian Stock Horse Stud
- T.R. and K.N. Paulsen

MUSWELLBROOK

DENMAN ROAD

THOMAS MITCHELL DRIVE

Muscle Creek

Wilnes Creek

Quarry Creek

Ramrod Creek

Ramrod Creek

Saddlers Creek

Proposed Diversion Drain

ML1757

ML1487

ML1655

ML1548

MPL263

CCL744

CL396

ML1739

ML1739

CL395

ML1739

AUTH 437

ML1548

CL229

ML1739

EL5965

ML1358

ML1593

EL5965

AUTH 437

AUTH437

6420000

6420000

300000

300000

- Mining Lease (1992 Act)
- Exploration Lease (1992 Act)
- Coal Lease (1973 Act)
- Consolidated Coal Lease (1973 Act)
- Exploration Authority
- Coal Lease (Sub-Leases)

16780000

16790000

16800000

-3810000

ML1487

ML1655

ML1548

MPL263

CCL744

CL396

CL395

ML1738

CL229

ML1358

ML1593

0 1,000 2,000

1.2.0 Managed resource protection
1.3.0 Other minimal use
2.1.0 Grazing native vegetation
3.1.0 Plantation forests
3.2.0 Grazing modified pastures
3.5.0 Seasonal horticulture
4.2.0 Grazing irrigated modified pastures
4.4.0 Irrigated perennial horticulture
5.2.0 Intensive animal production
5.4.0 Residential and farm infrastructure
5.5.0 Services
5.6.0 Utilities
5.7.0 Transport and communication
5.8.0 Mining
6.2.0 Reservoir/dam
6.3.0 River
Coal Lease (1973 Act)
Railway
Mining Lease (1992 Act)
Consolidated Coal Lease (1973 Act)
Coal Lease (Sub-Leases)

Mount Arthur Coal - BHP

Rehabilitation Management Plan - Current Land Use

FIGURE 1C

Scale: 1:60,000

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29/08/2023

2. Final Land Use

2.1 Regulatory Requirements for Rehabilitation

As stated in **Section 1.3** of this RMP, final land use at Mt Arthur Coal will include the establishment of native woodland interspersed with pasture, which is to be consistent with PA 09_0062. Regulatory requirements for post mining land use and rehabilitation are included in:

- Project Approval (09_0062 MOD 1);
- EPBC Approval 2014/7377;
- EPBC Approval 2011/5866; and
- Key Mining Tenements (listed in **Table 1-1** above).

Conditions which specifically affect the post mining land use, landscape and rehabilitation outcomes management are listed in **Table 2-1**.

Table 2-1 Regulatory Requirements Related to Rehabilitation

Document	Condition/ Section	Requirement	Area	Timing	Section Addressed/ Comment
Project Approval (09_0062 MOD 1)	Schedule 2, Condition 5	Mining operations for the project may take place until 30 June 2026.	Mine Site (Project as a whole)	During the active mining phase.	N/A
	Schedule 3, Condition 36	The Proponent shall implement the biodiversity offset strategy as outlined in Table 13 and as generally described in the EA (and shown in Appendix 7), to the satisfaction of the Secretary.	Rehabilitation Biodiversity Offset Area	End of Mine Life	Offset areas are managed under a Biodiversity Management Plan (BioMP)
	Schedule 3, Condition 38	The Proponent shall ensure that the offset strategy and/or rehabilitation strategy is focused on the re-establishment of: (a) significant and/or threatened plant communities, including: • Upper Hunter White Box – Ironbark Grassy Woodland; • Central Hunter Box – Ironbark Woodland; • Central Hunter Ironbark – Spotted Gum - Grey Box Forest; • Narrabeen Footslopes Slaty Box Woodland; • Hunter Floodplain Red Gum Woodland Complex; • White Box Yellow Box Blakely's Red Gum Woodland; • Hunter Lowlands Red Gum Forest; and (b) significant and/or threatened plant species, including: • River Red Gum (Eucalyptus camaldulensis); • Pine Donkey Orchid (Diuris tricolor); • Tiger Orchid (Cymbidium canaliculatum); • Weeping Myall (*Acacia pendula*); and (c) habitat for significant and/or threatened animal species.	• Native Ecosystem; and • Rehabilitation Biodiversity Offset Area.	End of Mine Life	• Section 6.2.1.2; • Section 6.2.5; and • Section 6.2.6. Offset areas are managed under a BioMP
	Schedule 3, Condition 40	Biodiversity Management Plan The Proponent shall prepare and implement a Biodiversity Management Plan for the project to the satisfaction of the Secretary. This plan must: (a) be prepared in consultation with OEH and Council, and be submitted to the Secretary for approval by the end of March 2015, unless otherwise agreed with the Secretary; (b) describe how the implementation of the offset strategy would be integrated with the overall rehabilitation of the site (see below); (c) include: i. a description of the short, medium, and long term measures that would be implemented to: • implement the offset strategy; and • manage the remnant vegetation and habitat on the site and in the offset areas; ii. detailed performance and completion criteria for the implementation of the offset strategy; iii. a detailed description of the measures that would be implemented over the next 3 years, including the procedures to be implemented for: • implementing revegetation and regeneration within the disturbance areas and offset areas, including establishment of canopy, sub-canopy (if relevant), understorey and ground strata; • protecting vegetation and soil outside the disturbance areas; • rehabilitating creeks and drainage lines that occur on the site, both inside and outside the disturbance areas (such as the White's Creek Diversion), to ensure no net loss of aquatic habitat; • managing salinity;	Rehabilitation Biodiversity Offset Area	End of Mine Life	Offset areas are managed under a BioMP

<table>
<tr><th>Document</th><th>Condition/ Section</th><th>Requirement</th><th>Area</th><th>Timing</th><th>Section Addressed/ Comment</th></tr>
<tr><td></td><td></td><td>• conserving and reusing topsoil;
• undertaking pre-clearance surveys;
• managing impacts on fauna;
• landscaping the site and along public roads (including Thomas Mitchell Drive, Denman Road, Edderton Road and Roxburgh Road) to minimise visual and lighting impacts;
• collecting and propagating seed;
• salvaging and reusing material from the site for habitat enhancement;
• salvaging, transplanting and/or propagating threatened flora and native grassland, in accordance with the Guidelines for the Translocation of Threatened Plants in Australia (Vallee et al., 2004);
• controlling weeds and feral pests;
• managing grazing and agriculture;
• controlling access; and
• bushfire management;
iv. a program to monitor the effectiveness of these measures, and progress against the performance and completion criteria;
v. a description of the potential risks to successful revegetation, and a description of the contingency measures that would be implemented to mitigate these risks; and
vi. details of who would be responsible for monitoring, reviewing, and implementing the plan.</td><td></td><td></td><td></td></tr>
<tr><td></td><td>Schedule 3, Condition 41A</td><td>The Proponent shall rehabilitate the site to the satisfaction of the DRE. The rehabilitation must comply with the objectives in Table 14, and be consistent with the rehabilitation plan shown in Appendix 7 and the final landform plan shown in Appendix 8.
Table 14: Rehabilitation Objectives
<table>
<tr><th>Feature</th><th>Objectives</th></tr>
<tr><td>Mine site (as a whole)</td><td>• Safe, stable and non-polluting
• Final landforms designed to incorporate natural microrelief and natural drainage lines to integrate with surrounding landforms</td></tr>
<tr><td>Final voids</td><td>• Designed as long term groundwater sinks and to maximise groundwater flows across back-filled pits to the final void
• Minimise to the greatest extent practicable:
o The size and depth of final voids
o The drainage catchment of final voids
o Any high wall instability risk
o Risk of flood interaction</td></tr>
<tr><td>Agricultural land</td><td>• Rehabilitate at least 33 hectares of Class II agricultural capability land in the area identified in the rehabilitation plan
• Rehabilitate other areas identified for agricultural use in the rehabilitation plan to sufficient agricultural capability to support grazing</td></tr>
<tr><td>Revegetation areas</td><td>• Restore at least 2,642 hectares of self-sustaining woodland ecosystems in accordance with the rehabilitation plan, including at least 500 hectares of White Box Yellow Box Blakely’s Red Gum Woodland</td></tr>
<tr><td>Creeks diversions and realignments</td><td>• Flows to mimic pre-development flows for all flood events up to and including the 1 in 100 year ARI</td></tr>
</table></td><td>• Native Ecosystem; and
• Rehabilitation Biodiversity Offset Area.</td><td>End of Mine Life</td><td>This Mt Arthur Coal RMP including previous and future revisions.
• Rehabilitation Objectives: Section 4 and Section 8.3;
• Final Landforms are discussed in Section 6.2.3
• Final Void: Section 6.2.3 and Rehabilitation Strategy.
• Agriculture: Section 6.2.3 and 6.2.5;
• Revegetation: Section 6.2.1.2, Section 6.2.1.3, Section 6.2.4;
• Diversions and realignments: Section 6.2.3.1 and Section 6.2.3.5.
• Surface Infrastructure: Section 6.2.2.3.
• Community: Section 4.2.1

Offset areas are managed under a BioMP</td></tr>
</table>

Document	Condition/ Section	Requirement	Area	Timing	Section Addressed/ Comment
		• Incorporate erosion control measures based on vegetation and engineering revetments • Incorporate structures for aquatic habitat • Revegetate with suitable native species			
		Surface Infrastructure: • To be decommissioned and removed, unless DRE agrees otherwise			
		Community: • Ensure public safety • Minimise the adverse socio-economic effects associated with mine closure			
	Schedule 3, Condition 42	The Proponent shall prepare a revised Rehabilitation Strategy for the Mt Arthur mine complex to the satisfaction of the Secretary. This strategy must: (a) be prepared in consultation with the DRE and Council, and be submitted to the Secretary for approval by the end of September 2015, unless otherwise agreed with the Secretary; (b) investigate options for: • increasing the area to be rehabilitated to woodland on the site; • reducing the size of final voids on site; and • beneficial future land use of disturbed areas, including voids; (c) describe and justify the proposed rehabilitation plan for the site, including the final landform and land use; and (d) include detailed rehabilitation objectives for the site that comply with and build on the objectives in Table 14. Note: The strategy should build on the rehabilitation plan in Appendix 7.	Mine Site (Project as a whole)	End of Mine Life	A Rehabilitation Strategy has been prepared for Mt Arthur Coal. The Rehabilitation Strategy should be read in conjunction to this RMP. Rehabilitation objectives are discussed in Section 4.
	Schedule 3, Condition 43	The Proponent shall carry out rehabilitation progressively, that is, as soon as reasonably practicable following disturbance (particularly on the face of emplacements that are visible off-site). Interim stabilisation measures must be implemented where reasonable and feasible to control dust emissions in disturbed areas that are not active and which are not ready for final rehabilitation. Note: It is accepted that parts of the site that are progressively rehabilitated may be subject to further disturbance in future.	Mine Site (Project as a whole)	During the active mining phase, Decommissioning, Landform Establishment, End of Life and Post Mining Phase.	• Section 6.1; • Section 6.2; and • Section 6.2.3.
	Schedule 3, Condition 44	The Proponent shall prepare and implement a Rehabilitation Management Plan for the Mt Arthur mine complex to the satisfaction of the DRE. This plan must: • be submitted to NSW Trade & Investment for approval by 30 September 2015; • be prepared in consultation with the Department, NOW, OEH and Council; • be prepared in accordance with relevant NSW Trade & Investment guidelines; • describe how the rehabilitation of the site would be integrated with the implementation of the biodiversity offset strategy; • include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, and triggering remedial action (if necessary); • describe the measures that would be implemented to ensure compliance with the relevant conditions of this approval, and address all aspects of rehabilitation including mine closure, final landform including final voids, and final land use; • include interim rehabilitation where necessary to minimise the area exposed for dust generation; • include a research program that seeks to improve the understanding and application of rehabilitation techniques and methods in the Hunter Valley; • include a program to monitor, independently audit and report on the effectiveness of the measures, and progress against the detailed performance and completion criteria; and	Mine Site (Project as a whole)	During the active mining phase, Decommissioning, Landform Establishment, End of Life and Post Mining Phase.	This Mt Arthur Coal RMP including previous and future revisions.

Document	Condition/ Section	Requirement	Area	Timing	Section Addressed/ Comment
		• build to the maximum extent practicable on other management plans required under this approval.			
EPBC Approval 2011/5688,	Condition 4	The person taking the action must commence progressive regeneration of 1915 ha of woodland and forest communities, including 299.20 ha of Box Gum Woodland identified in Table 1, as described in the Preliminary Documentation within 1 year of commencement of construction. (Table 1 indicates 500 ha of Box Gum Woodland, and 1415 ha Rehabilitation Corridors).	Native Ecosystem	During the active mining phase, Decommissioning, Landform Establishment, End of Life and Post Mining Phase.	• Section 6.1; • Section 6.2; and • Section 6.2.3.
	Condition 5	Biodiversity Management Plan The person taking the action must submit for the Ministers approval the BioMP for the project by 30 June 2013. The BioMP must reflect the proposed Mt Arthur Coal Complex Biodiversity Offset Strategy as outlined in Table 1 and as generally described in the Preliminary Documentation and focus on the reestablishment and protection of a minimum of 707.7 ha of Box Gum Woodland and a minimum of 738.7 ha of suitable habitat for Regent Honeyeater and Swift Parrot. The approved BioMP must be implemented.	• Native Ecosystem; and • Rehabilitation Biodiversity Offset Area.	End of Mine Life	Rehabilitation objectives are discussed in Section 4. Offset areas are managed under a BioMP.

2.2 Final Land Use Options Assessment

A Final Land Use Options Assessment has not been completed as part of this RMP as the suitability of the proposed final land use(s) are determined in the existing Project Approval processes including the development consent and EIS, and the previous MOP remain relevant for Mt Arthur.

Section 2.4 of this RMP provides detail on final land use domains.

2.3 Final Land Use Statement

The land use objective described in PA 09_0062 (MOD 1) is to create a mixture of pasture areas suitable for grazing along with large tracts of self-sustaining woodland to improve biodiversity values in the region, and water management areas. The conceptual final land use is depicted spatially on Plan 1.

Final voids are identified as either backfilled and achieving native woodland or grazing, or as a water management area for water storage or a groundwater sink.

There are 2 proposed final voids and the approximate dimensions are:

- Windmill Void; and
- McDonald Void.

As part of the obligation to minimise final voids Belmont Void will be backfilled.

2.4 Final land Use and Mining Domains

The key domains for Mt Arthur Coal, as shown in the Final Landform Features Plan (**Plan 1**), are outlined below in **Table 2-2**Error! Reference source not found..

Table 2-2 Mt Arthur Coal Domains based on NSW Resources Regulator Domain Codes (2021)

Final Land Use Domain	Code	Mining Domain	Code
Native Ecosystem	**A**	**Infrastructure Area**	**1**
Agricultural – Grazing	**B**	**Tailings Storage Facility**	**2**
Agricultural – Cropping	C	**Water Management Area**	**3**
Rehabilitation Biodiversity Offset Area (on site)	**D**	**Overburden Emplacement Area**	**4**
Industrial	E	**Active Mining Area (Open cut void)**	**5**
Water Management Areas	**F**	***Underground Mining Area (SMP)***	6
Water Storage (Excluding Final Void)	**G**	***Beneficiation Facility***	7
Heritage Area	H	***Other***	8
Infrastructure	I		
Final Void	**J**		
Other	**K**		

NOTES:

- The domains listed above are the required domains from the RMP Form and Way Document.

- The bold domains are relevant to the site and should be listed in Section 2.4 of this RMP. Domains in grey italics are not applicable to the site.
- Previous MOP Domain 6 (Offset Areas) is not a mining domain in the 2021 RMP Form and Way Guidance. Offsets onsite have been re-classified as Final Land Use Domain D Rehabilitation Biodiversity Offset Area as per Page 12 of the RMP Form and Way guidance (including remnant vegetation).

2.4.1 Final Land Use Domains

Final land use domains define the final land form and land use. Final land use domains contain post-mining land management units characterised by similar land use. The table below (**Table 2-3**) outlines the relevant final land use domains for the Project. These domains are outlined in the Final Landform and Rehabilitation Plans, **Plan 1** and **Plan 2**.

Table 2-3 Mt Arthur Coal Domains Final Land use Domains

Code	Final Land Use Domain for RMP	Description
A	Native Ecosystem	Native ecosystem at Mt Arthur Coal is described as **Native Woodland. Woodland ecosystems will** continue to be established predominantly on the shaped overburden emplacements and adjacent to final voids as the Project undertakes progressive rehabilitation.
B	Agricultural - Grazing	Areas identified for agricultural use will be rehabilitated to pasture landscapes with sufficient agricultural capability to support grazing livestock grazing. Per Schedule 3, Condition 41A of PA 09_0062 (MOD 1), rehabilitation will include 33 hectares of Class II agricultural capability land.
D	Rehabilitation Biodiversity Offset Area	The Form and Way document states this domain includes remnant vegetation or rehabilitation areas proposed to be subject to a Biodiversity offset application under the Biodiversity Conservation Act 2016. Per Schedule 3, Condition 41A of PA 09_0062 (MOD 1), rehabilitation includes restoration of "*at least 2,642 hectares of self-sustaining woodland ecosystems in accordance with the rehabilitation plan, including at least 500 hectares of White Box Yellow Box Blakely's Red Gum Woodland*". White Box Yellow Box Blakely's Red Gum Woodland is to be established to the north on site (refer Figure 5 of the Rehabilitation Strategy). The management of these offset areas (not a proposed woodland rehabilitation area) is covered under the Mt Arthur BioMP.
F	Water Management Areas; and	• The RMP Form and Way document defines this domain as 'water management areas (e.g. creek realignments, constructed wetlands, significant final landform drainage features)'. • For Mt Arthur this includes: • Whites Creek Diversion • Reinstatement of Fairford Creek; and • Drainage structures and drainage lines from landforms

Code	Final Land Use Domain for RMP	Description
G	Water Storage (Excluding Final Void)	The RMP Form and Way document defines this domain as water storage area (includes dams retained for the final land use, but excludes any anticipated permanent water body in the final void). The main mine water dam proposed to remain at closure is the Environment dam. Other sediment dams may remain in the final landform to assist work erosion and sediment control.
J	Final Void	There are 2 proposed final voids at closure (Windmill Void and MacDonalds Void) as shown in **Plan 1** (Final Landform Features). With mining scheduled to 2026, the active Windmill Pit will increase in volume and size as the mine progresses. Final voids will remain as a water management area for water storage or a groundwater sink. See **Section 2.2** of this RMP and Section 5.3 of the Mt Arthur Coal Rehabilitation Strategy regarding final void options.

2.4.2 Mining Domains

The mining domains for Mt Arthur are defined below (Table 2-14). These are classified as a land management unit with a discrete operational function (e.g. overburden emplacement), and therefore similar geophysical characteristics, that will require specific rehabilitation treatments to achieve the final land use(s).

Table 2-4 Mt Arthur Coal Mining Domains

Code	Mining Domain for RMP	Description
1	Infrastructure Area	For Mt Arthur this includes: • Main workshops; • Wash-down bay and mobile plant park-up areas; • CHPP (including structure, equipment and associated buildings); • Coal stockpile areas, including export stockpile; • Electricity sub stations; • Powerlines and light towers; • Fuel farm; • Truck fill Points; • Water treatment plant and potable tanks; • Water pipelines; • Septic tanks; • Conveyor from CHPP to export stockpile; • Rail loop and loading bin and infrastructure; • Visual and noise barriers (fencing) along the rail line; • Overpass bridges (2 over Thomas Mitchell Drive and 1 over The New England Highway). • Main administration building and bath house; • Projects Offices and portable buildings; • Powerlines and light towers; and • Sealed roads and car parks
2	Tailings Storage Facility	• Tailings Storage Facilities (TSF) (walls and tailings) including North Cut and Main TSF which comprises West Cut and South West Valley (of the former Bayswater No2 mining area); • Pumps and pump housing; and • Tailings pipelines under the tailings storage facility
3	Water Management Area	• Historic Voids; • Whites Creek diversion; • Environmental Dam; • CHPP Dam; • Main Dam; • Sediment Dam; • Dam walls; • Pumps and pump housings; • Polylines; • Open drains and spillways; • Alluvial Cut Off Wall and Levee.
4	Overburden Emplacement	• Shaped overburden • Unshaped overburden; and • Current rehabilitation. • Truck fill points • Pumps and pump housings; • Polylines; and • Powerlines and light towers;
5	Active Mining	Area of active mining. Movement of run of mine (ROM) coal and overburden.

3. Rehabilitation Risk Assessment

Detailed risk assessments have been completed for rehabilitation risks at Mt Arthur Coal and are reviewed and updated annually through the environmental management system process and published internally.

A Rehabilitation Risk Assessment was completed in general accordance with:

- Rehabilitation Risk Assessment Guideline (NSW Resources Regulator, 2021); and
- BHP's Risk Framework (which is aligned to ISO31000).

The objective of the risk assessment was to identify and assess rehabilitation risks for the Project, and determine critical controls for each risk.

Treatment of risks includes implementation of controls to prevent the causes of a threat, and mitigating controls to reduce its impacts. Residual Risk Rating (RRR) should be assessed and risk evaluation should be completed annually.

For each identified risk, Mt Arthur's internal Risk Framework was used to determine the Maximum Foreseeable Loss (MFL) rating of 1 to ≥5. A total of 16 risk scenarios were determined to have a MFL of 3 or above (with controls in place) as shown in **Table 3-1.**

Table 3-1 Rehabilitation Risk Assessment

Scenario	Control	
Loss of corporate knowledge or lack of qualified resources or poorly defined accountabilities	Annual budgeting and closure costing review, including studies and additional resources.	• Section 4.1; and • Section 6.
	Annual planning for resources - workforce planning, 2YB. LOA	
	Rehabilitation Master Contract to provide sufficient resourcing and governance.	
	HR strategies around workforce retention.	
	Document Management System	
	RACIs that outline roles and accountabilities during active mining through to post mining landuse.	
	Closure Planning documentation - RACIs to outline roles and accountabilities during active mining through to post mining landuse, provisioning processes.	
	Rehabilitation Management documentation - RACIs to outline roles and accountabilities.	
	Rehabilitation targets are tracked on site performance boards / scorecards to ensure activities are prioritised and tracked. Business planning processes capture rehabilitation targets and resourcing (LoA / 2YB).	
Extreme weather (climate change) causing failure of constructed landforms	Rehabilitation (monitoring) TARP responses.	• Section 4; • Section 6.2.1; • Section 6.2.4; and Section 6.2.5
	Rehabilitation Standard detailing rehabilitation processes	
	Rehabilitated landforms constructed to engineering designs that consider a range of weather events.	
	Erosion risk modelling	
	Closure study program to support 2030 closure to assess assumptions and modelling to ensure landforms will not fail (safe, stable, non-polluting)	
Structural failure/erosional instability of rehabilitated landforms	Testing and selection of preferred materials is incorporated in mine planning.	• Section 4.1; • Section 6.2.1; • Section 6.2.3; • Section 6.2.4; and Section 6.2.5
	Proposed closure study program to support 2030 closure announcement.	
	Survey checks and detailed inspections / engineering reviews of dump design	
	Dumps designed and constructed to Site Dump Standard	
	Conceptual drainage plan for general final landform	
	Engineered design of applied geomorphic landform.	
	QAQC process for rehabilitation.	
	Rehabilitation (monitoring) TARP responses.	
	Rehabilitation Standard detailing rehabilitation processes	
	Rehabilitated landforms constructed to engineering designs that consider a range of weather events.	
Final high wall or end wall fails beyond the abandonment or flood bund	Proposed closure study program to support 2030 closure announcement.	• Section 4.1; • Section 6.2.1; • Section 6.2.3; and Section 7
	Geotechnical engineering as shown in the GPL (i.e. max slope angles, critical areas (materials, faults etc), previous failure models floor conditions).	
	Cut off wall in place. Construction was subject to QAQC process.	

	Operations geotechnical/ wall stability monitoring program (including survey checks, piezometers).	
	Surface water diversions above high walls (not all considered adequate).	
	Current geotechnical design of walls to meet operational needs provide a factor of safety. Factor of safety is high (exceeds final plan).	
	Regulatory approval of existing mine wall designs/ operations.	
	Company owned buffer land surrounding all voids.	
	Dewatering of active voids during operations.	
	Alluvial cut-off wall is over engineered.	
Adverse geochemical/chemical composition of mined materials such as overburden, interburden, processing wastes, demolition wastes, subsoils and topsoils and imported cover materials	Groundwater monitoring.	• Section 4.1; • Section 6.2.1; and • Section 6.2.2.
	Spontaneous Combustion Management Plan for operations.	
	Mined material assessments and characterisation.	
	Rehabilitation materials sampling and amelioration	
	Material tracking/segregation document control and record keeping (QA/QC).	
	Selective handling: • Drilling and material characterisation to support the selective handling. • Material selectively handled based on it being weathering and competency (weathered cannot be used in the outside of the dumps, which it currently is).	
	Rehabilitation materials sampling and amelioration	
	Contaminated Land Management Procedure detailing operational remediation requirements and handling of contaminated materials	
	Surface water monitoring	
	Proposed closure study program to support 2030 closure announcement.	
	Co-disposal of coarse reject material and interburden	
Exposure of buried waste (erosion or weathering event, landform failure or incorrect disposal)	Characterisation of material (including water balance).	• Section 6.2.1; and • Section 6.2.2
	Record keeping (contaminated sites registers).	
	Groundwater monitoring.	
	Contaminated sites register, sampling and validation	
	Contaminated site assessment (Preliminary Site Investigation/ Phase 1)	
	Hazardous Materials surveys and register.	
	Surface water monitoring	
TSF landform failure (erosion or weathering event, landform failure or poor consolidation)	EoR (Engineer of Record) provides oversight and endorses basis of design	• Section 4.1; • Section 6.2.1; and • Section 6.2.3
	Proposed closure study program to support 2030 closure announcement.	
	Project group engineer and technical function review of construction and QA/QC	
	Construction QA/QC (construction engineer, BHP owners team, EoR)	
	Maintenance schedule for key equipment e.g. pumps	

	Certification completed by a 'suitably qualified and experienced person' (the Engineer of Record or delegate for tailings storage facilities)	
	Design includes engineered spillway to prevent overtopping suitable for an extreme rainfall event	
	Low water levels maintained (minimum freeboard requirements)	
	TSF Operational TARP and operational risk assessment	
	Secondary flocculant process used to increase tailings consolidation and improve beach angle	
	Whole site landform and drainage design	
	Design includes a seepage pathway to Drayton Void	
	Dam wall monitoring	
	Surface water monitoring	
	Groundwater monitoring	
	Landform integrated into the geomorphic landform design. (Design itself not geomorphic)	
	Geotechnical engineering as shown in the GPL (i.e. max slope angles, critical areas (materials, faults etc), previous failure models floor conditions).	
	Groundwater modelling	
Poor infrastructure management during demolition fails to meet expectations of internal and external stakeholders (community, regulator, BHP)	Hazardous Materials surveys and register.	• Section 4.1; • Section 6.2.1; and • Section 6.2.2
	Asset registers and record keeping, including survey plans.	
	Routine inspection and condition assessments have been undertaken on existing assets.	
	Project Approvals for retention of infrastructure.	
	Stakeholder engagement.	
	Use of licenced waste disposal contractor and facility.	
	Asbestos Management Plan determines how potentially hazardous building materials present and how they are to be disposed	
	Waste Handling and Disposal Procedure determines how potentially hazardous materials non-mined materials (excluding demolition waste)	
Poor management of retained infrastructure fails to meet expectations of internal and external stakeholders (community, regulator, BHP)	Asset registers and record keeping, including survey plans.	• Section 4.1; • Section 6.2.1; and Section 6.2.2
	Routine inspection and condition assessments have been undertaken on existing assets.	
	Project Approvals for retention of infrastructure.	
	Stakeholder engagement.	
	Asbestos Management Plan determines how potentially hazardous building materials present and how they are to be disposed	
	Use of licenced waste disposal contractor and facility.	
	Waste Handling and Disposal Procedure determines how potentially hazardous materials non-mined materials (excluding demolition waste)	
	Dam inspections and maintenance	

Unauthorised (reasonable) public access into closed site occurs (ie. unsafe structures and landforms, voids, confined spaces), including Mt Arthur crown lease area.	Engineering controls including fencing, signage and security established. Additional bunds, fencing, signage, designated access points around active voids.	• Section 6.2.1; and • Section 6.2.2
	Statutory site inspections completed of areas post closure.	
	Historical records of underground workings or remaining infrastructure available to key stakeholders.	
	Existing site safety management system and controls to prevent access.	
	Routine bore rehabilitation to ensure land is safe to traverse	
	Ongoing monitoring of spontaneous combustion risk on site	
	Geotechnical engineering as shown in the Geotechnical Pit Layout (GPL) i.e.max slope angles, critical areas (materials, faults etc), previous failure models floor conditions. Design to Factor of Safety of 1.5.	
	Ongoing capping of spontaneous combustion.	
Materials and resources are insufficient in quantity to meet expectations of internal and external stakeholders (community, regulator, BHP)	Mine Plan to include short term planning expectations for materials, and mid-term planning process.	• Section 4.1; • Section 5; • Section 6.2.1; • Section 6.2.3; and • Section 6.2.4;
	Landform design process identify the volume of material required.	
	Topsoil mass balance to be understood.	
	Topsoil Management Plan determines topsoil tracking, and handling requirements (advanced topsoil stockpiling and scheduling practices) and Topsoil Stockpile Database which tracks location, volume of resource.	
	Skilled contractors undertake topsoil stripping	
	Master rehabilitation contract incorporates QAQC (including topsoil placement) etc	
	Permit to Disturb (PTD) Reviews and identifies topsoil depths, Training and awareness of topsoil retention, Spatial data shows disturbance area.	
	Growth media alternatives (eg. subsoils, spoil, compost) to be considered / used	
	Compaction ripping; tillage.	
	Timing of seeding (as soon as possible after soil application).	
Ecosystem Establishment fails to meet expectations of internal and external stakeholders (community, regulator, BHP)	Stag tree stockpiling locations stored in GIS.	• Section 4.1; • Section 4.2; • Section 6.2.1; • Section 6.2.5; • Section 6.2.6; and • Section 8.
	Alternate habitat options (eg telegraph poles).	
	Seed harvested from the remnant woodland areas as well as prior to stripping.	
	Flexible species list.	
	Current seed supplier has a QA/QC process.	
	QA/QC of the seed by a third party.	
	Permit to Disturb (PTD) procedure including training and awareness, spatial data shows disturbance area, inspections.	
	Master rehabilitation contract incorporates ongoing maintenance and schedules	
	Site seed collection	
	Professional tubestock supply	
Ecosystem establish fails to meet expectations of internal and external stakeholders (community, regulator, BHP)	Rehabilitation Strategy and Rehabilitation Management Plan sets outline the existing obligations and commitments.	• Section 4.1; • Section 4.2; • Section 6.2.1; • Section 6.2.5;
	Rehabilitation monitoring and TARP responses.	
	Master rehabilitation contract incorporates ongoing maintenance and schedules	
	Alternate growth media (remove weed seed bank)	

	External technical advice	• Section 6.2.6; and • Section 8.
	Weed treatment plan	
	Master rehabilitation contract incorporates ongoing maintenance and schedules	
Ecosystem fails to due to damage to rehabilitation during establishment	Bushfire Management Plan reduces bushfire risk	• Section 4.1; • Section 6.2.1; • Section 6.2.5; • Section 6.2.6; and • Section 8.
	Emergency Response Team (ERT) on site to respond.	
	Signs & Fencing in the rehab areas.	
	Permit to Disturb includes checks against the forward program data	
	Pest Control Program.	
	Physical barriers on tubestock (hare tubes, guards, etc).	
	Master rehabilitation contract incorporates ongoing maintenance and schedules	
	Rehabilitation monitoring and TARP responses.	
	Rehabilitation Strategy and Rehabilitation Management Plan sets outline the existing obligations and commitments.	
	All QA QC processes for the execution and maintenance of rehabilitation	
	Ongoing engagement with regulators and community consultation.	
	Master rehabilitation contract incorporates ongoing maintenance and schedules	
	Requirement to meet the conditions with the existing Project Approval.	
	Project Approval Modification if new approval conditions are required to allow for relinquishment.	
	Document Management System.	
	Annual budgeting and closure costing review.	
	Rehabilitation (monitoring) TARP responses. (REMP)	
	Aboriginal Cultural Heritage management plan outlining indigenous engagement requirements.	
	Benchmarking - implement best practices and review lessons learned	
	Subject matter expert input for all key aspects of rehabilitation (from studies, design through to implementation)	
Ecosystem or landuse fails to meet expectations of internal and external stakeholders (community, regulator, BHP)	Transition team; proposed closure study program to support 2030 closure announcement.	• Section 4.1; • Section 6.2.1; • Section 6.2.5; Section 6.2.6; and • Section 8.
	Rehabilitation Strategy and Rehabilitation Management Plan sets outline the existing obligations and commitments.	
	All QA QC processes for the execution and maintenance of rehabilitation	
	Ongoing engagement with regulators and community consultation	
	Master rehabilitation contract incorporates ongoing maintenance and schedules	
	Requirement to meet the conditions with the existing Project Approval	
	Project Approval Modification if new approval conditions are required to allow for relinquishment	
	Document Management System	
	Annual budgeting and closure costing review	
	Rehabilitation (monitoring) TARP responses. (REMP)	

	Aboriginal Cultural Heritage management plan outlining indigenous engagement requirements	
	Benchmarking – implement best practices and review lessons learned	
	Subject matter expert input for all key aspects of rehabilitation (from studies, design through to implementation)	
Ecosystem fails or rehabilitation is damaged by post mining factors	Transition team; proposed closure study program to support 2030 closure announcement. To include climate impacts.	• Section 4.1; • Section 6.2.1; • Section 6.2.5; • Section 6.2.6; and Section 8.
	Closure studies to confirm erosion modelling of landform and drainage structures is sufficient, including water storage infrastructure.	
	Sensitive areas to be segregated / access controlled where necessary to prevent damage to ecosystem - site perimeter fencing, signage.	
	Post mining land use studies and engagement with local stakeholders and regulators.	
	Rehabilitation monitoring to monitor species diversity, ecosystem resilience. Quality control processes and records to track establishment.	
	Additional vegetation structures to support targeted fauna species - installation of stag trees, nest boxes.	
	Infrastructure needs assessment completed with stakeholders to support intended final land use (e.g. dams, fences, watering facilities).	
	Rehabilitation Strategy and Rehabilitation Management Plan sets outline the existing obligations and commitments.	
	Annual budgeting and closure cost provisioning to ensure resources are sufficient.	

4. Rehabilitation Objectives and Completion Criteria

4.1 Rehabilitation Objectives and Rehabilitation Completion Criteria

Mt Arthur Coal will rehabilitate mining generated landforms (waste emplacements) to establish a non-polluting, structurally stable landscape to maximise opportunities for a diverse post-mining landscape and range of land uses. It is proposed that final land uses should remain flexible and could include pastoral, commercial forestry, recreation, wildlife habitat corridors and/or other opportunities.

Rehabilitation Objectives, Performance Indicators and Completion Criteria, for the mining and final land use domains identified in **Section 2** are presented in **Table 4-1**. The spatial reference can be determined using the Final Land Use and Mining Domain codes shown in **Table 2-2**.These rehabilitation completion criteria are applicable to all rehabilitation at Mt Arthur Coal, inclusive of existing and future rehabilitation, and have been developed to address the rehabilitation obligations listed in **Table 2-1**.

Australian Coal Association Research Program (ACARP) and other industry-led and publicly available research has been used to justify threshold values for completion criteria and performance standards, and associated validation methodologies.

Table 4-1 Rehabilitation Objectives and Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Approved Rehabilitation Objectives	Indices	Draft Proposed Rehabilitation Completion Criteria	Example Justification / Validation Methods
A. Native Ecosystem **B. Agricultural – Grazing** **D. Rehabilitation Biodiversity Offset Area (on site)**	1. Infrastructure Area	A1 B1 D1	Removal of infrastructure	All infrastructure that is not to be used as part of the final land use is removed to ensure the site is safe and free of hazardous materials.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Surface structures, buildings, roads and rail infrastructure not required for post mining land use have services disconnected and terminated and are demolished and removed.	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.
A. Native Ecosystem **B. Agricultural – Grazing** **D. Rehabilitation Biodiversity Offset Area (on site)**	1. Infrastructure Area	A1 B1 D1	Retention of infrastructure	Ensure that retained infrastructure has relevant consent approvals. All infrastructure that is to remain as part of the final land use is safe and does not pose any hazard to the community.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Safety risks associated with remaining infrastructure identified and appropriately managed. Legal instruments established to prove transfer of ownership to another entity, or agreement to acquire, operate and manage retained infrastructure at mine closure.	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.
A. Native Ecosystem **B. Agricultural – Grazing** **D. Rehabilitation Biodiversity Offset Area (on site)**	4. Overburden Emplacement Area	A4 B4 D4	Land contamination	Reshaped overburden emplacements will be compatible with surrounding landforms (mined and non-mined) and selected postmining land uses.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.
A. Native Ecosystem **B. Agricultural – Grazing** **D. Rehabilitation Biodiversity Offset Area (on site)** **J. Final Void**	1. Infrastructure Area 2. Tailings Storage Facility 3. Water Management Area 4. Overburden Emplacement Area 5. Active Mining Area (Open cut void)	A1 A3 A4 B1 B2 B3 B4 B5 D1 D3 D4 D5 J5	Land contamination	There is no residual soil contamination on the Project area that is incompatible with the final land use or that poses a threat of environmental harm.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Carbonaceous, acid generating or spontaneously combustible material will be adequately characterised and addressed before closure; Contaminants less than the assessment criteria; and Contaminated materials removed from site, treated or capped.	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.
B. Agricultural – Grazing	2. Tailings Storage Facility	B2	Management of waste and process materials	Capping/ treatment of facilities will be appropriately designed and constructed so as to ensure geotechnical stability and successful containment of tailings material and hazardous leachate drainage or seepage.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Construction of capping layer as per independent consultant's design. Monitoring regime established for downstream waters; Monitoring indicates no evidence of capping instability or environmental harm; Sign off from the Dam Safety Committee that TSF wall integrity is satisfactory based on assessment by a suitably qualified geotechnical engineer; and Capping of tailings	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.

B. Agricultural – Grazing	2. Tailings Storage Facility	B2	Management of waste and process materials	The Project's tailings storage facilities will be capped to minimise the potential for exposure of potentially environmentally sensitive tailings material in the rehabilitated landform	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Construction of capping layer as per independent consultant's design; Field monitoring and/or survey data analysis indicates TSF capping will continue to shed water, with stability and erosion comparable to surrounding non-mined landforms of similar topography; Any areas of active erosion on the TSF capping or end walls are within the parameters for safe and stable (landform); Groundwater quality downgradient of TSF is within range as predicted in environmental assessments.	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.
A. Native Ecosystem **B. Agricultural – Grazing** **D. Rehabilitation Biodiversity Offset Area (on site)** **F. Water Management Areas**	1. Infrastructure Area 2. Tailings Storage Facility 3. Water Management Area 4. Overburden Emplacement Area 5. Active Mining Area (Open cut void)	A1 A3 A4 B2 B3 B4 D1 D3 D4 D5 F3	Landform stability	The final landform is safe, stable, non-polluting and does not present a risk of environmental harm downstream / downslope of the site or a safety risk to the public/stock/native fauna. Landform that is commensurate with surrounding natural landform and where appropriate, incorporates geomorphic design principles.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Field monitoring of surface drainage infrastructure demonstrates that constructed drainage features are functioning as designed with no significant failures; Field monitoring and/or survey data analysis indicates reshaped landforms will continue to shed water, with stability and erosion comparable to surrounding non-mined landforms of similar topography; Potentially high risk materials (coarse rejects, potentially acid-generating or spontaneously combustible) placed in overburden emplacements will be capped in accordance with the approved engineering design and assessed by a suitably qualified person; Absence of hazardous carbonaceous material on the surface of the rehabilitation; and No active spontaneous combustion areas, as evidenced through established monitoring program. To achieve the rehabilitation objectives, slopes are generally consistent with Project Approval (09_0062); Any areas of active erosion are within the parameters for safe and stable landform; and Discharge points from rehabilitated landform to natural channels are stable.	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.
J. Final Void	5. Active Mining Area (Open cut void)	J5	Landform stability	The final void is safe, stable, non-polluting and does not present a risk of environmental harm downstream / downslope of the site or a safety risk to the public/stock/native fauna.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Fencing and signage in place. Void low walls are to be reshaped to achieve long term stability; Void high walls to achieve a Factor of Safety (FoS) of 1.5 and, if required, protected with berm and trench, or fencing and signage, depending on risk. Final voids have been inspected by a qualified geotechnical engineer to validate that it is stable and poses acceptable safety risk.	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.
F. Water Management Areas	3. Water Management Area	F3	Landform stability	The flood levee is stable and flood-proof, with no evidence of slumping, and continued function and stability of subsurface of the alluvial cut off wall.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Demonstrated long-term stability and function of Hunter River alluvials cut-off wall and flood levee.	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.
A. Native Ecosystem **D. Rehabilitation Biodiversity Offset Area (on site)**	1. Infrastructure Area 3. Water Management Area 4. Overburden Emplacement Area 5. Active Mining Area (Open cut void)	A1 A3 A4 D1 D3 D4 D5	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Appropriate bushfire hazard controls (where required) have been implemented on the advice from the NSW Rural Fire Service. Self-sustainable ecosystem, resilient to bushfire: evidence of flowering and seeds or second generation juveniles for trees and shrubs.	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.

F. Water Management Areas	3. Water Management Area	F3	Surface water	Rehabilitate and revegetate Whites Creek in accordance with the Project Approval. Whites Creek reinstated such that there are no impacts to down stream receptors.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Whites Creek will be commissioned and the creek line reinstated such that there are no impacts to down stream receptors. Native vegetation will be planted along the draining channels as part of the rehabilitation, to maximise the long term stability of Whites Creek drainage system. Independent report confirming no loss of aquatic habitat (per PA 09_0062).	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.
A. Native Ecosystem **B. Agricultural – Grazing** **D. Rehabilitation Biodiversity Offset Area (on site)** **F. Water Management Areas**	1. Infrastructure Area 2. Tailings Storage Facility 3. Water Management Area 4. Overburden Emplacement Area 5. Active Mining Area (Open cut void)	A1 A3 A4 B1 B2 B3 B4 B5 D1 D3 D4 D5 F3	Surface water	Runoff water quality is similar to analogue sites.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Runoff water quality from rehabilitation areas are within the site specific criteria for Mt Arthur Coal, derived from ANZECC guidelines. Water quality in all storages left within the Project area (other than final voids) is suitable for the approved final land use.	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.
F. Water Management Areas **J. Final Void**	3. Water Management Area 5. Active Mining Area (Open cut void)	F3 J5	Water approvals	Structures that take water are appropriately licensed.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Licenses held, where required.	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.
A. Native Ecosystem **D. Rehabilitation Biodiversity Offset Area (on site)** **J. Final Void**	1. Infrastructure Area 3. Water Management Area 4. Overburden Emplacement Area 5. Active Mining Area (Open cut void)	A1 A3 A4 D1 D3 D4 D5 J5	Groundwater	Groundwater quality and groundwater regime are within range as predicted in environmental assessment and Water Management Plan. The risk to important groundwater assets has been addressed by the rehabilitation.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Groundwater quality and groundwater regime are within range as predicted in environmental assessments and in accordance with water sharing plans or water allocations held by the Project.	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.
B. Agricultural – Grazing	1. Infrastructure Area 2. Tailings Storage Facility 3. Water Management Area 4. Overburden Emplacement Area 5. Active Mining Area (Open cut void)	B1 B2 B3 B4 B5	Groundwater	Groundwater quality and groundwater regime are within range as predicted in environmental assessment. The risk to important groundwater assets (alluvial aquifers and landholder bores) has been addressed by the rehabilitation.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Groundwater quality and groundwater regime are within range as predicted in environmental assessments and in accordance with water sharing plans or water allocations held by the Project.	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.

D. Rehabilitation Biodiversity Offset Area (on site)	1. Infrastructure Area 3. Water Management Area 4. Overburden Emplacement Area 5. Active Mining Area (Open cut void)	D1 D3 D4 D5	Ecological rehabilitation	500 ha of rehabilitation will be established and maintained as Box Gum Woodland (as defined in Project Approval).	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	<50% coverage of high threat perennial weed species. Canopy density of 10-40% with keystone species present: Eucalyptus albens OR Eucalyptus moluccana, OR Eucalyptus albens x moluccana; and Eucalyptus blakelyi. Shrub density 1-30% with 2 or more of these keystone species present: Olearia elliptica; Notelaea macrocarpa; Acacia decora; Myoporum montanum; and Pandorea pandorana. An average native ground cover layer of ≥40% All structural dominant species apparent in reference sites are represented; A total of 12 or more native species non – grass species Box Woodland Establishment Area of 500 ha as per the Mt Arthur Coal Mine Rehabilitation Strategy Rehabilitation Strategy Conceptual Final Land Use Plan figure.	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.
A. Native Ecosystem	1. Infrastructure Area 3. Water Management Area 4. Overburden Emplacement Area	A1 A3 A4	Ecological rehabilitation	An area equivalent to 2142 ha will be established and maintained as native woodland as shown in the Final Landform and Rehabilitation Plan (FLRP).	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	All areas shown as Native Woodland vegetation community of the Mt Arthur Coal Mine Rehabilitation Strategy Rehabilitation Strategy Conceptual Final Land Use Plan figure, planted with a native species mix (seed or tubestock) targeted at establishing an open grassy woodland vegetation community. 2,142 hectares of self-sustaining woodland ecosystems as per the Mt Arthur Coal Mine Rehabilitation Strategy Rehabilitation Strategy Conceptual Final Land Use Plan figure <50% coverage of high threat perennial weed species. Canopy density of 10-40% with keystone species present: Allocasuarina luehmannii; and Brachychiton populneus; and Eucalyptus crebra OR Corymbia maculate; Eucalyptus albens OR Eucalyptus moluccana, OR Eucalyptus albens x moluccana OR Eucalyptus blakelyi; Shrub density 1-30% with keystone species present: Notelaea microcarpa; Acacia decora; Myoporum montanum; OR Native woodland vegetation composition to representis characteristic of the best- fit PCT's as described in the Mt Arthur Coal Rehabilitation Strategy (Section 6.1, Table 6-1); and All structural dominant species apparent in reference sites are represented;	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.

A. Native Ecosystem D. Rehabilitation Biodiversity Offset Area (on site)	1. Infrastructure Area 3. Water Management Area 4. Overburden Emplacement Area 5. Active Mining Area (Open cut void)	A1 A3 A4 D1 D3 D4 D5	Ecological rehabilitation	Habitat suitable for target species is present in rehabilitation areas. Rehabilitated areas contain flora species assemblages characteristic of species found within analogue sites to provide habitat.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Fauna monitoring of natural and introduced habitat features (i.e. nesting boxes large rocks, logs/coarse woody debris, hollow bearing timber) indicates colonisation by native species;	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.
A. Native Ecosystem D. Rehabilitation Biodiversity Offset Area (on site)	1. Infrastructure Area 3. Water Management Area 4. Overburden Emplacement Area 5. Active Mining Area (Open cut void)	A1 A3 A4 D1 D3 D4 D5	Ecological rehabilitation	Levels of ecosystem function have been established that demonstrate the rehabilitation is self sustainable.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.
A. Native Ecosystem D. Rehabilitation Biodiversity Offset Area (on site)	1. Infrastructure Area 3. Water Management Area 4. Overburden Emplacement Area 5. Active Mining Area (Open cut void)	A1 A3 A4 D1 D3 D4 D5	Ecological rehabilitation	Rehabilitated native woodland vegetation will provide faunal habitat and movement corridors by linking existing vegetation communities within and surrounding the mine boundary.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Rehabilitated native vegetation distribution will link areas of onsite and near-site native vegetation, and be consistent with the biodiversity corridors consistent with the Rehabilitation Strategy Rehabilitation Strategy Conceptual Final Land Use Plan	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.
A. Native Ecosystem D. Rehabilitation Biodiversity Offset Area (on site)	1. Infrastructure Area 3. Water Management Area 4. Overburden Emplacement Area 5. Active Mining Area (Open cut void)	A1 A3 A4 D1 D3 D4 D5	Ecological rehabilitation	Vegetation composition of the rehabilitation contains species characteristic of native vegetation communities described in the Rehabilitation Strategy, consistent with Condition 38 of the Project Approval (PA09_0062): Upper Hunter White Box – Ironbark Grassy Woodland; Central Hunter Box – Ironbark Woodland; Central Hunter Ironbark – Spotted Gum - Grey Box Forest; Narrabeen Footslopes Slaty Box Woodland; Hunter Floodplain Red Gum Woodland Complex; White Box Yellow Box Blakely's Red Gum Woodland; Hunter Lowlands Red Gum Forest. Note: where communities listed in the condition have been established in offset areas in accordance with condition 38, it is not the expectation that all communities are established or represented within rehabilitation areas.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Native Woodland 2,142 hectares of self-sustaining woodland ecosystems as per the Mt Arthur Coal Mine Rehabilitation strategy Rehabilitation Strategy Conceptual Final Land Use Plan figure <50% coverage of high threat perennial weed species. Canopy density of 10-40% with keystone species present: Allocasuarina luehmannii; and Brachychiton populneus; and Eucalyptus crebra OR Corymbia maculate; Eucalyptus albens OR Eucalyptus moluccana, OR Eucalyptus albens x moluccana OR Eucalyptus blakelyi; Shrub density 1-30% with keystone species present: Notelaea microcarpa; Acacia decora; Myoporum montanum; OR Native woodland vegetation composition to representis characteristic of the best- fit PCT's as described in the Mt Arthur Coal Rehabilitation Strategy (Section 6.1, Table 6-1); and All structural dominant species apparent in reference sites are represented;	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.

A. Native Ecosystem **D. Rehabilitation Biodiversity Offset Area (on site)**	1. Infrastructure Area 3. Water Management Area 4. Overburden Emplacement Area 5. Active Mining Area (Open cut void)	A1 A3 A4 D1 D3 D4 D5	Ecological rehabilitation	Vegetation structure is trending to analogue site. Tree densities as per completion criteria values (once approved). Rehabilitated native woodland will be focussed on re-establishing the vegetation communities as described in the Project Approval: Upper Hunter White Box – Ironbark Grassy Woodland; Central Hunter Box – Ironbark Woodland; Central Hunter Ironbark – Spotted Gum - Grey Box Forest; Narrabeen Footslopes Slaty Box Woodland; Hunter Floodplain Red Gum Woodland Complex; White Box Yellow Box Blakely's Red Gum Woodland; Hunter Lowlands Red Gum Forest. Note: where communities listed in the condition have been established in offset areas in accordance with condition 38, it is not the expectation that all communities are established or represented within rehabilitation areas.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Native Woodland 2,142 hectares of self-sustaining woodland ecosystems as per the Mt Arthur Coal Mine Rehabilitation strategy Rehabilitation Strategy Conceptual Final Land Use Plan figure <50% coverage of high threat perennial weed species. Canopy density of 10-40% with keystone species present: Allocasuarina luehmannii; and Brachychiton populneus; and Eucalyptus crebra OR Corymbia maculate; Eucalyptus albens OR Eucalyptus moluccana, OR Eucalyptus albens x moluccana OR Eucalyptus blakelyi; Shrub density 1-30% with keystone species present: Notelaea microcarpa; Acacia decora; Myoporum montanum; OR Native woodland vegetation composition to representis characteristic of the best- fit PCT's as described in the Mt Arthur Coal Rehabilitation Strategy (Section 6.1, Table 6-1); and All structural dominant species apparent in reference sites are represented; Box Gum Woodland <50% coverage of high threat perennial weed species. Canopy density of 10-40% with keystone species present: Eucalyptus albens OR Eucalyptus moluccana, OR Eucalyptus albens x moluccana; and Eucalyptus blakelyi. Shrub density 1-30% with 2 or more of these keystone species present: Olearia elliptica; Notelaea macrocarpa; Acacia decora; Myoporum montanum; and Pandorea pandorana. An average native ground cover layer of ≥40% All structural dominant species apparent in reference sites are represented; A total of 12 or more native species non – grass species Box Woodland Establishment Area of 500 ha as per the Mt Arthur Coal Mine Rehabilitation strategy Rehabilitation Strategy Conceptual Final Land Use Plan figure.	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.
B. Agricultural – Grazing	1. Infrastructure Area 2. Tailings Storage Facility 3. Water Management Area 4. Overburden Emplacement Area 5. Active Mining Area (Open cut void)	B1 B2 B3 B4 B5	Agricultural revegetation	Land capability is sustainable for the long term and only requires maintenance that is consistent with the intended final land use. Pasture rehabilitation land will demonstrate appropriate soil properties so as to support sustainable livestock grazing.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Land and soil capability classification or agricultural land classification criteria met (Class V or better as assessed by an agronomist); and Rehabilitation areas comprise palatable grasses and legumes appropriate to the district and suitable for cattle grazing; and Weed presence is within range found analogue sites and does not present a risk to the intended final land use.	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.

J. Final Void	5. Active Mining Area (Open cut void)	J5	Agricultural revegetation	Land capability is sustainable for the long term and only requires maintenance that is consistent with the intended final land use.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Land and soil capability classification or agricultural land classification criteria met (Class V or better as assessed by an agronomist); and Rehabilitation areas comprise palatable grasses and legumes appropriate to the district and suitable for cattle grazing; and Weed presence is within range found analogue sites and does not present a risk to the intended final land use.	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.
B. Agricultural – Grazing	1. Infrastructure Area 2. Tailings Storage Facility 3. Water Management Area 4. Overburden Emplacement Area 5. Active Mining Area (Open cut void)	B1 B2 B3 B4 B5	Agricultural revegetation	Land use capability is capable of supporting the target agricultural land use (grazing) and Class II (where required).	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Rehabilitated landscapes will be of the land capability Class V-VI or better comparable to that of pre-mining environment; and Appropriate infrastructure such access roads and fencing, including fencing along drainage lines and adjacent woodland areas, maintained and functional.	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.
B. Agricultural – Grazing	1. Infrastructure Area 2. Tailings Storage Facility 3. Water Management Area 4. Overburden Emplacement Area 5. Active Mining Area (Open cut void)	B1 B2 B3 B4 B5	Agricultural revegetation	Rehabilitate at least 33 hectares of Class II agricultural capability land in the area identified in the Final Landform and Rehabilitation Plan.	Rehabilitation performance indices will be determined pending approval of rehabilitation objective and completion criteria.	Land and soil capability classification or agricultural land classification criteria met (Class II as assessed by an agronomist); and Rehabilitation areas comprise palatable grasses and legumes appropriate to the district and suitable for cattle grazing; and Weed presence is within range found analogue sites and does not present a risk to the intended final land use.	Justification or validation methods of performance will be determined pending approval of rehabilitation objective and completion criteria.

4.2 Rehabilitation Objectives and Rehabilitation Completion - Stakeholder Consultation

Mt Arthur Coal regularly engages with local stakeholders regarding proposed operations, including community engagement programs and opportunities. This engagement includes:

- The operation of a 24-hour free call community response line to allow the community to contact the operation directly (1800 882 044);
- Access to information including approval documents, environmental assessments, management plans, environmental audits and environmental management and monitoring reports on a publicly accessible website, at: https://www.bhp.com/environment/regulatory-information/;
- Quarterly CCC meetings to provide an interface between the community, mine management and the select government departments. The community representatives on the CCC are able to share information from CCC meetings with the wider community and to report back on community issues at CCC meetings;
- The Mt Arthur Coal Community Investment Fund which provides financial and in-kind support to local not-for-profit organisations and partners with community development programs;
- Regular attendance at monthly meetings of Muswellbrook Chamber of Commerce and Industry Inc, of which Mt Arthur Coal is an active member, to support local business houses and industry; and
- Participation in the Upper Hunter Mining Dialogue (UHMD), coordinated by the NSW Minerals Council to address cumulative impacts from mining in the Upper Hunter and identify opportunities for improved management and innovation.

Consultation with registered Aboriginal parties is discussed in the Aboriginal Heritage Management Plan (AHMP).

In relation to the Mt Arthur Coal Pathway to Closure, Mt Arthur Coal will be implementing a comprehensive engagement program with a broad spectrum of interested stakeholders. This will include a Social Impact Assessment (SIA) conducted specifically for the proposed Project Modification (MOD 2030).

Consultation specific to this document version is provided in Table 4-2 below with consultation provided in September attached in **Appendix 3**. Stakeholder consultation relating to rehabilitation is reported annually in the Mt Arthur Coal Annual Rehabilitation Report.

Table 4-2 Stakeholder Consultation 2019-2024

Date	Stakeholder	Details of Consultation	Actions by Mt Arthur Coal
June 2019	• DPE • NSW RR; and • MSC.	New RMP format and separated from the Mine Operations Plan as per the new Resource Regulator Guidelines.	RMP updated as appropriate post consultation.
April 2020	• DPE • NSW RR; and • MSC.	Update to RMP for submission with Annual Forward Plan, to align with Resource Regulator guidelines.	RMP updated as appropriate post consultation.
June 2021	• DPE • NSW RR; and • MSC.	Update to RMP following rehabilitation risk assessment.	RMP updated as appropriate post consultation.
September 2023	• DPE • NSW RR; and • MSC.	A copy of this RMP has been sent to this Department to be reviewed for comment.	RMP update as appropriate post consultation.
June 2024	• DPE • NSW RR; and • MSC.	Update triggered by Rehab Objective approval by RR. A copy of this RMP has been sent to this Department to be reviewed for comment.	

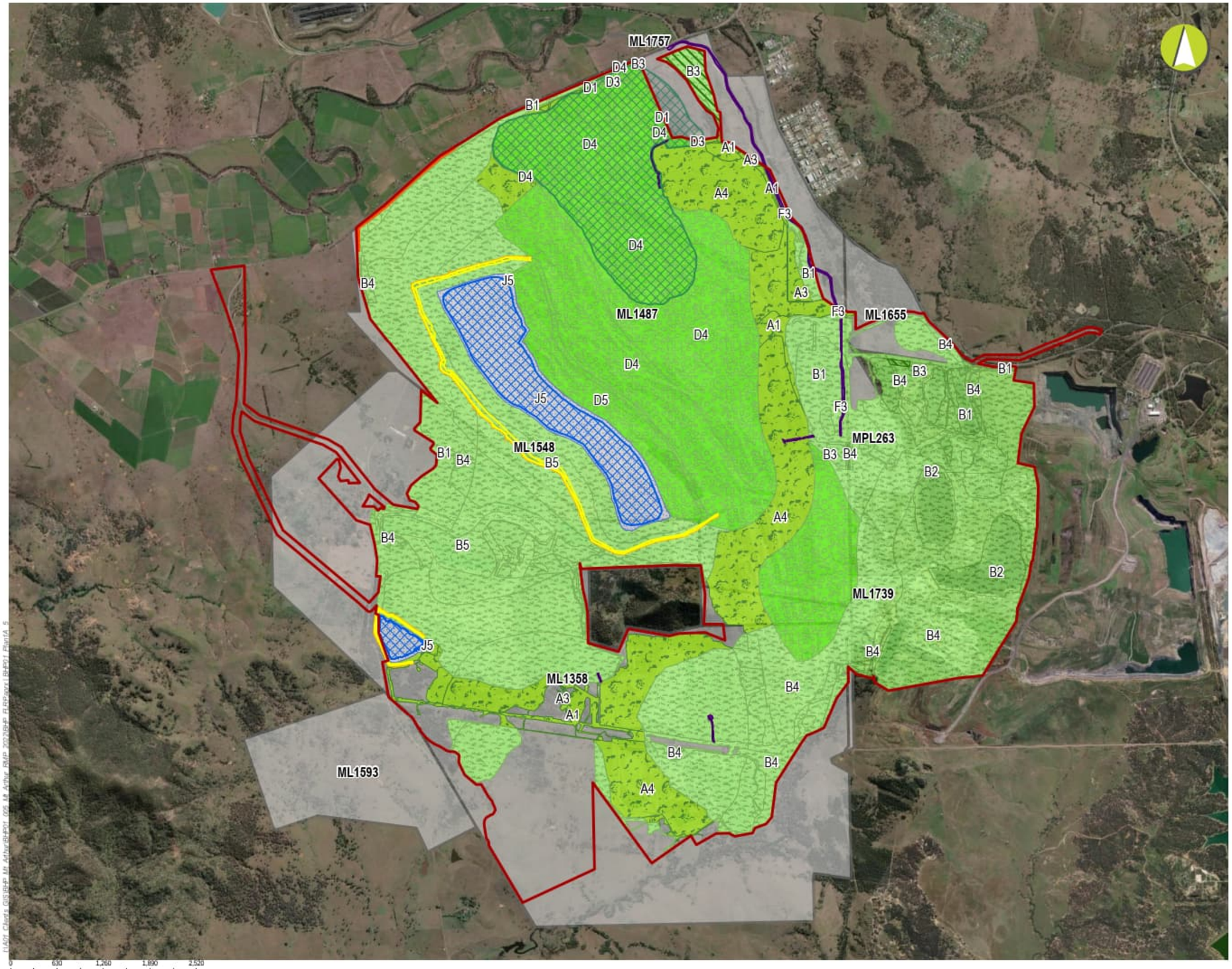
5. Final Landform and Rehabilitation Plan

This section outlines the Final Landform and Rehabilitation Plans for Mt Arthur Coal which have been prepared as per the RMP Form and Way Document.

The two plans include:

Plan 1: Final Landform Features.

Plan 2: Final Landform Contours.



LEGEND

- Project Approval Boundary
- Current Authourisations
- Box Gum Woodland Establishment Area
- Option1: Proposed Pasture Class II

Final Landform Feature

- Alluvial cut off wall
- Fence Line
- Final Void Water Level
- Safety Bund
- Water Management Structures

Final Landuse Domain

- Domain A: Native Ecosystem
- Domain B: Agricultural - Grazing
- Domain D: Rehabilitation Biodiversity Offset Area
- Domain F: Water Management Areas
- Domain J: Final Void

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Sheet Size : A3

BHP

Source: Project Approval Boundary, Final Landform and Current Authorisations from UCMPL (2023). Roads, watercourses and electricity transmission lines from LPI (2023).

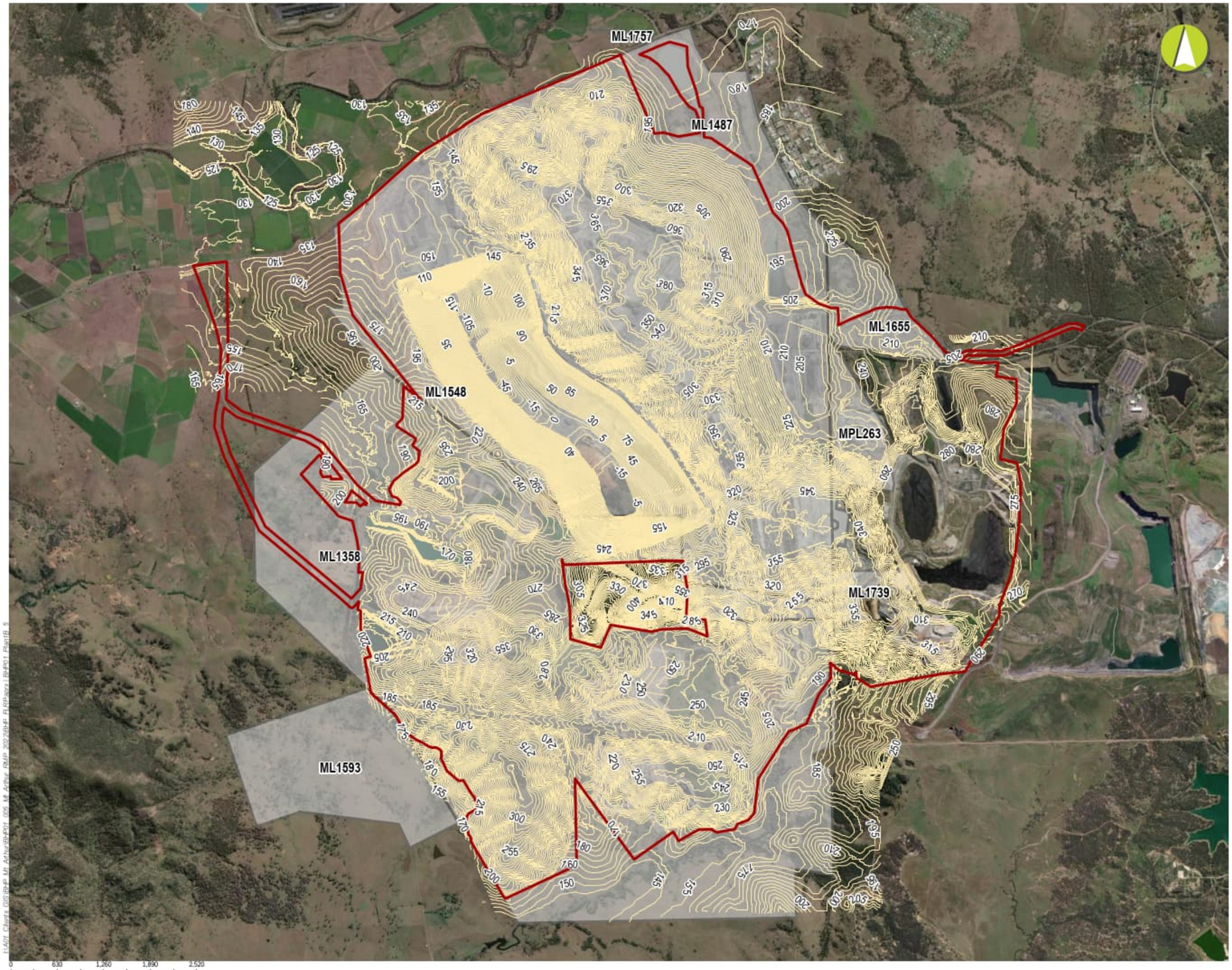
Mount Arthur Coal - BHP

Plan 1

Final Landform and Rehabilitation

Plan: Final Landform Features

Mine name	Mount Arthur Coal
Plan name	Mount Arthur RMP
Year of anticipated relinquishment	TBA following Portal Submission
Data theme submission ID No.	TBA following Portal Submission
Spatial Reference	GDA2020 MGA Zone 56
Plan date (date created)	15/05/2024



LEGEND

- Project Approval Boundary
- Current Authourisations
- Final Landform Contours (5m)

0 630 1,260 1,890 2,520 m

Scale: 1:52,500

Sheet Size : A3

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BHP

Source: Project Approval Boundary, Final Landform and Current Authorisations from UCMPL (2023). Roads, watercourses and electricity transmission lines from LPI (2023).

Mount Arthur Coal - BHP

Plan 2
Final Landform and Rehabilitation
Plan: Final Landform Contours

Mine name	Mount Arthur Coal
Plan name	Mount Arthur RMP
Year of anticipated relinquishment	TBA following Portal Submission
Data theme submission ID No.	TBA following Portal Submission
Spatial Reference	GDA2020 MGA Zone 56
Plan date (date created)	22/02/2024

6. Rehabilitation Implementation

6.1 Life of Mine Progressive Rehabilitation Schedule

This section describes the rehabilitation schedule over the life of the mine, from the commencement of the rehabilitation management plan until lease relinquishment. The life of mine rehabilitation schedule must include a series of plans illustrating the proposed mine layout and sequence of progressive rehabilitation across the leasehold area at a minimum of five-yearly intervals until completion of mining and achievement of the final land use.

Detailed mine planning is completed annually and outlines proposed mining/disturbance and rehabilitation areas. Detailed figures will be prepared as part of the Annual Rehabilitation Report and Forward Program, with these outlining activities over the next three years. Beyond three years, the Project is working on detailed mine planning, but the information is considered conceptual, hence it has not been included in this RMP.

6.2 Phases of Rehabilitation and General Methodologies

The final land use objectives will be achieved through a series of conceptual stages listed below:

- **Active –** The RMP Form and Way document states in the context of rehabilitation, land associated with mining domains is considered ‘active’ for the period following disturbance until the commencement of rehabilitation.
- **Stage 1: Decommissioning** – 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** – The RMP Form and Way document states that this phase of rehabilitation 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, 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** – The RMP Form and Way document states that this phase of rehabilitation consists of activities required to establish the physical, chemical and biological components of the substrate required to establish the desired vegetation community (including 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** – The RMP Form and Way document outlines that his phase of rehabilitation 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 tube stocking) 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** – The RMP Form and Way document outlines that this phase of rehabilitation 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 Competition** – The RMP Form and Way document outlines that this 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.

By dividing the temporal progression of rehabilitation into these stages, and allocating progress indicators and relinquishment criteria (as discussed in **Section 4**). Mt Arthur Coal is able to track the development of rehabilitation to final completion and relinquishment. Not all rehabilitation phases are relevant to each management domain. Error! Reference source not found. shows the rehabilitation objectives for each phase. **Table 4-1** shows the rehabilitation objectives for each phase.

The stages listed above and methodologies (where relevant) are discussed in more detail in the following sub-sections.

6.2.1 Active Mining Phase

The RMP Form and Way document states in the context of rehabilitation, land associated with mining domains is considered ‘active’ for the period following disturbance until the commencement of rehabilitation. This sub-section summarises the risks and opportunities for rehabilitation associated with the active mining phase across the mining domains. The following sub-sections have been prepared as per the RMP Form and Way document.

6.2.1.1 Soils and Materials

Each mining domain has relevant controls that which have been designed to achieve rehabilitation targets. During active mining, soil and materials management should be managed by the Topsoil Management Plan and controls specified in this RMP document. The Topsoil Management Plan outlines the requirements for topsoil pre-stripping, characterisation, handling, storage and placement.

Prior to topsoil stripping, a pre-stripping assessment is undertaken. This assessment compares actual conditions to general recommendations presented in the relevant soil stripping plan and delineates local topographical and drainage variations to topsoil depth. The final stripping plan is modified to appropriately ensure all suitable topsoil material is recovered without contamination by subsoils.

Recommended topsoil recovery depths are 100-300 mm based on the presence of a moderately to strongly structured sandy to silty loam A horizon. Duplex soils are common and stripping of heavy clay subsoils is to be avoided. Some soils displayed sodic subsoil properties and measure have been implemented to ensure these materials do not contaminate topsoil resources.

Soil and land capability assessments conducted as part of the Mt. Arthur Coal Open Cut Consolidation Project EA (2009) and the Mt Arthur Coal Modification Project EA (2013) identified topsoil resources suitable for recovery and use as a growth medium for post-mining rehabilitation across a majority of the highwall areas.

The RMP Risk Assessment identified poor quality or lack of topsoil as a potential risk to rehabilitation. Control measures in place include the Topsoil Management Plan, a topsoil mass balance review, and a topsoil stockpile database. Additional actions include:

- A review of the Materials Sampling Procedure;
- A review of the current GIS tracking system, and topsoil stripping and stockpiling schedule;
- Investigate alternative growth media substitutes.

Relevant Mt Arthur Coal documents for topsoil management include:

- MAC-ENC-MTP-053 Topsoil Management Plan (internal document);
- MAC-ENC-PRO-012 Land Management Procedure (internal document);

- NEC-HSE-PRO-001 Permit to Disturb Procedure (internal document); and
- MAC-STE-STD-214 Mine Rehabilitation Standard (internal document) - This describes methods to achieve satisfactory rehabilitation and provides a framework for all rehabilitation activities after final placement and reshaping of the underlying landform, including QA/QC processes.

6.2.1.2 Flora

Mt Arthur Coal undertakes annual flora and fauna monitoring to track progress against the BioMP and rehabilitation objectives (refer **Section 4**). The monitoring program tracks the condition of habitat areas over time and ensures that the established performance indicators and project approval requirements are being met.
The monitoring includes 22 active monitoring sites throughout site woodland rehabilitation areas and remnant vegetation areas onsite and within biodiversity offset areas. Remnant vegetation monitoring sites are used to assess mine impact and natural regeneration, as well providing reference data for comparative assessment of rehabilitation monitoring sites.

Threatened Species

Environmental specialists will provide advice on seed mixture for reinstatement works and ensure that native seeds are collected prior to clearing works. Native vegetation seed mixes and tubestock planting species composition will reflect the communities mentioned within the Project Approval.

Threatened species include the Tiger Orchid and terrestrial orchids. These are salvaged and translocated during summer or autumn (outside the peak growing period) to ensure minimal distress. Staggered translocation of individuals over time increases the potential for success. Approval to remove threatened species from the Approved Project Disturbance Area is within the Project Approval therefore a separate licence to remove/translocate threatened flora is not necessary.

Seed Management

Mt Arthur Coal continually reviews and updates the applied seed mix to increase success of rehabilitation with consideration given to:

- Staged application of seed to mimic natural ecological development;
- Properties of species to help with growth medium development;
- Properties of species to species diversity by ensuring niches within the landscape are filled as they develop;
- The use early colonisers to ameliorate and stabilise soils; and
- Species identification to better allocate resources and allow for planning of infill planting.

Weed Management

Weed management at Mt Arthur Coal (including offset areas) consists of two major programs:

1) Weed Assessment Program; and
2) Weed Treatment Program.

The Weed Assessment Program consists of annual inspections of all Mt Arthur Coal owned land (except operational areas such as open cut pits). In addition, mining personnel, contractors and lessees report areas of identified weed infestation. The results of these inspections guide weed control programs for the subsequent year.

Mt Arthur Coal's weed treatment programs are guided by the Hunter Regional Strategic Weed Management Plan 2023 – 2027 (revision currently in Draft) (Hunter Local Land Services, 2022). Mt Arthur Coal primarily targets Weeds of National Significance, as well as State Priority weeds and Regional Priority weeds for the Hunter Region, declared under the Biosecurity Act 2015. The treatment program involves the seasonal treatment, mainly through chemical spraying, of the highest priority weed infestations.

A trial using high resolution aerial imagery to assess weeds in rehabilitation areas is currently being undertaken.

Weed treatment was identified as a critical control to manage the risk associated with weed colonisation of rehabilitated areas at Mt Arthur Coal are sufficient. Documents relating to weed management are listed below.

Pest Management

Feral animal presence is continually monitored through scheduled inspections and workforce feedback. Information from these sources is used to plan the feral animal control programs across the mine site and all biodiversity offset and conservation areas.

Pest control at Mt Arthur Coal is managed under a pest control program. This program targets wild dogs and foxes that represent a threat to biodiversity values on site (including offset areas) and to adjacent grazing operations. At minimum, one feral animal control program is conducted each year, targeting areas where dogs and foxes have been spotted. Pest management programs are conducted in accordance with the *Pesticide Control Order 2010 (1080 Liquid Concentrate and Bait Products)* and, where possible, in conjunction with wider regional control programs. Other pest management programs conducted include rabbit and hare control, using baits and trapping, and kangaroo harvesting will occur as required.

Bushfire

Specific bushfire prevention and fire suppression control measures are implemented in order to protect remnant vegetation communities as well as Mt Arthur Coal fixed and mobile infrastructure.

Prevention and control measures include fuel load assessment and reduction programs, the establishment and maintenance of fire breaks and the prevention of ignition sources. Fire suppression and control is achieved through on-site firefighting equipment and vehicle access trails, which provide access to all areas of Mt Arthur Coal owned land. Mt Arthur Coal also maintains a trained emergency response team on each shift, and fire extinguishers are fitted in all vehicles and buildings.

Relevant Mt Arthur Coal documents providing detailed management of flora, pests, weeds and bushfire include:

- MAC-ENC-MTP-050 Biodiversity Management Plan (BioMP);
- MAC-ENC-MTP-047 Rehabilitation Strategy;
- MAC-ENC-PRO-080 Rehabilitation and Ecological Monitoring Procedure (internal document);
- MAC-STE-STD-214 Mine Rehabilitation Standard (internal document);
- MAC-ENC-PRO-012 Land Management Procedure (internal document);
- MAC-HSE-PRO-002 Pest Animal Management Procedure (internal document);
- MAC-ENC-PRO-076 Bushfire Prevention Procedure (internal document); and
- MAC-STE-PRO-010 Emergency Procedure – Bushfires (internal document);.

The RMP Risk Assessment identified threats to flora establishment and risk of bushfire. In addition to the current bushfire prevention procedure, and rehabilitation monitoring and maintenance, the following actions were identified:

- Review REMP based on updated objectives, criteria and TARP
- Develop a scope to respond more rapidly respond to TARP triggers; and
- Assess potential for impacts associated with climate change.

6.2.1.3 Fauna

Mt Arthur Coal has a management strategy in place to manage or mitigate mining impacts on native flora, fauna and habitat in the vicinity of operational mining areas. Pre-project ecological assessments and control of disturbance during vegetation clearing are the main protection measures. Habitat value of the native woodland areas will be enhanced by integrating regional habitat linkages (for threatened species) between remnant on site native vegetation communities, offset areas, rehabilitated mined land and off site vegetation areas.

To further increase habitat value, habitat design incorporates salvaging and reusing material from site, and relocation of habitat trees identified during ecological assessments. Habitat features include nesting boxes (various bird, squirrel glider, possum and bat) and natural habitat features (including large rocks, logs/coarse woody debris,

hollow bearing timber). These features are placed in established native woodland rehabilitation. Further, water management includes a requirement for creek diversion (rehabilitation) and rehabilitation of drainage lines to ensure no net loss of aquatic habitat (managed under the BioMP).

Fauna monitoring is undertaken to assess the natural and introduced habitat features, and colonisation by native species is reported on in the Rehabilitation Assessment Report.

Pest control is discussed in **Section 6.2.1.2**.

Relevant Mt Arthur Coal documents providing detailed management of habitat and native fauna include:

- MAC-HSE-PRO-002 Pest Animal Management Procedure (internal document);
- MAC-ENC-PRO-012 Land Management (internal document);
- NEC-HSE-PRO-001 Permit to Disturb Procedure (internal document); and
- MAC-ENC-MTP-050 Biodiversity Management Plan.

The RMP Risk Assessment identified potential threats to fauna which are managed in accordance with the current controls. Additional actions include:

- Fencing or signage for sensitive areas,
- Review REMP based on updated objectives, criteria and TARP;
- Develop rapid response applicable to TARP; and
- Review current GIS system with regard to rehabilitation and closure planning.

6.2.1.4 Rock / Overburden Emplacement

Once the mining area is cleared of vegetation and topsoil, the material lying above the target coal seams, known as overburden, is broken up through drilling and blasting to enable it to be removed. Mt Athur Coal mine extracts coal from multiple horizontal coal seams and therefore interburden must also be managed during mining operations. Materials characterisation in undertaken routinely which determines management requirements (segregated, stockpiled separately, treated etc.). Where possible, overburden and coarse rejects are co-disposed relying on the buffering capacity of waste rock to mitigate any potentially acid forming materials.

All productive overburden dumps and coal stockpiles are set out in a safe uniform design, well-constructed and routinely maintained at Mt Arthur Coal. The placement of the overburden, interburden and coarse reject material is planned out during the mine planning process, to ensure that the dump space is maximised and reduce the haulage time. Procedures and standards detail where, or more importantly where not, certain material types can be placed, such as coarse reject material must not be placed within 20m of the edge of a rehab dump.

As of September 2023, there are 8 main overburden emplacement areas at Mt Arthur Coal including:

- Visual Dumps 1 – 5 (VD1-5);
- Contingency Dumps 1 – 5 (CD1-5);
- Saddlers Dump 1-3 (SD1-3);
- Belmont Void;
- Out of Pit Dump 1N (OP1N);
- Tailings Emplacement Expansion walls;
- Conveyor Corridor Overburden Emplacement Area; and
- Ayredale Pit.

The mine plan has been developed to maximise opportunities for in-pit waste rock emplacement, however there is still an out-of-pit overburden emplacement area (OEA) that is being used in the mine plan. Overburden, interburden and coarse reject material will continue to be co-disposed in-pit or within overburden emplacement areas or utilised in the construction of stockpile pads, roads or other infrastructure.

All overburden dumps will be capped (as required) and remediated with geomorphic design. This method is currently being used on several overburden emplacements across Mt Arthur Coal. The geomorphic design approach uses the characteristics of stable natural alluvial landforms in the local environment as an analogue on which to base the design of overburden landforms.

The life of mine plan and final landform is currently being reassessed in response to the 2023 Mt Arthur Coal closure announcement. Assessments on dump heights and material balance (including rock quality) are being undertaken to determine the potential material deficit at closure.

Relevant Mt Arthur Coal documents providing detailed management of overburden emplacements include:

- MAC-PRD-STD-003 Design Construction and Maintenance of Dump Areas (internal document);
- MAC-ENC-MTP-053 Topsoil Management Plan (internal document);
- MAC-ENC-PRO-012 Land Management Procedure (internal document);
- NEC-HSE-PRO-001 Permit to Disturb Procedure (internal document); and
- MAC-STE-STD-214 Mine Rehabilitation Standard (internal document).

The RMP Risk Assessment identified risks associated with the dumping of overburden, interburden and coarse reject material. In addition to current controls, a review Materials Handling Process and update (if required) will be undertaken to mitigate this risk.

6.2.1.5 Waste Management

Mt Arthur Coal is committed to operating in an environmentally responsible manner and abides by the waste management hierarchy of ‘avoidance, reduction, reuse, recycle and dispose’ as much as practicable to minimise the waste generated by the mine. Waste is managed during operations in accordance with the internal Waste Management Plan.

In accordance with Waste Avoidance Resource Recovery Act 2001, waste material is categorised into designated waste streams and each stream is treated and disposed of accordingly. Other waste management procedures involves:

- Minimising waste generation, encouraging and facilitating re-use and recycling of waste streams where possible;
- Conducting appropriate segregation, storage, transportation and disposal of waste generated across the Project;
- Conducting proper hydrocarbon management, wastewater and sewage treatment; and
- Providing education and training programs to personnel and contractors regarding waste mitigation measures and proper waste handling and disposal.

Mt Arthur Coal are assessing potential options for the construction of an on site waste emplacement cell. Progress of these assessments will be captured in future RMP revisions.

Relevant Mt Arthur Coal documents providing detailed management of overburden emplacements include:

- MAC-ENC-PRO-033 Waste Handling and Disposal – details the procedure to be followed for handling, storage and disposal of multiple waste types generated by the operation of Mt Arthur Coal.

The RMP Risk Assessment identified potential risk associated with unexpected waste streams and buried materials. In addition to current controls, the following actions were identified:

- Undertake review of waste handling procedures; and
- Investigate possibility for on site waste cell (non-hazardous).

6.2.1.6 Geology and Geochemistry

Responsible materials management allows for appropriate characterisation and placement of potentially acid mine drainage (AMD) generating or other deleterious materials, as well as separation and retention of beneficial materials during operations for use at closure. An understanding of materials properties informs landform closure

design which in turn influences operational materials placement, and impacts the ability to achieve safe and stable landforms post-closure.

Potential AMD sources, including waste rock, ore, in pit wall/ floor rock, tailings and process residue must be identified and characterised through geochemical studies undertaken, or peer reviewed, by an appropriately qualified AMD specialist.

Materials characterisation must also include physical properties to identify management requirements (segregated, stockpiled separately, treated) for materials during design and operations, as well as provide an indication of the availability of materials which may be beneficial for closure.

The controls listed below will enable the collection of sufficient AMD and physical characterisation data, to provide inputs to risk assessments.

- Develop conceptual site model to identify potential AMD sources;
- Conduct geotechnical testing;
- Conduct physical testing; and
- Track and record material quantities and movements to ensure correct handling and management, final location (e.g. location within specific waste rock dump), and reporting of potential deleterious material sources. Spoil material is regularly tested to determine the quality of material for rehabilitation.

A geochemical assessment of overburden material, completed as part of the Mt Arthur North Coal Project Environmental Impact Statement (Coal Operations Australia Limited, April 2000) analysed overburden material for potential sodicity, and determined a moderate to high potential for sodic spoil to be uncovered during mining.

Relevant Mt Arthur Coal documents providing detailed management of overburden emplacements include:

- BHP Mined Materials Management Standard (internal document);
- MAC-STE-STD-214 Mine Rehabilitation Standard (internal document);
- MAC-ENC-PRG-002 Spontaneous Combustion Control Program (internal document); and
- MAC-PRD-STD-003 Design, Construction and Maintenance of Dump Areas (internal document).

The RMP Risk Assessment identified potential risk associated with adverse geochemical composition of mined materials. In addition to current controls, the following actions were identified:

- Undertake a review of the Materials Handling Process;
- Assess adequacy of current groundwater monitoring network;
- Update REMP; and
- Review current GIS system.

6.2.1.7 Material Prone to Spontaneous Combustion and Generating Acid Mine Drainage

Spontaneous combustion at Mt Arthur Coal is predominantly confined to old mining areas in the Bayswater No. 2 and the Maxwell Infrastructure (Drayton) sublease area. This is a result of the higher levels of sulphuric material in the coal seams mined from the Greta measures, compared to those mined in the former Bayswater No. 3 and Mt Arthur North mining areas (Wittingham Measures).

A Spontaneous Combustion Control Program has been prepared for ongoing operations at Mt Arthur Coal. It details the monitoring and control measures implemented to manage spontaneous combustion at Mt Arthur Coal. Key mitigation measures for spontaneous combustion include:

- Monitoring for signs spontaneous combustion per the Spontaneous Combustion Control Program;
- Remedial action of spontaneous combustion; and
- Overburden emplacement and coal stockpile designed to minimise Spontaneous combustion potential. Material prone to spontaneous combustion should be combined with overburden in active dumps and not block dumped unless it can be covered with inert material.

A geochemical assessment of overburden material, completed as part of the Mt Arthur North Coal Project Environmental Impact Statement (Coal Operations Australia Limited, April 2000), indicated that the non-coal associated rock strata (95% of the overburden to be removed) represented a low risk of acid generation, that no selective handling was required, and that containment of leachate or runoff was not required (for AMD purposes).

Relevant Mt Arthur Coal documents providing detailed management of unsuitable geochemical properties and spontaneous combustion include:

- BHP Mined Materials Management Standard (internal document);
- MAC-STE-STD-214 Mine Rehabilitation Standard (internal document);
- MAC-PRD-STD-003 Design Construction and Maintenance of Dump Areas; and
- MAC-ENC-PRG-002 Spontaneous Combustion Control Program – details the monitoring and control measures implemented to manage spontaneous combustion at Mt Arthur Coal.

The risk assessment identified risk associated with Material Prone to Spontaneous Combustion and Generating Acid Mine Drainage. In addition to current controls, the following actions were identified:

- Undertake a review of the Materials Handling Process;
- Assess adequacy of current groundwater monitoring network; and
- Review current GIS system to improve tracking of at risk areas.

6.2.1.8 Ore Beneficiation Waste Management (Reject and Tailings Disposal)

Coarse rejects

Coarse rejects may be co-disposed with overburden into designated overburden emplacement areas, or in-pit waste rock emplacement areas (refer **Section 6.2.1.4**). Coarse rejects are block tipped and evenly distributed with competent material where possible. One row of competent material is required along the open edge of the dump. When advancing a tip head over an area consisting of predominantly block tipped coarse reject, the dump height is limited to 20 m and must contain competent material with a minimum 5 metres suitable capping (non-acid forming material).

Coarse reject material within the overburden emplacement areas will be incorporated to the final landform at a depth where rehabilitation establishment is not impacted and to mitigate the potential for spontaneous combustion or ignition of carbonaceous material in the event of bushfire occurring within the revegetated landscape.

Tailings

There are a number of existing reject and tailings emplacement areas currently servicing coal processing facilities (refer **Section 2.4.2**). Mt Arthur Coal has 2 TSF as follows:

- North Cut, which is currently being capped; and
- Main TSF.

Tailings are pumped as a slurry to approved tailings dams constructed within the mined-out voids from where supernatant waters will be recovered to the mine water management system, for dust suppression, or reuse in the CHPP. Tailings will continue to be pumped to the approved Main TSF to minimise additional surface disturbance.

Mt Arthur Coal is responsible for the active tailings management and capping design. In response to the 2023 Mt Arthur Coal closure announcement, Mt Arthur Coal is developing a flocculation strategy and a TSF capping design to enable closure activities by providing a stable base for plant and equipment to operate on the tailings. The tailings capping and cover design will take into consideration local topography, climatic conditions, and availability of suitable cover materials (i.e. weathered mine waste rock). The proposed flocculation system will be completed in two phases:

1) **Short-term phase**, which focuses on the implementation of the flocculation plant to meet the early deposition requirements for treatment of tailings which reduces risk of closure by ensuring that a full depth of crust can be developed across the reach of the TSF; and

2) **Long-term phase**, which focuses on the deposition strategy of the tailings to create an optimum beach profile to achieve sufficient cover across the dam. The long-term phase will also investigate the most suitable flocculant type and plant to ensure best practice for the flocculation system.

The locations of tailings storage facilities are illustrated in **Figure 1D**. Tailings management is outlined above in **Section 6.2.1.4** and further detailed in **Section 6.2.3.3**.

- MAC-STE-MTP-034 TSF Stage 2 Phase 1, Operations and Maintenance Plan (internal document);
- BHP Mined Materials Management Standard (internal document);
- MAC-STE-STD-214 Mine Rehabilitation Standard (internal document);
- MAC-PRD-STD-003 Design Construction and Maintenance of Dump Areas (internal document); and
- MAC-ENC-PRG-002 Spontaneous Combustion Control Program (internal document).

The RMP risk assessment identified the management of coarse reject and tailings disposal as a risk due to the potential for adverse geochemical composition and erosion of capping material leading to poor rehabilitation and downstream impacts. In addition to current controls, the recommended actions include:

- Review and update (if required) materials tracking process;
- Reassess the groundwater monitoring network;
- Update TSF groundwater model and incorporate to site-wide model TSF Trigger Action Response Plan (TARP) and dam management documentation;
- Update TSF Operational TARP to include closure risk management requirements (i.e floc requirements, escalations); and
- Complete flocculation works to project schedule and in line with external commitments.

6.2.1.9 Erosion and Sediment Control

The primary site-wide management measure for erosion and sediment is the control of initial ground disturbance and timely land rehabilitation following disturbance. Managing surface water run-off and establishment of a vegetative cover is a critical for erosion control.

Emplacement slopes are reshaped to incorporate appropriate surface run-off management structures to reduce erosion potential in addition to rapid establishment of vegetation cover (discussed below). These structures generally consist of contour drains, mulching and rock placement. Sediment ponds, designed in accordance with *the Managing Urban Stormwater Guidelines* (Landcom (2004) [Blue Book]), are integrated into landform drainage plans to intercept and reduce sediment load from surface runoff until rehabilitation is established.

Rapidly establishing sterile cover crop species are included in both the pasture and native vegetation seed mixes. These species (e.g. Shirohie Millet in Summer and Coolibah Oats in Winter) provide erosion control via establishment of a surface vegetative cover and subsurface root system, which remains after the grass has died off, allowing the slower growing but more permanent plant species to emerge. Due to ongoing drought conditions mulch is being trialled across topsoil for temporary stabilisation, and to promote ground cover.

Relevant Mt Arthur Coal documents providing detailed management of erosion and include:

- MAC-ENC-PRO-060 Erosion and Sediment Control Plan;
- MAC-ENC-MTP 034 Site Water Management Plan;
- NEC-HSE-PRO-001 Permit to Disturb Procedure (internal document);
- MAC-ENC-PRO-012 Land Management Procedure (internal document); and
- MAC-STE-STD-214 Mine Rehabilitation Standard (internal document).

The RMP Risk Assessment identified erosion and sediment control as a potential risk due to unstable post-mining landform. In addition to current controls, the recommended actions include:

- Develop a Drainage Monitoring Program;
- A review of the Materials Handling Procedure; and

- Review current GIS system to improve capture sediment control improvements and verification activities.

6.2.1.10 Ongoing Management of Biological Resources for Use in Rehabilitation

Seed Collection and Propagation

Native revegetation activities in rehabilitation areas will preferentially use local provenance seed for direct seeding or tubestock propagation. Mt Arthur Coal will, where practicable, harvest native seed from remnant native vegetation located on Mt Arthur Coal owned land. This seed is used in rehabilitation via direct-seeding, or to develop tubestock for planting in rehabilitation and regeneration activities.

Salvage of Tree Hollows, Stags and Timber

The salvage of hollow bearing trees, hollow logs, fallen timber and boulders will be undertaken, where practical, during the clearing process. Habitat structures will be placed in rehabilitation areas and is aimed at increasing habitat complexity in these areas in order to encourage native species and in particular, key threatened species.

Soil Seed Bank Management

Soil seed bank management at Mt Arthur Coal Mine includes:

- Stockpile piles will be ripped and sown with a cover crop/pasture mix once their construction is completed;
- Stockpile heights will be managed by the Mine Services Supervisor/ Contracted Topsoil Stripping Supervisor; and
- Weeds will be monitored and sprayed by hand, if necessary.

Relevant Mt Arthur Coal documents providing detailed management of biological resources for use in rehabilitation include:

- MAC-ENC-MTP-053 Topsoil Management Plan (internal document);
- MAC-ENC-PRO-012 Land Management Procedure (internal document);
- MAC-ENC-MTP-050 Biodiversity Management Plan ; and
- MAC-STE-STD-214 Mine Rehabilitation Standard (internal document).

The RMP Risk Assessment identified potential risk associated with insufficient of habitat features, seed mix, or tube stock. In addition to current controls, the following actions were identified:

- Review inventory of habitat features (i.e. stag trees); and
- Refine methodology for seed collection and review of quality and supply options for seed and tubestock; and
- Review Rehabilitation Monitoring Program and current GIS system.

6.2.1.11 Mine Subsidence

Although Mt Arthur Coal is located within the Muswellbrook Mine Subsidence district, there is no recent history of mine subsidence within Mt Arthur Coal mine leases. As a result, subsidence is not predicted to impact on mining or rehabilitation activities within this RMP period.

6.2.1.12 Management of Potential Cultural and Heritage Issues

Aboriginal Heritage

Aboriginal Cultural Heritage is managed in accordance with the approved Mt Arthur Coal Aboriginal Heritage Management Plan (AHMP). The AHMP has been developed to address the management of Aboriginal cultural heritage sites across Mt Arthur, and to ensure compliance with statutory requirements.

Mt Arthur have sought to avoid and minimise potential impacts on the significant archaeological values of the Project throughout the project planning process. This has included the avoidance of direct impacts on areas (sites) which:

- Contain identified grinding grooves; and

- Include archaeological features of high cultural significance.

Mt Arthur Coal has sought to minimise potential indirect impacts on known sites through:

- Management of potential blasting impacts;
- Salvage programs at any sites that will be directly impacted by mining operations in accordance with procedures developed in consultation with the Aboriginal community and Heritage NSW.

Consultation with registered Aboriginal parties will be undertaken as part of the proposed Mt Arthur Coal closure works and corresponding actions will captured in future RMP updates.

Relevant Mt Arthur Coal documents providing detailed management of Cultural Heritage include:

- MAC-ENC-MTP-042 Aboriginal Heritage Management Plan (AHMP);

European Heritage

Historic heritage is managed in accordance with the approved Mt Arthur Coal Historic Heritage Management Plan (HHMP) which provides the framework to identify, assess, monitor, and conserve European heritage.

Mt Arthur Coal owns and manages five heritage-listed homesteads:

- Edinglassie Homestead (state significance);
- Rous Lench Homestead (state significance);
- Edderton Homestead Complex (local significance);
- Belmont Homestead Complex (local significance); and
- Balmoral Homestead (local significance).

Comprehensive historic heritage assessments of land directly and potentially affected by mining activities and associated facilities and infrastructure have been conducted during the environmental assessment phases over the life of the project. Mt Arthur Coal will implement the historical heritage management measures associated with continued operations including managing blasting practices to meet relevant blast impact assessment criteria at listed heritage sites/items within the vicinity of the Project.

In the event that unexpected archaeological remains or potential heritage items are discovered, all works in the immediate area will cease, the remains and potential impacts will be assessed by a qualified archaeologist or heritage consultant and if necessary, Heritage NSW and DPE will be notified in accordance with the Heritage Act 1977.

Mt Arthur Coal will continue to undertake stakeholder and community consultation regarding European Heritage as required.

Relevant Mt Arthur Coal documents providing detailed management of European Heritage include:

- MAC-ENC-MTP-046 Historic Heritage Management Plan (HHMP).

The RMP Risk Assessment identified potential risk associated with cultural and heritage which are mitigated in accordance with current controls including the AHMP and HHMP.

6.2.1.13 Exploration Activities

Mt Arthur Coal have developed procedures to manage exploration activities, so that they are conducted in an environmentally responsible manner and in consideration of the community. Mt Arthur is responsible for the final rehabilitation of any exploration sites.

At the completion of exploration, the following will be completed:

- Capping and backfilling of boreholes outside the mining footprint in accordance with Exploration Code of Practice: Rehabilitation (Resources Regulator, 2017);
- Rehabilitation of disturbance areas in accordance with this RMP;
- Access roads are to be rehabilitated so that they do not alter the natural path of overland flow;
- Disturbed areas surrounding drill sites will be returned to the same topography as that preceding drilling;

- Any vegetation removed as part of the project and access track clearing requirements will be used in the rehabilitation works;
- Stripped topsoil stockpiled as part of the project preparations will be replaced; and
- Erosion and sediment control devices will be maintained and remain in place until the drill sites and associated tracks are completely rehabilitated.

The Permit to Disturb process will be completed prior to undertaking any exploration activity. Results from exploration activities will be used to investigate aspects such as geological/geotechnical features, seam structure and coal/overburden characteristics as input to detailed mine planning and feasibility studies.

Relevant Mt Arthur Coal documents for exploration activities include:

- MAC-ENC-PRO-060 Erosion and Sediment Control Plan;
- NEC-HSE-PRO-001 Permit to Disturb Procedure (internal document); and
- MAC-STE-STD-214 Mine Rehabilitation Standard (internal document).

6.2.2 Decommissioning

Infrastructure is to be removed unless otherwise approved by the Resources Regulator. The primary risks to rehabilitation associated with infrastructure removal is contamination from hazardous building materials and fuel and chemical storage.

Mt Arthur Coal implements the following practices to mitigate such risks:

- Maintenance of a contaminated sites register
- Maintenance of a hazardous buildings materials register, primarily asbestos
- Prior to removal:
  - Areas are to be assessed for site contamination
  - All areas to be remediated to a standard that is acceptable under NSW State legislation.

Relevant Mt Arthur Coal documents providing detailed management of hazardous materials and contaminated sites include:

- MAC-ENC-PRO-074 Contaminated Land Management (internal document) – procedure contains details of how to identify, manage and remove/remediate contaminated land; and
- MAC-STE-PRO-013 Hazardous Materials Management Procedure (internal document) – safe and appropriate handling, transport and storage of hazardous materials on site.

6.2.2.1 Site Security

Mt Arthur Coal implements a variety of control strategies to minimise the potential for public safety incidents within the Project area, including the following:

- Mt Arthur Coal is a controlled Project with all visitors required to report to the reception areas on arrival and complete an induction process to ensure all safety requirements are addressed;
- Access points to control areas have boom gates, and the remainder of the access points are secure with locked gates and fencing;
- Operational staff or security are present on the Project at all times;
- Safe operation of all mining equipment and processes are undertaken in accordance with the existing Mt Arthur Safety Management System;
- Hazardous substances are managed within the Project area in licenced facilities to ensure safe handling and storage;
- Blasting activities are undertaken in accordance with the Blast Management Plan; and

- Mt Arthur Coal operates a 24 hour community hotline for the public to report any concerns regarding public safety associated with Mt Arthur Coal.

The RMP Risk Assessment identified potential risk associated with unauthorised public access into closed site. Suitable controls are in place to manage this potential future risk.

6.2.2.2 Infrastructure to be Removed or Demolished

Mt Arthur Coal will decommission and remove all built infrastructure not required for the final landform during the mine closure phase. Decommissioning activities will be done in consultation with the Resources Regulator, and ideally, in accordance with a decommissioning plan that will be used as a guide for sequencing and the process of infrastructure removal. Decommissioning activities include:

- Disconnection of all above ground and buried services and removal of associated infrastructure;
- Removal of all built infrastructure and plant such as:
- Electrical switchyards & substation;
- Buildings/ tanks, industrial buildings;
- Aerial conveyors;
- Concrete pads;
- Stacker reclaimer;
- Water pipelines;
- Water pumping infrastructure;
- Dam infrastructure at (i.e. pontoons, pumps, telemetry system);
- CHPP (if not required post closure);
- Removal of all wastes and hazardous materials; and
- Removal (or on-site remediation) of any contaminated soils in accordance with a contaminated land assessment (where required).
- Decommissioning of groundwater boreholes in accordance with the “Minimum Construction Requirements for Water Bores in Australia (2020)

Pursuant to Schedule 3, Condition 41A of PA 09_0062, demolition activities will be conducted in accordance with AS2601-2001: The Demolition of Structures, or its latest version.

The RMP Risk Assessment identified potential risk associated with poor infrastructure management during demolition. In addition to current controls, the following actions were identified:

- Review if infrastructure (to be retained) and demolition strategy within closure studies program; and
- Waste management procedures.

6.2.2.3 Buildings, Structures and Fixed Plant to be retained

All mining related infrastructure shall be decommissioned and removed, unless the Resources Regulator agrees otherwise per Condition 41A (Table 14) of PA 09_0062 (MOD 1), however, there is potential for some infrastructure to remain at closure (in consultation with DPE) for future industrial operations.

The RMP Risk Assessment identified potential risk associated with poor infrastructure management of retained infrastructure. In addition to current controls, the following actions were identified:

- Review if infrastructure (to be retained) and site security requirements; and
- Waste management procedures.

6.2.2.4 Management of Carbonaceous/Contaminated Material

Contaminated Material

Hydrocarbons and other hazardous substances including bulk diesel fuels and chemicals, are kept in designated storage compounds designed and managed in accordance with relevant standards and procedures. Where required, bulk diesel fuels and chemicals are contained in bunded storage areas to minimise the potential for accidental spills. Monitoring and inspection programs are maintained for these facilities to ensure hazardous materials and wastes are being adequately stored and disposed of and that any spills or leaks are promptly reported and managed.

Additional management measures include:

- Tank farms and fuel fill points will be decontaminated prior to demolition and disposal;
- Inspecting and maintaining equipment and plant including the conveyor networks regularly to minimise potential for leaks associated with equipment failures;
- Management of identified asbestos at various buildings across Mt Arthur in accordance with the Asbestos Management Plan;
- Maintaining the existing bioremediation areas and establishing additional bioremediation areas as required to treat soils contaminated by hydrocarbon spills;
- Where hydrocarbon contamination is identified and a potential impact to sensitive receptors identified, bioremediation will be conducted on site or the material will be transported to an approved and engineered landfill site for disposal;
- Residual surface material will be scalped from hardstand areas and unsealed access roads and disposed of in a suitable location to remove the heavily compacted or contaminated material; and
- Maintaining a Contaminated Sites Register.

Carbonaceous Material

Excess coal material remaining at closure will be scraped-up and disposed of to the tailings/ coarse reject emplacement area, or capped with inert material carbonaceous materials should be managed in in accordance with the Waste Management Plan or Spontaneous Combustion Management Plan which describes the methods to be used when handling and disposing of carbonaceous materials. A Phase 2 Contamination Assessment is proposed to identify any potential contamination sources at the site. Issues identified will be addressed during the mine closure and decommissioning processes.

Relevant Mt Arthur Coal documents providing detailed management of carbonaceous materials and contaminated sites include:

- MAC-STE-STD-214 Mine Rehabilitation Standard (internal document);
- MAC-ENC-PRO-029 Spill Response (internal document);
- MAC-ENC-PRO-074 Contaminated Land Management (internal document); and
- MAC-STE-PRO-013 Hazardous Materials Management Procedure (internal document); and
- Spontaneous Combustion Control Procedure (internal document).

The RMP Risk Assessment identified risks associated with the management of hazardous or contaminated material (and subsequent impact to receptors). In addition to current controls, the following actions have been identified:

- Investigate options and suitability for an on site waste cell (non-hazardous);
- Review adequacy of current groundwater monitoring network;
- Review and update (if required) REMP;
- Review and update (if required) materials handling process;
- Undertake contamination assessments, review and update contaminated site register; and

- Review water balance model.

6.2.2.5 Hazardous Materials Management

Hazardous materials will be assessed as part of mine closure planning, and should be removed as part of Stage 1 (decommissioning) phase of rehabilitation in accordance with the relevant Hazardous Material Management Plans and Asbestos Registers.

Relevant Mt Arthur Coal documents providing detailed management of hazardous materials include:

- MAC-ENC-PRO-074 Contaminated Land Management; and
- MAC-STE-PRO-013 Hazardous Materials Management Procedure.

The RMP Risk assessment identified potential risk associated with Hazardous materials. Current controls are in place to manage these risk and additional controls identifies are discussed in **Sections 6.2.2.2 to 6.2.2.4**.

6.2.2.6 Underground Infrastructure

No underground mining infrastructure at Mt Arthur Coal requires decommissioning or removal. Minor infrastructure that was in place to support an underground operation has been removed.

6.2.3 Landform Establishment

Landform establishment is the process of shaping the final landform to a safe, stable and free draining landform that is appropriate for the desired final land use and consistent with the surrounding landscape.

The final shaped landform will be constructed in accordance with the requirements of this document. Rehabilitation will be undertaken progressively, generally commencing as soon as practicable following the completion of mining related activities.

The RMP Form and Way document states that this phase of rehabilitation 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, and prepare a substrate with the desired physical and chemical characteristics (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 per landform design planning.

General Landform Design

Mt Arthur Coal will adopt a geomorphological landform design where practical. It should be noted that the design will require the refinement and optimisation of the landforms as construction experience is obtained at Mt Arthur Coal including:

- Evaluation the performance of the rocky materials selected for erosion protection in the drainage lines;
- Revegetation strategies in and around the drainage lines and on the general slopes; and
- Evaluation of the performance of the different soil types in varying slope and catchment area configurations.

Monitoring will inform continual improvement of the design including limitations on where it can be implemented.

Final Landform Design Construction

The final landform design approach moves away from specifying maximum slopes, since it is not the steepness of the slope alone that represents an erosion risk, but rather a combination of the catchment area and slope.

Where steeper outer slopes exist, material will be placed in benches and then dozed into place, while on the upper surface such as for Main overburden emplacement area, the material can be placed and shaped using GPS equipment.

Steeper drainage lines are armoured appropriately, not as a highly engineered drop structures, but rather as an integrated surface in the manner of a typical valley creek.

Final Void Design

An adaptive design approach to wall stability will be applied to the final voids, with consideration given to experience and learnings gained throughout the mining operation and long term issues such as erosion, surface degradation and effects of stored void water. This approach is particularly suited to the complex structural geology at Mt Arthur Coal, with pit walls intersecting faults and dykes at varying angles.

Other factors to consider include:

- Rock mass failure; and
- Erosional stability around the crest of the final void.

Mt Arthur Coal will adopt leading practice at the time of closure, for example Probability of Failure (PoF) – a focus of ongoing research and development - as a design criterion, instead of the more deterministic Factor of Safety.

Relevant Mt Arthur Coal documents providing detailed management of landform establishment include:

- MAC-STE-STD-214 Mine Rehabilitation Standard (internal document);
- MAC-PRD-STD-003 Design Construction and Maintenance of Dump Areas (internal document); and
- MAC-TCS-STD-002 Landform Design (internal document) –design guidance for placement and slope angles of material including topsoil, different classifications of rock, carbonaceous material and design review processes.

The RMP Risk Assessment identified potential risk associated with the Landform Establishment phase, specific to design and construction (including final void), and drainage network failure. In addition to current controls, the following actions were identified:

- Review of landform design and design criteria (checklist) including stakeholders, compliance of design and construction of geomorphic landform;
- Review current GIS system relating to rehabilitation and closure planning;
- Review and update (if required) materials handling process;
- Review and update (if required) current geotechnical knowledge and potential impacts to final void with respect to 2030 announcement;
- Undertake flood and surface water modelling to assess potential impacts on current controls (due to 2030 announcement);
- Review site water balance model; and
- Develop drainage monitoring program including sediment control on landforms. Incorporate program to the REMP.

6.2.3.1 Water Management Infrastructure

Drainage

Where possible, Mt Arthur coal will adopt a free-draining geomorphic landform design. Managing runoff from rehabilitation is critical in achieving long term stability and success of rehabilitated areas. Inappropriate drainage can lead to instability and failure of landforms as well as failure of revegetation efforts. Detailed drainage designs are to be prepared by an experienced consultant for all primary rehabilitation areas, these designs are to be prepared in accordance with the Blue Book, approved final landform. These designs generally contain all runoff water on-site until rehabilitation has progressed to a sufficient stage to be classified as clean water. The following design elements should be considered:

- Drainage upslope of rehabilitation areas to minimise overland concentrated flows;
- Water off active advancing dumps and flat areas should be managed to prevent runoff onto rehabilitated areas;
- Drainage paths, contour drains, ridgelines and emplacements, to be shaped as much as practical, undulating profiles in keeping with natural landforms of the surrounding environment; and

- Drainage designs for each area will include consideration of the final landform and future adjacent rehabilitation areas to produce a free draining final landform to mitigate potential reworking of fringes where drainage designs may not match up adequately.

Suitable erosion control measures (e.g. catch drains, sediment dams, silt fences, mulches, etc.) will be implemented to minimise soil loss from areas undergoing rehabilitation. In addition, sedimentation dams are incorporated into the final landform to collect runoff from the rehabilitated areas and the dam capacity.

In addition, further investigation is required with regard to long-term water licencing and water management works associated with any ongoing water take by the final landform via interception, storage or diversion.

Sediment Dams

Runoff from rehabilitated and revegetated areas will continue to be directed to mine water storages or sediment retention storages prior to being allowed to drain offsite until the landform becomes more stable.

Sediment dams will offset the increase of peak flows associated with the steeper post-rehabilitation catchments compared to the pre-mining catchments. Other options may be considered where the sediment dams do not sufficiently mitigate the peak flows.

During rehabilitation works, water storage areas and sediment dams are proposed to be retained and will be:

- Integrated into final rehabilitation catchment;
- Reinstated or decontaminated (where required); and
- Converted to clean water dam.

Spillway Augmentation

The decision to remove spillways will be reviewed in the Final Closure Plan to assess if additional work is required for discharge points.

Creek Diversions

Whites Creek diversion will largely be retained and integrated into the post-mine landscape and the redundant section reinstated and rehabilitated.

Fairford Creek was a natural ephemeral creek. Current proposed rehabilitation of the creek is provided in the Conceptual Fairford Creek Reinstatement Plan, however, this will be reviewed based on the Mt Arthur Coal 2030 closure announcement.

Creek diversions are discussed further in **Section 6.2.3.5**.

Water Sources

Further investigation is required to clearly understand and minimise residual risk to water sources. The RMP will be updated as required to include additional studies and assessments.

6.2.3.2 Final Landform Construction: General Requirements

The conceptual final landform has been designed to be consistent with the rehabilitation objectives in Schedule 3, Condition 41A of the Project Approval (Refer **Section 1.2**, **Table 1-1**).

Visual Amenity

A visual impact of mining operations was undertaken as part of the Mt Arthur Coal Open Cut Modification Project EIS, and overburden emplacement design incorporates measures to minimise visual impact. Management measures designed to reduce visual impact include:

- The integration of tree corridors on overburden emplacements as part of progressive rehabilitation;
- The retention of the eastern flank of MacLean's Hill to assist in creating landscape diversity at the foot of overburden emplacements;
- Modifying final void high walls and low wall slopes to minimise final disturbance;

- Incorporating micro relief features throughout overburden emplacements to provide an enhanced naturally appearing landform and fauna habitat;
- The practical consideration of geomorphic type designs on emplacements to sustainably manage water and create a natural looking and stable landform;
- The strategic design and rehabilitation of overburden emplacements for increased visual shielding of operations;
- Establishing visual and ecological planting patterns of native trees to achieve landscape patterns that complement the existing spatial distribution of tree and grass cover in a grazing landscape; and
- Minimising exposure of work areas to sensitive receivers where possible, largely through the timely rehabilitation of visible overburden emplacements.

  In addition, the Closure Plan will look at minimising visual impacts through the rehabilitation process to meet the proposed final landform. The plan will review the presence of visual bunds including that which is adjacent to Denman and whether they will remain in the landscape post closure. The final status of visual bunds will be included in future updates of the RMP, this will take into consideration feedback via consultation.

6.2.3.3 Final Landform Construction: Reject Emplacement Areas and Tailings Dams

Overburden Emplacement Areas

Information regarding final landform construction of overburden emplacement areas is discussed in **Section 6.2.3.2** above.

Tailings Facilities

Tailings storage facilities at MAC (refer **Section 2.4.1** and **Section 6.2.1.8**) are in the following stages:

Active:

- Main TSF comprising West Cut Void and South West Valley.

Inactive:

- North Cut.

Capped / Closed:

- SP1;
- SP2; and
- SP3.

North Cut TSF is actively being closed. West Cut Void and South West Valley have undergone lifts and an overflow pathway in place to merge the two facilities (Main TSF), and subsequently a single emplacement area requiring future capping. Tailings emplacement methods in West Cut Void and South West Valley are being reviewed and modified to allow for more efficient closure.

Future studies are required to:

- Review the capping of SP1-3; and
- Determine the most effective closure of West Cut Void and South West Valley TSF.

The rehabilitated Tailings Storage Facility (TSF) will be integrated into the final landform and revegetation process. The TSF in the Bayswater No. 2 and Drayton Sub-lease Areas will be integrated with other rehabilitation in the Drayton Sub-lease Are to form an elevated landform. The capping design will be free draining to avoid slumping and potential pooling. The capping layer will focus on sealing and the underlying material for creating suitable conditions for sustainable revegetation.

Groundwater interaction has also been considered as part of the TSF final landform design. To achieve a non-polluting landform, the capping design incorporates sufficient growth medium, integrated cap and vegetation and grasses for initial coverage. Based on the outcomes, trees and shrubs may also be incorporated. Sediment ponds

designed for 1:20 year 24-hour storm event will be removed from the final landform, similar to standard rehabilitation at Mt. Arthur Coal Mine.

The decommissioning of tailings facilities will have closure design in accordance with ANCOLD guidelines. Capping/ treatment of facilities will be appropriately designed and constructed so as to ensure geotechnical stability and successful containment of tailings material and hazardous leachate drainage or seepage. The closure of will require sign off from the Dam Safety Committee that TSF wall integrity is satisfactory based on assessment by a suitably qualified geotechnical engineer.

The RMP Risk Assessment identified potential risk associated with TSF landform failure. In addition to current controls, the following actions were identified:

- Implementation of automated monitoring and additional training associated with TSF (dam) inspections;
- Updates to operation and maintenance manual, and TSF TARP;
- Undertake additional final landform and flocculation studies;
- Assess potential climate change impacts;
- Review TSF groundwater model and incorporate to site wide mode; and
- Review and update materials handling process (if required).

6.2.3.4 Final Landform Construction: Final Voids Highwalls and Low Walls

Final Voids

BHP has been developing a Final Voids Decision Framework since 2017 which provides overarching principles to guide closure decisions for final voids in NSW and QLD. The Mt Arthur Rehabilitation Strategy, specifically Section 7.2 meets the commitments contained in the in the Project Approval and has superseded the Final Voids Management Plan previously referred to in RMP.

As part of the closure process, additional assessments will be undertaken to ensure that the voids remain safe, stable and non-polluting in the rehabilitated post-mining landscape phase and inform any controls that may be required to minimise negative impacts to livestock and the community. These studies will involve assessing:

- Safety hazards will include fencing, signage, restricted access to tracks and roads and removing any features that could encourage recreational activities (if compatible with the final land use).
- Geotechnical assessment on rock properties and geological structures to determine a design that has appropriate long-term stability. Surface water flow will be considered and specific designs will be implemented to manage the stability depending on the location of each void.
- Potential use of pits as a groundwater sink will help reduce the risk of contaminants entering the groundwater system.

The following pits will be backfilled and rehabilitated:

- West Cut;
- East Cut;
- North Cut;
- Belmont;
- Drayton West; and
- Completion criteria for the final voids in the Rehabilitation Strategy will be reviewed and updated periodically using stakeholder feedback.
- Saddlers group of pits including Saddlers South, Saddlers Central, Saddlers North.

As per the Project Approval, the following landforms will remain as rehabilitated final voids:

- Windmill Void – consisting of MacLeans (backfilled), Windmill (backfilled), Huon, Calool, Roxburgh, and Ayredale (backfilled pits); and

- McDonalds Void.

The final land use for the final voids is further discussed in the Mt Arthur Coal Rehabilitation Strategy.

Risks relating to final void identified during the RMP Risk Assessment are discussed in **Section 6.2.3**.

6.2.3.5 Construction of Creek/ River Diversion Works

Mt Arthur Coal have examined creek diversions, reinstatements and realignments to better understand:

- Incorporation of erosion control measures based on vegetation and engineering;
- incorporation of structures for aquatic habitat (including geomorphic and vegetation); and
- revegetate with suitable native species.
- As stated in the BioMP Mt Arthur Coal will:
  - define a process for decision making on the approach for creek reinstatement (using the current mine plan),
  - develop a set of creek design principles; and
  - develop further designs for creek reinstatement, revegetation and replacement.

Fairford Creek Reinstatement

In accordance with PA 09_0062 Schedule 3, Condition 41A the following rehabilitation objectives apply to creek diversions and realignments:

- Flows to mimic pre-development flows for all flood events up to and including the 1 in 100 year ARI;
- Incorporate erosion control measures based on vegetation and engineering revetments;
- Incorporate structures for aquatic habitat; and
- Revegetate with suitable native species.

The Conceptual Fairford Creek Reinstatement Plan was submitted to the DPE in 2020. This Plan outlines the background topography, hydrology, geomorphology and ecology of the natural Fairford Creek and similar creeks to assist in developing principals and objectives for the design of the Fairford Creek reinstatement. The Plan supports the Initiation Phase of the design process and the conception implementation of the reinstatement. The final planning will form part of a future Forward Plan and will include performance and completion criteria.

6.2.4 Growth Medium Development

Surface preparation activities for rehabilitated areas will commence as soon as practicable following the completion of mining activities. The RMP Form and Way document states that this phase of rehabilitation consists of activities such as spreading the prepared landform with topsoil or subsoil or soil substitutes, applying soil ameliorants required to establish the desired vegetation community. Planning in this phase includes actions to minimise loss of growth media due to erosion in addition to the following:

- Analysis of topsoil/ subsoil to assess quality and determine amelioration requirements;
- Determination of available resources provision of specifications to contractor;
- Calculating topsoil volumes and volume availability;
- Topsoiling placement, ensuring topsoil is applied evenly and to specification;
- Amelioration (e.g. gypsum, mulch) application to top soil at recommended rates;
- Topsoil stockpile management to ensure remaining topsoil stockpiles have been rolled over, ripped and seeded with cover crop;
- Suitable erosion control measures will be implemented to minimise soil loss from areas undergoing rehabilitation; and
- Stockpiles re-surveyed/scanned and inventory and GIS database updated.

A pre-rehabilitation topsoil stockpile inspection and testing program has been implemented to characterise stockpiled material, identify suitability for the specific proposed rehabilitation, and identify any requirement for soil ameliorants such as gypsum.

Topsoil is sourced from nearby stockpiles, or directly placed from stripping operations. Due to the age and variable quality of stockpiled soil, it is tested before placement to determine suitability and identify amelioration requirements. The material is then placed and spread to an approximate depth of 150 - 300 millimetres. Ameliorants (i.e. gypsum), if required, are applied and integrated, and the topsoil surface is contour cultivated prior to seeding to provide suitable micro-environments that shelters seed and encourages water infiltration. The landscape being constructed will also include extensive use of trees and rock scarp for visual relief.

Relevant BHP and Mt Arthur Coal documents providing detailed management of topsoil include:

- MAC-ENC-MTP-053 Topsoil Management Plan (internal document);
- MAC-ENC-PRO-012 Land Management Procedure (internal document); and
- NEC-HSE-PRO-001 Permit to Disturb Procedure (internal document).

The RMP Risk Assessment identified potential risk associated with the Growth Media Development phase. In addition to current controls, the following actions were identified:

- Review and update topsoil stripping and stockpiling schedule (to 2030);
- Incorporate ripping triggers or controls to be incorporated to TARP;
- Investigate additional growth media alternatives;
- Investigate additional temporary stablisation options;
- Review and update (if required) materials sampling procedure;
- Review current GIS system relating to rehabilitation and closure planning;
- Develop rapid response to support TARP; and
- Undertake additional soil amelioration studies.

6.2.5 Ecosystem and Land Use Establishment

This section outlines the methodologies to establish appropriate vegetation communities for the final land use of Native Ecosystem and Agricultural Grazing (refer **Section 2**) as described in Project Approval 09_0062.

The RMP Form and Way document outlines that this phase of rehabilitation 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 tube stocking) and implementing land management activities such as weed control. This phase of rehabilitation incorporates revegetated lands and may include habitat augmentation such as installation of nest boxes, weed and pest animal control / management and establishment of flora.

From a rehabilitation planning perspective, the major strategies are to ensure that, Mt Arthur Coal rehabilitation planning incorporates requirements listed in EPBC Approval (EPBC 2011/5866 and EPBC 2014/7377) and Project Approval 09_0062 MOD 1 (refer **Section 1.2**, **Table 1-1**)

Habitat

Re-establishing, or increasing, the habitat value of rehabilitated woodland vegetation communities, by the placement of recovered habitat features such as hollow-bearing logs, large wooden debris and rocks will be a key rehabilitation initiative. Large surface rocks raked clear during overburden emplacement rehabilitation will be placed in piles as habitat features amongst or adjacent to remnant vegetation where possible.

Native Ecosystem (Seed Mix and Tube Stock)

Native vegetation seed mixes are selected to re-establish Ironbark-Box-Gum communities (per Schedule 3, Condition 41A of Project Approval 09_0062). Tube stock planting programs also target the establishment of box-gum woodland and fauna habitat. Biodiversity and habitat values within woody rehabilitation areas are also

enhanced by the incorporation of habitat structures such as nesting/roosting boxes, hollow bearing trees recovered during vegetation clearing, woody debris and rock piles. The diversity of structure improves the potential biodiversity capability.

The native woodland vegetation seeded before July 2012 was a generic native tree and shrub mix based on species common to native vegetation communities of the Upper Hunter Valley floor. Following consultation with ecological consultants, the seed mix used to establish woodland rehabilitation at Mt Arthur Coal was modified during 2013 and more recently in 2018 to better reflect the species composition of Upper Hunter White Box – Ironbark Grassy Woodland. This seed mix was also modified to include mainly native grass species, along with a sterile exotic cover crop, for groundcover. Mt Arthur Coal is conducting trials into multi-pass seeding, focussing on cover crop and early coloniser species in the initial seeding pass with follow up seeding and tube stock of upper and mid storey species. This is to ensure that a valuable resource isn't wasted due to adverse conditions.

Agricultural – Grazing (Seed Mix)

In the past, pasture rehabilitation has largely been established by broadcast seeding of a pasture seed mix, based heavily on exotic grass species such as rhodes grass (*Chloris gayana*), kikuyu (*Pennisetum clandestinum*) and green panic (*Panicum maximum*). The actual composition of the pasture seed mix has varied substantially, with the most significant change being the reduction and eventual removal of Rhodes Grass due to its observed dominance in pasture rehabilitation.

Species selected may vary year to year based on availability, characteristics of the landform to be established and based on trials of different phases of seeding.

Monitoring

Mt Arthur Coal has an integrated ecological and rehabilitation monitoring program which, as well as assessing mining impact on nearby remnant native vegetation, also assesses the ecological development of rehabilitation areas against the remnant communities and rehabilitation progress criteria.

Ecological monitoring in accordance with MAC-ENC-PRO-080 Rehabilitation and Ecological Monitoring was identified as a critical control to demonstrate that the structure and function of the ecosystem has been achieved in this rehabilitation phase, and to identify if a rehabilitation area is able to be signed off. Mt Arthur Coal will regularly review the monitoring undertaken (refer **Section 8**) to ensure it reflects any changes to rehabilitation objectives, performance indicators and completion criteria (**Section 4**, **Table 4-1Error! Reference source not found.**).

Weed and Pest Management

Weed and pest management is discussed in **Section 6.2.1.2**.

Relevant Mt Arthur Coal documents providing detailed management of native flora and fauna include:

- MAC-ENC-MTP-050 Biodiversity Management Plan (BioMP);
- MAC-ENC-MTP-047 Rehabilitation Strategy;
- MAC-ENC-PRO-080 Rehabilitation and Ecological Monitoring Procedure; and
- MAC-ENC-PRO-012 Land Management Procedure.

6.2.6 Ecosystem and Land Use Development

The RMP Form and Way document outlines that this phase of rehabilitation consists of the activities to manage maturing rehabilitation areas on a trajectory to achieving rehabilitation objectives, completion criteria (discussed in **Section 4**) and the Final Landform.

Activities associated with the ecosystem and land use development phase of rehabilitation are generally ongoing maintenance, land management activities and rehabilitation monitoring.

Maintenance at rehabilitated areas will include, but not be limited to:

- Weeds and pest animal control;
- Managing bushfire risks;

- Minor earthworks to remediate any significant erosion features, including contour banks and diversion channels;
- Infill planting and/or seeding to meet vegetation community requirements;
- Maintaining erosion and sediment controls; and
- A rehabilitation monitoring program to assess the progress of rehabilitation areas toward the nominated completion criteria.

The Rehabilitation and Ecological Monitoring Program was identified as a critical control to identify any failing areas of vegetation establishment so the TARP can be triggered. Weed and pest management undertaken during the active mining phase will be continued into the ecosystem and land use development phase.

Rehabilitation monitoring (discussed in **Section 8**) will be undertaken until it can be demonstrated that rehabilitation areas have met all conditions for relinquishment.

6.3 Rehabilitation of Areas Affected by Subsidence

There is no recent history of mine subsidence within Mt Arthur Coal mine leases, therefore subsidence is not predicted to impact on mining or rehabilitation activities within this RMP period.

7. Rehabilitation Quality Assurance Process

Mt Arthur Coal has developed a Rehabilitation Standard to provide guidance on the process of establishing rehabilitation. The Mt Arthur Coal Rehabilitation Standard has the following objectives:

- Defining roles and responsibilities for the design, establishment, maintenance and monitoring of rehabilitation areas;
- Defining the phases of rehabilitation;
- Define design requirements and tolerances; and
- Defining appropriate hold points in the establishment of rehabilitation on waste rock. This includes Inspection Test Plans (ITP) templates.

The following are additional quality assurance practices in the Mt Arthur Coal:

- Mt Arthur Coal maintains a topsoil stockpile database;
- Bulk shaping will be completed by GPS enabled dozers;
- Dumps for rehabilitation are verified compliant to design by the use of LIDAR; and
- Supplied seed will be verified for viability species.

The rehabilitation monitoring requirements will be audited as part of BHPs Assurance Audit Program against the *BHP Our Requirements for Closure and Legacy Management* and *Our Requirements for Environment and Climate Change*.

The performance of rehabilitation will be reviewed as part of the Annual Review as per Project Approval 09_0062 MOD 1 Schedule 5 Condition 3. The monitoring program will subsequently be reviewed as per Project Approval 09_0062 MOD 1 Schedule 5 Condition 4.

Table 7-1 below outlines the rehabilitation and quality assurance process for Mt Arthur.

Table 7-1 Rehabilitation Quality Assurance Criteria

Phase	Key Quality Assurance Steps	Current Record Status (in place / still required)	Procedures/ Documentation
Active Mining	Records of competent personnel for active mining and rehabilitation.	Records in place.	Position descriptions.
	Up to date mine plans.	Completed for this RMP and the ARRFP	• Mining planning procedures; • MAC-TCS-STD-002 Landform Design; • MAC-TSV-STD-001 Short Term Planning Design Standard; and • MAC-PRDSTD-003 Design Construction and Maintenance of Dump Areas.
	Documentation of pre-clearance surveys (covering all key environmental aspects).	Records in place per Permit to Disturb Procedure	• NEC-HSE-PRO-001 Permit to Disturb Procedure; and • MAC-ENC-PRO-012 Land Management Procedure.
	Maintenance of a topsoil inventory to document stripped, stockpiled and re-spread resources.	Location of soils stockpiles are known.	• MAC-ENC-MTP-053 Topsoil Management Plan; • MAC-ENC-PRO-012 Land Management Procedure; and • NEC-HSE-PRO-001 Permit to Disturb Procedure.
	Regular inspections of erosion and sediment controls.	Currently being completed, as required.	• MAC-ENC-PRO-060 Erosion and Sediment Control Plan; and • MAC-ENC-MTP 034 Site Water Management Plan.
	• Regular inspections to identify potential weed infestations; • Details of weed status included in rehabilitation monitoring; and • Weed management spraying records.	• Inspections currently being completed; and • Current records kept for weed spraying.	• MAC-ENC-PRO-012 Land Management Procedure.
	Regular inspections to review spontaneous combustion.	Currently being completed.	• BHP Mined Materials Management Standard; • MAC-PRD-STD-003 Design Construction and Maintenance of Dump Areas; and • MAC-ENC-PRG-002 Spontaneous Combustion Control Program
	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	• BHP Mined Materials Management Standard; • MAC-PRD-STD-003 Design Construction and Maintenance of Dump Areas; and • MAC-STE-STD-214 Mine Rehabilitation Standard.
	Soil testing.	Currently being completed, as required.	• MAC-STE-STD-214 Mine Rehabilitation Standard; • MAC-ENC-MTP-053 Topsoil Management Plan; • MAC-ENC-PRO-012 Land Management Procedure; and • NEC-HSE-PRO-001 Permit to Disturb Procedure.
Decommissioning	Inspections and demolition reports to confirm all infrastructure has been removed.	Required prior to closure. Development of a Decommissioning Plan to be completed.	N/A
	Removal of waste	Waste records to be maintained per Waste Handling and Disposal procedure.	MAC-ENC-PRO-033 Waste Handling and Disposal

Phase	Key Quality Assurance Steps	Current Record Status (in place / still required)	Procedures/ Documentation
	Validation testing to ensure any contamination/hazardous substances has been appropriately remediated and/or removed.	Required prior to closure. Phase 2 Contamination Assessment to be completed.	• MAC-ENC-PRO-029 Spill Response; • MAC-ENC-PRO-074 Contaminated Land Management; and • MAC-STE-PRO-013 Hazardous Materials Management Procedure
	Public safety risks are assessed during decommissioning.	Fencing, signage, security.	N/A
Landform Establishment	Landform establishment and survey process. Quality assurance signoff of constructed landforms including slopes, landforms and water drainage structures.	Currently being completed, as required.	• MAC-TCS-STD-002 Landform Design; and • MAC-STE-STD-214 Mine Rehabilitation Standard
	Records of reject capping depth for the Project area.	Currently being completed, as required.	MAC-STE-STD-214 Mine Rehabilitation Standard
	Recording depths of ripping of rehabilitation areas.	Currently being completed, as required.	MAC-STE-STD-214 Mine Rehabilitation Standard
	Slopes, geotechnical and stability assessment required for closure planning.	Required prior to closure.	N/A
	Void Water Management Assessment completed as part of closure planning.	Required prior to closure.	N/A
Growth Medium Establishment	Soil assessment for existing rehabilitation areas.	Covered in rehabilitation monitoring.	• MAC-ENC-MTP-053 Topsoil Management Plan; and • NEC-HSE-PRO-001 Permit to Disturb Procedure.
	Soil assessment for future rehabilitation areas.	Required prior to future rehabilitation.	• MAC-ENC-MTP-053 Topsoil Management Plan; and • NEC-HSE-PRO-001 Permit to Disturb Procedure.
	Register of topsoil and subsoil for future rehabilitation.	Location of soils stockpiles are known.	• MAC-ENC-MTP-053 Topsoil Management Plan; • MAC-ENC-PRO-012 Land Management Procedure; and • NEC-HSE-PRO-001 Permit to Disturb Procedure.
	Records of identification and management of actual acid forming, potentially acid forming (PAF) and non-acid forming (NAF) material and ongoing monitoring.	Currently being completed, as required.	• BHP Mined Materials Management Standard; • MAC-PRD-STD-003 Design Construction and Maintenance of Dump Areas; and • MAC-TCS-STD-002 Landform Design;
Ecosystem and Land Use Establishment	Documentation of seeding or planting activities undertaken including: • Date of planting; • Weather conditions; • Seed mix; • Seeding rate (kg/ha) and/or planting rate (tubestock/ha); • Fertiliser rate (kg/ha); • Records of the salvage of all rehabilitation resources including suitable capping materials, topsoils/subsoils, seeds, habitat structures (e.g. tree hollows and rocks) for use in rehabilitation.	Records in place. To be recorded for future monitoring programs.	• MAC-ENC-PRO-080 Rehabilitation and Ecological Monitoring Procedure; and • MAC-STE-STD-214 Mine Rehabilitation Standard.

Phase	Key Quality Assurance Steps	Current Record Status (in place / still required)	Procedures/ Documentation
	Regular Project area inspections of rehabilitated areas to allow early identification of any emerging threats to rehabilitation.	Currently being completed, as required.	• MAC-STE-STD-214 Mine Rehabilitation Standard; and • MAC-ENC-PRO-080 Rehabilitation and Ecological Monitoring Procedure.
	Rehabilitation monitoring in accordance with **Section 8** to monitor the success of rehabilitation.	Records of existing and proposed rehabilitation monitoring.	MAC-ENC-PRO-080 Rehabilitation and Ecological Monitoring Procedure.
	Continuation of environmental monitoring program.	Ongoing.	• MAC-ENC-MTP-050 Biodiversity Management Plan (BioMP); • MAC-ENC-MTP-047 Rehabilitation Strategy; • MAC-STE-STD-214 Mine Rehabilitation Standard; and • MAC-ENC-PRO-080 Rehabilitation and Ecological Monitoring Procedure.
	• Weed and feral animal infestations; and • Documentation of all weed management and eradication programs and follow-up inspections.	Current weed management records kept.	MAC-ENC-PRO-012 Land Management Procedure.
Ecosystem and Land Use Development	Rehabilitation monitoring in accordance with **Section 8** to monitor the success of rehabilitation.	Criteria assessed in the annual rehabilitation monitoring.	• MAC-STE-STD-214 Mine Rehabilitation Standard; and • MAC-ENC-PRO-080 Rehabilitation and Ecological Monitoring Procedure.
	Regular Project inspections of rehabilitated areas to allow early identification of any emerging threats to rehabilitation.	Currently being completed, as required.	MAC-STE-STD-214 Mine Rehabilitation Standard
	• Weed and feral animal infestations; and • Documentation of all weed management and eradication programs and follow-up inspections.	Records kept per Land Management Procedure.	• MAC-STE-STD-214 Mine Rehabilitation Standard; • MAC-ENC-PRO-012 Land Management Procedure.

The rehabilitation quality assurance process will be used when planning future rehabilitation activities.

The objective for rehabilitation will be one of continuous improvement and includes:

- Utilising relevant industry best practice rehabilitation techniques;
- Utilising key personnel with rehabilitation and closure experience;
- Continuing to undertake rehabilitation monitoring and assessing against rehabilitation criteria; and
- Reviewing rehabilitation performance against the Trigger Action Response Plan in **Section 10**.

8. Rehabilitation Monitoring Program

8.1 Analogue Site Baseline Monitoring

Mt Arthur Coal aims to create rehabilitation that uses the characteristics of the local environment as a reference (or analogue) on which to base the design of overburden landform rehabilitation. Analogue sites indicate the condition of the native communities in the vicinity of the mining area and have been established in areas of remnant woodland within the Mt Arthur Coal mining authorities. To provide a reference for comparison, the analogue sites represent vegetation communities for each community type being established during rehabilitation. The 20 x 20m quadrats are surveyed for species diversity, vegetation composition, cover abundances, structure and function values. Dependent on mining and rehabilitation progression and access, analogue sites may be added or moved.

Pasture is assessed using DPE approved methodology and non-mined pasture reference sites for comparison. Pasture assessment involves visually estimating the quantity and quality of available pasture by visually estimating the botanical composition and ground cover in the area.

Analogue along with other monitoring sites are listed in the Rehabilitation and Ecological Monitoring Procedure (REMP).

8.2 Rehabilitation Establishment Monitoring

Mt Arthur Coal rehabilitation monitoring programs consider statutory obligations targeted post mining land uses. Rehabilitation objectives and nominated completion criteria, as well as the scale of the rehabilitation areas to be monitored.

Following cessation of mining at Mt Arthur Coal, the existing environmental monitoring program will be maintained until all decommissioning and rehabilitation works have been completed in accordance with as per the requirements of PA 09_0176 and EPL11457.

Mt Arthur Coal rehabilitation monitoring programs have been implemented to achieve the following objectives:

- assess the condition and development of rehabilitated/ regenerated vegetation;
- assess the stability of land surface, landforms and related engineering structures;
- allow for the comparison of rehabilitated/regenerated areas with relevant baseline information, reference sites;
- progress indicators and completion criteria as listed in the Mt Arthur Coal RMP;
- identify requirements for maintenance or remedial treatment; and
- meet statutory and corporate requirements relating to rehabilitation and ecological monitoring.

The following monitoring programs have been implemented, at Mt Arthur Coal as part of the REMP:

- rehabilitation Completion;
- landform Stability and Rapid Assessment Walkover;
- revegetation Inspections;
- ecological Development;
- visual Amenity Monitoring; and
- grazing Potential and Pasture Assessment.

The rehabilitation monitoring program will be reviewed regularly to ensure that sufficient parameters are included to validate completion criteria in **Table 4-1Error! Reference source not found.**.

8.3 Measuring Performance Against Rehabilitation Objectives and Rehabilitation Completion Criteria

Rehabilitation completion monitoring is undertaken during rehabilitation projects to ensure the rehabilitation method used to complete the rehabilitation is recorded, and meets the standards adopted by Mt Arthur Coal. The monitoring requires the rehabilitation contractor and Mt Arthur Coal representative to inspect the works after each key phase and sign-off that the completed work meets the specifications for rehabilitation included in the contract. A Rehabilitation Completion Form is completed to show compliance.

Landform Stability and Rapid Assessment Walkover

Landform stability monitoring program consists of an inspection regime or remote sensing analysis for developing and established rehabilitated areas to monitor long-term stability of rehabilitated and modified natural lands. The aim of this program is to:

- Prove that post-mining landforms are vegetated, relatively stable and represent minimal risk of failure and verify completion criteria with regards to landform stability;
- Identify areas of significant active erosion across Mt Arthur Coal site (except operational and infrastructure areas), and evaluate potential for environmental impact; and
- Determine the requirement for maintenance, remedial treatment or modification of rehabilitation measures.

The monitoring program consists of the completion of routine record keeping of walkover inspections and an annual desktop review of latest remote sensing data (e.g. LiDar).

Revegetation Inspection

The intent of revegetation inspections is to assess actively revegetated areas to assess the germination of seed, survival and establishment of tubestock, identify potential issues (i.e. poor germination rates, tubestock mortality or predation, water stress or weed infestation) and identify any requirement for maintenance or remedial management.

The monitoring program consists of the completion of revegetation inspection by a suitably qualified and experienced person to determine if the rehabilitation can progress from the Ecosystem and Land Use Establishment Phase to the Ecosystem and Land Use Development Phase.

Ecological Development Monitoring

The ecological development monitoring program consists of an annual Vegetation Community Assessment and Fauna Survey in order to:

- Prove that areas designated as providing biodiversity value in the post-mining landscape are trending towards the selected vegetation community composition and structure as described in completion criteria; and
- Identify requirement for maintenance activities, remedial action, or modification to rehabilitation, regeneration or land management programs.

Visual Amenity Monitoring

Mt Arthur Coal has a number of overburden emplacement areas which can be viewed from surrounding locations adjacent to the Mt Arthur Coal complex. The monitoring program consists of an annual inspection of six viewpoints surrounding Mt Arthur Coal with a photo to be taken and the completion of the Visual Assessment Checklist. Monitoring of the overburden emplacement areas will ensure any mitigation measures are implemented to maintain compliance against modelled predictions.

Grazing Potential and Pasture Assessment

The Grazing Potential and Pasture Assessment program consists of a Ground and Pasture Assessment and Grazing Suitability Review across areas of pasture rehabilitation and buffer land that are designated as potential post-mining grazing areas. The aims of the program are to show that proposed grazing pasture displays the landscape, soil and pasture characteristics suitable for supporting sustainable beef cattle grazing, and identify maintenance and remedial requirements that would further improve grazing potential.

Measuring Performance

Discussion on performance is provided in the Annual. The Annual Review is the reporting mechanism for rehabilitation and is available on the website.

9. Rehabilitation Research, Modelling and Trials

9.1 Current Rehabilitation Research, Modelling and Trials

Mt Arthur Coal have undertaken numerous rehabilitation trials in the past, with rehabilitation outcomes achieved from some of these trials. Current trials being undertaken at Mt Arthur Coal include:

- **Temporary Stabilisation** trials to investigate the use of hay mulch to increase surface stabilisation and reduce short term erosion risks.
- **Erosion Modelling** to:
  - produce erosion monitoring results based on remote sensing; and
  - predict erosion risk of rehab surfaces to determine hard limits for rehab
- **Growth Medium** trials are undertaken to develop standard growth media alternatives to topsoil to:
  - reduce risk of topsoil deficit;
  - eliminate risk of weed seed bank risk within topsoil out competing the native species; and
  - reduce initial erosion.

9.2 Future Rehabilitation Research, Modelling and Trails

Key learnings from rehabilitation trials will be incorporated into rehabilitation planning during future monitoring at Mt Arthur Coal including:

- Rehabilitation planning;
- Landform design;
- Temporary stabilisation;
- Erosion modelling;
- Growth Medium
- Seed mixes; and
- Use of ameliorants (e.g. biosolids).

In addition to trials discussed in **Section 9.1** the following trials are proposed:

- **Rehabilitation planning**

  Monitoring of the rehabilitation progress through the rehabilitation phases has been ongoing at Mt Arthur Coal. The Monitoring is proposed to be increased and expanded as the rehabilitation increases across site. Mt Arthur Coal is working with a consultant to update and improve the monitoring program across Mt Arthur Coal.

- **Native Ecosystem**

  Further field trials into the establishment of box gum grassy woodlands (especially groundcover and understoreys) in existing pasture rehabilitation have been developed. These trials investigate methods to reduce the dominance of exotic grass species, increase the proportion of native grass species, and control weed proliferation, when modifying existing pasture rehabilitation. Where possible Mt Arthur Coal will look to utilise the results of other research initiatives completed in the Hunter Valley to help develop and inform establishment of box gum woodland.

  Drought affected areas have impacted progress for some woodland rehabilitation over the life of Mt Arthur Coal. Pasture has been planted on an interim basis to prevent wind and water erosion. Recently, in agreement with DPE, tube stock have been planted on the VD1 drought affected areas with little success. Irrigation is proposed in some areas to understand if it will improve success. This remedial process is captured by monitoring following the Rehabilitation and Ecological Monitoring Procedure requirements and implementation activities as per the TARP in **Section 10**.

- **Agricultural – Grazing**

Grazing trials are undertaken on rehabilitated land south of MacDonalds Pit, with a reference site established on adjacent non-mined grazing land. This trial area originally formed part of an industry-wide rehabilitation grazing trial being coordinated by NSW Mining, as part of the Upper Hunter Mining Dialogue. Grazing of cattle on this land is now undertaken by a lessee.

- **Temporary Stabilisation**

  Mulch will be trialled as a temporary erosion control measure while in the ecosystem establishment phase. Coarse compost has been trialled as a temporary erosion control measure, and hay mulch will also be trialled in the future as another alternative.

10. Intervention and Adaptive Management

Potential threats to rehabilitation have been identified as part of the RMP Risk Assessment discussed in **Section 3.**. Mt Arthur Coal undertake and record annual rehabilitation monitoring/ inspections to assess the success of overall rehabilitation and identify any areas that require improvement.

Where rehabilitation monitoring indicates that rehabilitation outcomes are not trending toward the nominated completion criteria, Mt Arthur Coal will instigate early intervention and adaptive management to identify the cause and minimise the potential for rehabilitation failure.

Mitigation actions will be recorded on the Mt Arthur Coal document control system for implementation. Where necessary, rehabilitation procedures will be reviewed and revised in order to improve rehabilitation outcomes.

Mt Arthur Coal will also refer to the Project -specific TARP shown in **Table 10-1**. The TARP identifies the proposed contingency strategies in the event of unexpected variations or impacts to rehabilitation outcomes and outlines the key identified risks, their trigger and proposed mitigation measures to reduce the identified risks.

Table 10-1 Trigger Action Response Plan for Rehabilitation

RMP Category / Aspect	Key Element	Monitoring	Trigger/ Response	Acceptable Rehabilitation Parameters	Level 1 Trigger	Level 2 Trigger
Landform stability	Erosion control: Rills and gully's.	Walkover inspections and Erosion Modelling	Trigger	Minor sheet erosion or rills **<100mm width and <10m length**.	Minor sheet erosion or rills **>100mm <300mm width and <10m length**.	Gullies **>300mm width or >10m length**.
			Response	Continue routine inspections and erosion monitoring.	• Targeted monitoring • Scope and schedule management actions (e.g. core logs, mulch, cover crop seeding).	• Design engineer to review as builts and determine physical controls required (e.g. core logs). • Implement additional controls as recommended.
	Erosion control: Slope gradient.	Walkover inspections and Erosion Modelling	Trigger	Topographic Factor **≤12.5**.	Topographic Factor **>12.5 ≤25**.	Topographic Factor **>25**
			Response	Continue routine inspections and erosion monitoring.	• Targeted monitoring • Scope and schedule management actions (e.g. core logs, mulch, cover crop seeding).	• Design engineer to review as builts and determine physical controls required. • Review landform design. • Implement additional controls as recommended.
	Erosion control: Ground cover.	Walkover Inspection and Ecological Monitoring	Trigger	**>75%** vegetation cover.	Between **50% and 75%** vegetation cover.	**<50%** vegetation cover.
			Response	Continue routine inspections and erosion monitoring.	• Targeted monitoring • Scope and schedule management actions (e.g. mulch, cover crop seeding, re-seeding target species).	• Collect soil samples (see Growth Media TARP). • Engage ecologist or soil specialist to review cause of erosion and implement actions. • Implement additional controls as recommended.
	Rock weathering of drains in rehabilitation.	Walkover inspections	Trigger	• Any **10m length with <30%** weathering. Areas of scour **<100mm** in depth and **<10m** length.	• Any **10m length with >30%** weathering • Areas of scour **<100mm** in depth and **<10m** length.	• Any **10m length with >30%** weathering • Areas of scour **>100mm** in depth and **>10m** length.
			Response	Continue routine inspections and erosion monitoring.	• Targeted monitoring • Scope and schedule management actions (e.g. core logs, mulch, fresh rock).	• Engage an engineer to review design and cause of failure. • Implement additional controls as recommended.
	Acid and Metalliferous Drainage (AMD).	Walkover inspections and Sampling (QA/QC)	Trigger	Visual inspection or soil characterisation identifies no potential AMD materials present.	Visual inspection identifies AMD materials 0-10% of rehabilitation project area.	• Visual inspection identifies AMD materials **>10%** of rehabilitation project area • .Soil characterisation identifies PAF or water monitoring identifies AMD. • PAF/ AMD is affecting large areas of overburden or current rehabilitation.
			Response	Continue inspections and routine soil characterisation.	• Review location of PAF at site. • Review material tracking register and dump design. • Collect samples (see Growth Media TARP). • Undertake additional water sampling. • Assess volume for rehandling and scope capping or rehandling requirements.	• Undertake geochemistry assessments. • Undertake additional water sampling. • Engage a specialist to assess and recommend treatment for PAF or AMD (i.e. moving material or treatment by amelioration). • Implement additional controls as recommended.
Growth Media	Erosion control: Soil quality.	Walkover inspections, Erosion Modelling and Sampling (QA/QC)	Trigger	Exchangeable sodium percent **(ESP) <5%**.	**ESP >5% <8%.**	**ESP >8%.**
			Response	No ameliorants required.	• Targeted monitoring • Scope and schedule management actions (e.g. additional amelioration).	• Engage ecologist or soil specialist to review cause of erosion and implement actions. • Implement additional controls as recommended.

	Chemical parameters: Final Land Use (FLU) woodland.	Walkover inspections, Erosion Modelling and Sampling (QA/QC)	Trigger	**pH:4.5-9** **EC (1:5 ratio) of <0.15 uS/cm** **CEC >14 Cmol+/kg**	pH:<4.5 >9 EC (1:5 ratio) of >0.15 uS/cm CEC <14 Cmol+/kg	
			Response	No ameliorants required.	• Engage ecologist or soil specialist to review cause of erosion and implement actions. • Implement additional controls as recommended.	
	Chemical parameters: FLU pasture.	Walkover inspections, Erosion Modelling and Sampling (QA/QC)	Trigger	**pH:4.5-9** **EC (1:5 ratio) of <0.15 uS/cm** **CEC >14 Cmol+/kg**	pH:<4.5 >9 EC (1:5 ratio) of >0.15 uS/cm CEC <14 Cmol+/kg	
			Response	No ameliorants required.	• Engage ecologist or soil specialist to review cause of erosion and implement actions. • Implement additional controls as recommended.	
	Physical parameters.	Walkover inspections, Erosion Modelling and Sampling (QA/QC)	Trigger	Clay content **<30%**.	Clay content **>30% <60%**.	Clay content **>60%**.
			Response	No ameliorants required.	• Targeted monitoring • Scope and schedule management actions (e.g. additional amelioration).	• Engage a rehabilitation specialist to assess the cause of persistent weed presence. • Implement recommendations as required.
Biodiversity (Native Ecosystem)	Weed presence.	Walkover inspections and Ecological Monitoring	Trigger	• High threat perennial weeds coverage **<5%**. • Total weed coverage **<30%**.	• High threat perennial weeds coverage **<15%**. • Total weed coverage **>30% <50%**.	• High threat perennial weeds coverage **>25%**. • Total weed coverage **>50%**.
			Response	Continue routine monitoring.	• Targeted monitoring • Scope and schedule management actions (e.g. intensive weed treatment).	• Engage a rehabilitation specialist to assess the cause of persistent weed presence. • Implement recommendations as required.
	Bare patches.	Walkover inspections and Ecological Monitoring	Trigger	Bare patches are **<15%**.	Bare patches are **>15% and <30%** (excluding rocks and logs).	Bare patches are **>30%** (excluding rocks and logs).
			Response	Continue routine monitoring.	• Targeted monitoring • Scope and schedule management actions (e.g. mulch, cover crop seeding, re-seeding target species).	• Collect soil samples (see Growth Media TARP). • Review species selection. • Engage ecologist and soil specialist to review cause of vegetation loss and implement actions.
	Native Woodland species composition: Groundcover, mid-storey and canopy.	Walkover inspections and Ecological Monitoring	Trigger	Species composition is within **15%** of consistent the target species.	Species composition is not consistent with the target species **>15% and <30 %**.	Species composition is not consistent with the target species **>30%**.
			Response	Continue routine monitoring.	• Targeted monitoring • Scope and schedule management actions (e.g. re-seeding target species, tube stock planting).	• Engage an ecologist/rehabilitation specialist to review the cause of lower species. • Undertake analytical soil testing and evaluation (see Growth Media TARP). Where appropriate implement recommendations for amelioration.
	Box Gum Woodland stem density: Canopy.	Walkover inspections and Ecological Monitoring	Trigger	**40-160** stems/ha.	**<40 or >160** stems/ha.	**<10 or >260** stems/ha.
			Response	Continue routine monitoring.	<40 • Scope and schedule management actions (e.g. reseeding or tubestock planting). >160 • Targeted monitoring.	<10 • Collect soil samples (see Growth Media TARP). • Engage an ecologist/rehabilitation specialist to review the cause lower stem densities. • Where appropriate implement recommendations for amelioration. >260

						• Engage an ecologist/rehabilitation specialist to assess stem thinning requirements.
	Box Gum Woodland stem density: Mid-storey.	Walkover inspections and Ecological Monitoring	Trigger	**0-120** stems/ha	**<40 or >120** stems/ha.	**<10 or >220** stems/ha.
			Response	Continue routine monitoring.	>10 <40 • Scope and schedule management actions (e.g. reseeding or tubestock planting). >120 • Targeted monitoring.	• Collect soil samples (see Growth Media TARP). • Engage an ecologist/rehabilitation specialist to review the cause lower stem densities. • Implement recommendations as required.
Agriculture	Carrying capacity (grazing support) - within pasture FLU.	Walkover inspections and Pasture Monitoring	Trigger	Carrying capacity (DSE/ha), crude protein (%), digestibility (%), green dry matter content (kg green DMA/ha) **comparable** to reference sites.	Carrying capacity (DSE/ha), crude protein (%), digestibility (%), green dry matter content (kg green DMA/ha) **within 0 to 20%** when compared to reference sites.	Carrying capacity (DSE/ha), crude protein (%), digestibility (%), green dry matter content (kg green DMA/ha) **>20%** when compared to reference sites.
			Response	Continue maintenance and monitoring.	• Review Soil Mapping and Assessments • Engage rehabilitation specialists to review cause of low carrying capacity (e.g. review seed mix, methodology and soil conditions).	Engage rehabilitation specialists to review cause of low carrying capacity (e.g. review seed mix, methodology and soil conditions).
Pests	Predatory species.	Walkover inspections and Ecological Monitoring	Trigger	Pest animal species are not causing damage to rehabilitation.	Animal predation **>15% and <30 %** of vegetation.	Animal predation **> 30%** of vegetation.
			Response	Continue maintenance and monitoring.	• Scope and schedule management actions • .Targeted monitoring.	Engage ecologist to identify cause of increased predation and facilitate additional control measures.

11. Review Revision and Implementation

In accordance with Clause 11 of Schedule 8A to the Mining Regulation 2016, Mt Arthur Coal will amend this RMP in the following circumstances:

- As a consequence of an amendment made to the rehabilitation objectives, rehabilitation completion criteria or final landform and rehabilitation plan;
- To reflect any changes to the risk control measures in the rehabilitation management plan that are identified in a rehabilitation risk assessment; and
- Whenever directed in writing to do so by the Secretary.

The Lease holder must ensure the RMP remains current and relevant to ensure it defines the rehabilitation outcomes to be achieved in relation to the mining area and sets out the strategy to achieve those outcomes.

Whenever any foreseeable hazard is identified that presents a risk to achieving the rehabilitation objectives, the rehabilitation completion criteria and the final landform and rehabilitation plan, the lease holder is required to update the Rehabilitation Risk Assessment and the RMP.

Appendix 1 Document Control

Amendment History			
Date	**Version**	**Page**	**Details**
June 2019	Version 1.0	All	New RMP format and separated from the Mine Operations Plan as per the new Resource Regulator Guidelines.
April 2020	Version 2.0	All	Update RMP for submission with Annual Forward Plan, to align with Resource Regulator guidelines
June 2021	Version 3.0	All	Update RMP following rehabilitation risk assessment
September 2023	Version 4.0	All	Update to RMP based on new Form and Way Document. Key changes included: • Restructure; • Updated Risk Assessment Summary • Updated TARP • Updated Rehabilitation Objectives and Criteria • Align to RR Form and Way Guidance (2021); and • Align to commitments in the Mt Arthur Coal Rehabilitation Strategy.
June 2024	Version 4.1	31-37 39 40 54,58-60 lxxxiii	Updated Table 4-1 in line with approved Rehabilitation Objectives. Replaced Final Landuse and Rehabilitation Plan: Final Landforms with Plan approved by the NSW Resources Regulator Replaced Final Landuse and Rehabilitation Plan: Final Contours with Plan approved by the NSW Resources Regulator Updates which take into consideration 2023 consultation feedback Inclusion of Schedule of Lands Table in Appendix 2

Appendix 2 Schedule of Lands

Key	County	Parish	Plan Label	Sum of Area (ha)
AUTH437	**DURHAM**	BROUGHAM	DP48776	0.147269
			DP802124	63.939019
			DP843634	6.750378
			DP93323	0.591152
		WYNN	DP1159371	0.212422
			DP29950	0.002733
			DP802124	27.533853
			DP843634	2.005284
			DP843635	35.271553
AUTH437 Total				**136.453663**
CCL744	**DURHAM**	BROUGHAM	DP1078759	0.012306
			DP726248	3.633652
			DP727767	45.520783
			DP752449	172.83557
			DP793428	45.695323
			DP842045	157.66343
			DP843634	0.051629
			DP850818	12.679073
		SAVOY	DP842045	6.112983
			DP850818	0.061756
		WYNN	DP842045	88.956156
			DP843634	0.133305
			DP850818	11.757392
CCL744 Total				**545.113358**
CL229	**DURHAM**	SAVOY	DP850818	147.571733
		WYNN	DP843634	0.151903
			DP850818	139.861485
CL229 Total				**287.585121**
CL395	**DURHAM**	SAVOY	DP850818	5.172772
		WYNN	DP842045	0.356609
			DP850818	4.814661
CL395 Total				**10.344042**
CL396	**DURHAM**	BROUGHAM	DP842045	18.632625
		SAVOY	DP842045	10.197934
			DP850818	0.063057
CL396 Total				**28.893616**
EL5965	**DURHAM**	ALTHORPE	DP1018587	230.319716
			DP113451	5.550959
			DP1179733	14.267555
			DP165342	244.452858
			DP388347	20.403079
			DP599514	0.244707
			DP752441	466.57983

			DP953903	26.644121
			DP956112	95.266521
		VAUX	DP1018587	80.351369
			DP1135281	34.384821
			DP113689	1.352522
			DP1149723	3.612097
			DP1161684	17.115823
			DP1259663	576.000499
			DP215827	3.849236
			DP249536	17.764739
			DP34397	834.777342
			DP379269	112.07169
			DP379270	5.463335
			DP385720	32.9531
			DP599514	343.828528
			DP6090	228.409452
			DP722249	76.379893
			DP752500	239.690695
			DP791860	55.239626
		WYNN	DP1018587	191.973568
			DP133634	5.394935
			DP29950	0.057863
			DP843635	120.818513
EL5965 Total				**4085.218992**
ML1358	**DURHAM**	BROUGHAM	DP1259663	52.016203
			DP26211	115.475879
			DP48776	2.546452
			DP802124	65.054453
			DP843634	148.160144
		VAUX	DP1259663	269.673522
			DP204369	1.584073
			DP249536	154.3354
			DP26211	238.6042
			DP29950	41.344966
			DP385720	16.31214
			DP48776	3.507606
			DP514759	15.422183
			DP752500	46.181914
			DP843634	96.633393
		WYNN	DP1090735	8.000236
			DP1159371	1.146909
			DP133634	1.264267
			DP29950	1213.376429
			DP47302	0.339473
			DP48776	23.696707
			DP802124	25.86946
			DP843634	93.302294
			DP843635	706.537693

ML1358 Total				**3340.385996**
ML1487	**DURHAM**	BROUGHAM	DP1212588	72.470061
			DP228159	102.853962
			DP246348	42.748978
			DP27346	502.14694
			DP390143	225.213801
			DP407349	73.257487
			DP573259	116.994585
			DP575515	55.894092
			DP802124	696.976246
			DP843634	589.773615
		VAUX	DP1259663	0.001398
			DP223018	0.006602
			DP228159	64.06259
			DP246348	35.743183
			DP385720	48.654229
			DP550431	30.10302
			DP575515	25.092463
			DP601359	82.596681
			DP722249	3.661743
			DP806149	236.111496
			DP843634	319.061388
		WYNN	DP802124	0.042128
			DP843634	114.059255
ML1487 Total				**3437.525943**
ML1548	**DURHAM**	BROUGHAM	DP802124	0.004921
			DP843634	109.950904
		VAUX	DP385720	0.930323
			DP843634	101.357016
		WYNN	DP29950	2.009545
			DP48776	0.456938
			DP802124	37.67827
			DP843634	34.041521
ML1548 Total				**286.429438**
ML1593	**DURHAM**	ALTHORPE	DP1018587	11.111761
		VAUX	DP1018587	119.007321
			DP752500	42.133326
		WYNN	DP1018587	130.768096
			DP1090735	0.341208
			DP133634	12.416504
			DP29950	15.575283
			DP752503	17.269027
			DP843635	28.110915
ML1593 Total				**376.733441**
ML1593s	**DURHAM**	ALTHORPE	DP1018587	6.779587
		VAUX	DP1018587	4.564893
			DP752500	42.133326
ML1593s Total				**53.477806**

ML1655	**DURHAM**	BROUGHAM	DP1212588	145.70159
			DP726248	0.046124
			DP727767	0.422144
			DP752449	2.617206
			DP802124	0.010271
			DP842045	0.00424
			DP850818	0.17105
ML1655 Total				**148.972625**
ML1739	**DURHAM**	BROUGHAM	DP843634	0.019548
			DP850818	0.725732
		WYNN	DP843634	11.612446
			DP850818	33.298381
ML1739 Total				**45.656107**
ML1757	**DURHAM**	BROUGHAM	DP387021	2.453554
ML1757 Total				**2.453554**
MPL263	**DURHAM**	BROUGHAM	DP726248	0.341412
			DP802124	0.544607
			DP842045	1.049742
			DP843634	0.37602
			DP850818	114.453902
MPL263 Total				**116.765683**
Grand Total				**12902.00939**

Appendix 3 Consultation

Summary of comments following stakeholder engagement with:				
Department of Planning and Environment (Resources Regulator) (Nil additional comments)				
Department of Planning and Environment - Water (DPE-Water) (14/09/2023)				
Muswellbrook Shire Council (MSC) (22/11/2023)				
Bullet Point #	Department	Date	Comment	BHP Response 21/9/2023
1	DPE-Water	14/09/2023	Sharing of water must protect the water source, its dependent ecosystems and basic landholder rights.	Noted. No action, statement only.
2	DPE-Water	14/09/2023	Water sources, floodplains and dependent ecosystems are protected and restored.	Noted. No action, statement only.
3	DPE-Water	14/09/2023	Activities within a water source should avoid or minimise land degradation, including soil erosion, compaction, geomorphic instability, contamination, and where possible land should be rehabilitated.	Erosion, sediment control, water and potential contamination impacts are managed by internal Mt Arthur Coal Management Plans in addition to State Significant Development plan for water and biodiversity. Rehabilitation will be completed in accordance with Project Approval (PA 06_0092) and the Rehabilitation Objectives which are approved by Resources Regulator.
4	DPE-Water	14/09/2023	The final Rehabilitation Management Plan is made electronically available on a public accessible website.	Electronic version of the Rehabilitation Management Plan is publicly available on the BHP Mt Arthur website.
5	DPE-Water	14/09/2023	A conceptual model/diagram clearly presents how the groundwater and surface water systems interact with the final landform. This is to be informed by recent environmental assessments/modelling reviews.	A site water balance model is required for the Mt Arthur Coal per the PA 06_0092 Schedule 3, Condition 30. The model depicts groundwater and surface water interactions. Details of which are presented in the site water management plan. Landform drainage plans have been developed for the site which show the estimated drainage (surface overflow) of the final landform.
6	DPE-Water	14/09/2023	The final design and location of surface drainage features achieves a stable landform and maintains or improves riparian corridor functioning. This is to be completed with reference to industry guidelines such as: “Rehabilitation Manual for Australian Streams (LWRRDC 2000)”, “Guideline: Works that interfere with water in a watercourse for a resource activity (DNRME 2019)” and “Guidelines for Controlled Activities on Waterfront Land (DPE 2022)” or their latest versions.	Rehabilitation will be completed in accordance with PA 06_0092 and the Rehabilitation Objectives and Final Landuse Rehabilitation Plan which are approved by Resources Regulator. Schedule 3, Condition 33 and Condition 34 of PA 06-0092 outlines the minimum requirement for surface and groundwater monitoring including impacts to dependent ecosystems and riparian vegetation. Schedule 3, Condition 41A (Table 14) outlines rehabilitation objectives for Creek Diversions and Alignments. These PA objectives are incorporated to the site Rehabilitation Objectives approved by Resources Regulator (RMP Section 4.1). Creek diversions and rehabilitation of creeks and drainage lines is discussed in RMP Sections 6.2.1.3, 6.2.3.1 and 6.2.3.5.
7	DPE-Water	14/09/2023	Dirty runoff catchment areas are rehabilitated and the conveyance of clean surface runoff downstream is maximised.	Rehabilitation will be completed in accordance with PA 06_0092 and the Rehabilitation Objectives and Final Landuse Rehabilitation Plan which are approved by Resources Regulator. Surface runoff is managed by the site Erosion and Sediment Control Plan and the Site Water Management Plan.
8	DPE-Water	14/09/2023	Decommissioning of groundwater boreholes is in accordance with the “Minimum Construction Requirements for Water Bores in Australia (2020)”.	The RMP will be updated to reflect this. Refer Decomissioning RMP Section 6.2.2.
9	DPE-Water	14/09/2023	Ongoing water take by the final landform via interception, storage or diversion is quantified and complies with relevant approvals and licences under the Water Management Act 2000 or a relevant exemption. Please note exemptions from the requirement to hold approvals under s.90 and 91 of the Water Management Act 2000 for approved SSD/SSI projects will not apply once the project approval ceases. Therefore, any relevant water management works that are to be retained will need to obtain an approval prior to the development consent lapsing.	Further investigation is required with regard to long-term water licencing and water management works. The RMP will be updated to reflect this.

10	DPE-Water	14/09/2023	Aquifer interference activities are designed to minimise ongoing water take and water quality impacts and meet the requirements of the NSW Aquifer Interference Policy.	Water Quality is managed per the Water Management Plan. Schedule 3, Condition 33 and Condition 34 of PA 06-0092 outlines the minimum requirement for surface and groundwater monitoring including impacts to dependent ecosystems and riparian vegetation. Rehabilitation Objectives which are approved by Resources Regulator address water quality in the post mining landscape.
11	DPE-Water	14/09/2023	Final voids do not present a risk to important groundwater ecosystems and assets (groundwater dependent ecosystems, alluvial aquifers, and landholder bores).	Rehabilitation will be completed in accordance with PA 06_0092 and the Rehabilitation Objectives and Final Landuse Rehabilitation Plan which are approved by Resources Regulator. Schedule 3, Condition 33 and Condition 34 of PA 06-0092 outlines the minimum requirement for surface and groundwater monitoring including impacts to dependent ecosystems and riparian vegetation.
12	DPE-Water	14/09/2023	Final voids are designed to be sinks or to flow through the local groundwater system and need to be confirmed by a post-mining groundwater model.	A site water balance model is required for the Mt Arthur Coal per the PA 06_0092 Schedule 3, Condition 30. The model depicts groundwater and surface water interactions. Details of which are presented in the site water management plan. The RMP will be updated as required to include additional studies and assessments. Water monitoring will be undertaken for a period of time after closure. Timing will be determined once study is completed, in consultation with relevant agencies.
13	DPE-Water	14/09/2023	Residual risk to water sources is clearly understood and minimised. This is to include relevant assessment documentation and updated risk assessments to meet the requirements of the NSW Aquifer Interference Policy. Further detail can be found in Fact Sheet 5 in Appendix C of the "Guidelines for Groundwater Documentation for SSD/SSI Projects. Technical guideline (DPE 2022)".	Further investigation is required. The RMP will be updated as required to include additional studies and assessments.
14	DPE-Water	14/09/2023	A monitoring and review program is included to ensure the rehabilitation outcomes are met.	Rehabilitation will be completed in accordance with PA 06_0092 and the Rehabilitation Objectives and Criteria which are approved by Resources Regulator. It is noted that Criteria and Performance Indices are under development. Refer Section 4.1 and Section 8 of the RMP.

Reference #	Department	Date	Comment	BHP Response 22/11/2023
1	MSC	22/11/2023	Consultation Staff support the statement in Section 6.2.1.12 of the RMP that states "consultation with registered Aboriginal parties will be undertaken as part of the proposed Mt Arthur closure works and corresponding actions will be captured in future RMP updates".	No further update required.
2	MSC	22/11/2023	Confirmation is required on whether the bund adjacent to Denman Road will be removed, and if so, provision of indicative visual landform drawings to show key views from Denman Road (noting that Denman Road is a Designated Tourist Route). As stated in the Hunter Regional Plan 2041, Denman Road is an important regional freight route and 'business frontage, access from these routes…will need to consider wayfinding, visitor experience and safety and scenic amenity'. Officers' preference is that the visual bund be removed post mining.	The RMP will be updated to include proposed final status of visual bunds adjacent to Denman Rd. It is not a requirement of the RMP to provide a visual depiction of final landform from view points. The Closure Plan will look at minimising visual impacts through the rehabilitation process to meet the proposed final landform. Further consultation will be completed on this matter.
2 (incorrectly labelled in PDF)	MSC	22/11/2023	Officers request that an area within CL229 is planted with Native Woodland to combine with the corridors proposed under the existing approved Maxwell Underground mine - see Figure 11 from SSD 9526 (Maxwell Underground Mine).	Rehabilitation will be completed per current final landform plan (FLRP) approved by Resources Regulator.

3	MSC	22/11/2023	Preference is to include a figure showing the neighbouring Malabar Coal final landform and vegetation to demonstrate vegetation connectivity and wildlife corridors.  	Showing proposed final landforms for neighbouring mining leases is not a requirement of the RMP. Final landforms are approved by Resources Regulator (RR) via portal submission of Final Landform Rehabilitation Plans (FLRPs). This is a requirement for all large mine sites.
4	MSC	22/11/2023	Any new final landforms should be designed to include the following principles: a) When viewed from Muswellbrook and key State owned roads (including Designated Tourist Routes), any new emplacement landforms will have micro-relief and principles of GeoFLuv applied. b) Emplacement landforms across the site designed to look less "engineered" (i.e. incorporation of micro- relief to avoid simple blocky forms). c) Surface water drainage will incorporate micro-relief to increase drainage stability and avoid major engineered drop structures. d) Shaping in areas near road infrastructure that may enable more intensive employment land uses in the future when mining ceases.	Per project approval (09-0062, Schedule 3, Cond 41A) *Final landforms are designed to incorporate natural microrelief and natural drainage lines to integrate with surrounding landforms.* Section 6.2.3.2 of the RMP discusses Visual Amenity and states: • *Incorporating micro relief features throughout overburden emplacements to provide an enhanced naturally appearing landform and fauna habitat*. • *The practical consideration of geomorphic type designs on emplacements to sustainably manage water and create a natural looking and stable landform.* The RMP and Rehabilitation Strategy generally describe that geomorphic landform design features will be incorporated where practical. Current rehabilitation is per the approved FLRPs (land use and contours).
5	MSC	22/11/2023	Section 2.3 states that there are two proposed voids. Staff are of the understanding that the current approval is for three voids.	The conceptual final landform (submitted as FLRP and approved in Rehabilitation Strategy) shows two voids: Northern Void and McDonalds Void. There are two proposed final voids in the current modification submission. To be further discussed.
6	MSC	22/11/2023	The final void (and associated drainage network) should be shaped to reflect a less engineered profile that is more consistent with the surrounding natural environment and at less risk of erosion.	Refer response to comment reference 04. RMP states "*Where possible, Mt Arthur coal will adopt a free-draining geomorphic landform design…. Detailed drainage designs are to be prepared by an experienced consultant for all primary rehabilitation areas, these designs are to be prepared in accordance with the Blue Book, approved final landform*"
7	MSC	22/11/2023	Staff request a copy of the Final Void Management Plan referenced in Section 6.2.3.4.	The Mt Arthur Rehabilitation Strategy, specifically Section 7.2 has replaced the Final Voind Management Plan. RMP has been updated to reflect this.
8	MSC	22/11/2023	Stock fences, dams and access tracks should be established as part of rehabilitation in areas accommodating a final land use of pasture / cattle grazing.	Rehabilitation will be completed in accordance with PA 06_0092 and the Rehabilitation Objectives and Final Landuse Rehabilitation Plan which are approved by Resources Regulator. This type of infrastructure will be considered as we continue to engage the Resources Regulator on pasture land use outcomes.
9	MSC	22/11/2023	Please show the 33ha area proposed for Class II agricultural capability land on a figure.	The approved Conceptual Final Land Use Plan in the Rehabilitation Strategy and the FLRP Plan 1 of the RMP) depict three potential options for 33ha Class II capability.

10	MSC	22/11/2023	Section 6.2.1.10 of the RMP highlights seed collection and the assessment of seed and tube stock quality and supply options as potential risks due to insufficient seed mix or tube stock. Staff support the commitment to refine seed collection methodology and also recommend enhancements be implemented, for example, improvements to seed collection procedures and or consideration of an onsite seed collection facility. It is understood that BHP staff attend a quarterly meeting with other sites to discuss environmental issues, perhaps BHP could investigate a sharing arrangement of the Mount Pleasant Mine seed collection facility.	The RMP Risk Assessment identified the following action "*Refine methodology for seed collection and review of quality and supply options for seed and tubestock*" which is aknowledged in the RMP Section 6.2.1.10.
11	MSC	22/11/2023	In 2005, flying-foxes established a camp at Muscle Creek and a section of the Hunter River on land owned by Council and Australian Rail Track Corporation (ARTC). The camp is located close to residential areas and its proximity to a caravan park and public facilities including walk ways, recreational areas, sporting fields, clubs, hotels and the local hospital are the main areas of concern for the community. Historically, the camps have been occupied by the threatened Grey-Headed Flying-fox and in recent years, Little Red Flying-foxes. Disturbance to threatened flying foxes and their habitat is limited by legislative requirements. Flying-foxes predominantly roost in trees within the riparian zone surrounding Muscle Creek and the Hunter River. It would be ideal to establish suitable habitat in areas outside the current camp locations, as research suggest camps can be encouraged to move out of urban areas if there is suitable habitat nearby. Hunter Valley Energy Coal Pty Ltd (HVEC) own multiple parcels of land adjacent to the Hunter River to the north of Denman Road which may be suitable for an alternate flying-fox camp. Officers would like to request HVEC consider flying-fox habitat on some of these land parcels and welcome the opportunity to discuss further.	Previously discussed during Rehabilitation Strategy consultation. This is not a RMP requirement, however, BHP may further discuss other options with MSC.
12	MSC	22/11/2023	Clarification is required to whom is responsible for the removal of the historic conveyor between MAC and AGL's Bayswater and Liddell Power Station.	The portion of the conveyor corridor within the area governed by PA 06_0092 has been removed.

Eckersley, Michelle

From:	no-reply@majorprojects.planning.nsw.gov.au
Sent:	Thursday, 21 December 2023 7:26 AM
To:	Nixon, James
Cc:	Christensen, Chloe; Joe.Fittell@planning.nsw.gov.au
Subject:	Mt Arthur Open Cut Extension - Rehabilitation Management Plan
Attachments:	Approval of Plan Strategy or Study_21122023_072533.pdf

Dear James ,

The Department has completed its assessment of the Rehabilitation Management Plan for the Mt Arthur Open Cut Extension

The Department's comments are attached.

If you have any enquiries, please contact Joe Fittell on 02 4908 6896 /at Joe.Fittell@planning.nsw.gov.au.

To sign in to your account click here or visit the Major Projects Website.

Please do not reply to this email.

Kind regards

The Department of Planning and Environment

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Our ref: MP09_0062-PA-148

Chloe Christensen
Environmental Specialist
Hunter Vallley Energy Coal Pty Ltd
Thomas Mitchell Drive
Muswellbrook NSW 2333

21/12/2023

Subject: Consultation on Rehabilitation Management Plan

Dear Ms Christensen

I refer to the Rehabilitation Management Plan which has been submitted to the Department for consultation in accordance with Condition 44, Schedule 3 of the development consent for the Mount Arthur Open Cut Extension (MP09_0062).

The Department has carefully reviewed the document and confirms it has no comments, noting that it is consistent with the Rehabilitation Strategy which was recently approved by the Planning Secretary.

If you wish to discuss the matter further, please contact me on (02) 4908 8696.

Yours sincerely

Joe Fittell
Team Leader
Resource Assessments

Eckersley, Michelle

From:	no-reply@majorprojects.planning.nsw.gov.au
Sent:	Thursday, 14 September 2023 1:34 PM
To:	Nixon, James
Subject:	Mt Arthur Open Cut Extension Mt Arthur Coal Rehabilitation Management Plan - Response from DPE Water
Attachments:	DPE Water - Mt Arthur Rehab Mgt Plan.pdf

DPE Water has responded to your request for advice in relation to the Mt Arthur Open Cut Extension Mt Arthur Coal Rehabilitation Management Plan . The response is attached. Record of this consultation has been automatically saved to the portal.

When you are ready, login to your profile to submit the final document to the Department.

To sign in to your account click here or visit the Major Projects Website.
Please do not reply to this email.

Kind regards

The Department of Planning and Environment

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Our ref: OUT23/15058

James Nixon
BHP
Email: James.Nixon@bhp.com

14 September 2023

Subject: **Mt Arthur Open Cut Extension (MP09_0062) – Mt Arthur Coal Rehabilitation Management Plan**

Dear James Nixon,

I refer to your request seeking advice from the Department of Planning and Environment – Water (the department) on preparation of a Rehabilitation Management Plan for the above matter. It is understood this consultation is in accordance with conditions of approval for the project.

The department requests the plan be considered further to ensure relevant water legislation, policy and management requirements are addressed. The department has defined a range of outcomes relevant to assist in the preparation of Rehabilitation Management Plans and these are detailed in Attachment A.

Should you have any further queries in relation to this submission please do not hesitate to contact DPE Water Assessments at water.assessments@dpie.nsw.gov.au

Yours sincerely,

Tim Baker
Senior Project Officer
Water Assessments
Department of Planning and Environment: Water

Attachment A

Detailed advice regarding the Mt Arthur Coal – Rehabilitation Management Plan

1.0 Rehabilitation Management Plan Outcomes

The Rehabilitation Management Plan is recommended to be reviewed to achieve the following outcomes. These are intended to meet the department's legislative, policy and water management requirements.

- Sharing of water must protect the water source, its dependent ecosystems and basic landholder rights.
- Water sources, floodplains and dependent ecosystems are protected and restored.
- Activities within a water source should avoid or minimise land degradation, including soil erosion, compaction, geomorphic instability, contamination, and where possible land should be rehabilitated.
- The final Rehabilitation Management Plan is made electronically available on a public accessible website.
- A conceptual model/diagram clearly presents how the groundwater and surface water systems interact with the final landform. This is to be informed by recent environmental assessments/modelling reviews.
- The final design and location of surface drainage features achieves a stable landform and maintains or improves riparian corridor functioning. This is to be completed with reference to industry guidelines such as: "*Rehabilitation Manual for Australian Streams* (LWRRDC 2000)", "*Guideline: Works that interfere with water in a watercourse for a resource activity* (DNRME 2019)" and "*Guidelines for Controlled Activities on Waterfront Land* (DPE 2022)" or their latest versions.
- Dirty runoff catchment areas are rehabilitated and the conveyance of clean surface runoff downstream is maximised.
- Decommissioning of groundwater boreholes is in accordance with the "Minimum Construction Requirements for Water Bores in Australia (2020)".
- Ongoing water take by the final landform via interception, storage or diversion is quantified and complies with relevant approvals and licences under the *Water Management Act 2000* or a relevant exemption. Please note exemptions from the requirement to hold approvals under s.90 and 91 of the *Water Management Act 2000* for approved SSD/SSI projects will not apply once the project approval ceases. Therefore, any relevant water management works that are to be retained will need to obtain an approval prior to the development consent lapsing.
- Aquifer interference activities are designed to minimise ongoing water take and water quality impacts and meet the requirements of the NSW Aquifer Interference Policy.
- Final voids do not present a risk to important groundwater ecosystems and assets (groundwater dependent ecosystems, alluvial aquifers, and landholder bores).
- Final voids are designed to be sinks or to flow through the local groundwater system and need to be confirmed by a post-mining groundwater model.
- Residual risk to water sources is clearly understood and minimised. This is to include relevant assessment documentation and updated risk assessments to meet the requirements of the NSW Aquifer Interference Policy. Further detail can be found in

Fact Sheet 5 in Appendix C of the "*Guidelines for Groundwater Documentation for SSD/SSI Projects. Technical guideline* (DPE 2022)".

- A monitoring and review program is included to ensure the rehabilitation outcomes are met.

End of Attachment

Eckersley, Michelle

Subject: Rehabilitation Management Plan - Response from Muswellbrook Shire Council
Attachments: MSC Staff comments on Rehabilitation Management Plan.pdf

From: no-reply@majorprojects.planning.nsw.gov.au <no-reply@majorprojects.planning.nsw.gov.au>
Sent: Wednesday, November 22, 2023 10:52 AM
To: Nixon, James <James.nixon@bhp.com>
Subject: Mt Arthur Open Cut Extension Mt Arthur Coal Rehabilitation Management Plan - Response from Muswellbrook Shire Council

Muswellbrook Shire Council has responded to your request for advice in relation to the Mt Arthur Open Cut Extension Mt Arthur Coal Rehabilitation Management Plan . The response is attached. Record of this consultation has been automatically saved to the portal.

When you are ready, login to your profile to submit the final document to the Department.

To sign in to your account click here or visit the Major Projects Website.
Please do not reply to this email.

Kind regards

The Department of Planning and Environment

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Enquiries
Please ask for Theresa Folpp
Direct 02 6549 3700
Our reference 23/2828

22 November 2023

Jimmy Nixon
Superintendent Environment
BHP Mount Arthur Coal

Dear Mr Nixon

Mount Arthur Coal (MP 09_0062) – Muswellbrook Shire Council (Staff) comments on Rehabilitation Management Plan

Reference is made to the following:

- 'Mt Athur Coal Rehabilitation Management Plan' dated 06 September 2023; and
- Request to provide feedback via the Major Projects Portal.

Consultation with Muswellbrook Shire Council specific to the RMP is outlined in Table 4-2 of the RMP. The RMP has been provided to Council Staff on four occasions.

Consultation

01. Staff support the statement in Section 6.2.1.12 of the RMP that states "consultation with registered Aboriginal parties will be undertaken as part of the proposed Mt Arthur closure works and corresponding actions will be captured in future RMP updates".

Visual

02. Confirmation is required on whether the bund adjacent to Denman Road will be removed, and if so, provision of indicative visual landform drawings to show key views from Denman Road (noting that Denman Road is a Designated Tourist Route).

    As stated in the Hunter Regional Plan 2041, Denman Road is an important regional freight route and '*business frontage, access from these routes…will need to consider wayfinding, visitor experience and safety and scenic amenity'*.

    Officers' preference is that the visual bund be removed post mining.

Location of Woodland Corridors

02. Officers request that an area within CL229 is planted with Native Woodland to combine with the corridors proposed under the existing approved Maxwell Underground mine - see Figure 11 from SSD 9526 (Maxwell Underground Mine).

03. Preference is to include a figure showing the neighbouring Malabar Coal final landform and vegetation to demonstrate vegetation connectivity and wildlife corridors.

Final Landform

04. Any new final landforms should be designed to include the following principles:

    a) When viewed from Muswellbrook and key State owned roads (including Designated Tourist Routes), any new emplacement landforms will have micro-relief and principles of GeoFLuv applied.
    b) Emplacement landforms across the site designed to look less “engineered” (i.e. incorporation of micro- relief to avoid simple blocky forms).
    c) Surface water drainage will incorporate micro-relief to increase drainage stability and avoid major engineered drop structures.
    d) Shaping in areas near road infrastructure that may enable more intensive employment land uses in the future when mining ceases.

Final Voids

05. Section 2.3 states that there are two proposed voids. Staff are of the understanding that the current approval is for three voids.

06. The final void (and associated drainage network) should be shaped to reflect a less engineered profile that is more consistent with the surrounding natural environment and at less risk of erosion.

07. Staff request a copy of the Final Void Management Plan referenced in Section 6.2.3.4.

Final Landuse

08. Stock fences, dams and access tracks should be established as part of rehabilitation in areas accommodating a final land use of pasture / cattle grazing.

09. Please show the 33ha area proposed for Class II agricultural capability land on a figure.

Seed Collection

10. Section 6.2.1.10 of the RMP highlights seed collection and the assessment of seed and tube stock quality and supply options as potential risks due to insufficient seed mix or tube stock. Staff support the commitment to refine seed collection methodology and also recommend enhancements be implemented, for example, improvements to seed collection procedures and or consideration of an onsite seed collection facility.

    It is understood that BHP staff attend a quarterly meeting with other sites to discuss environmental issues, perhaps BHP could investigate a sharing arrangement of the Mount Pleasant Mine seed collection facility.

Alternate Flying-Fox Camps

11. In 2005, flying-foxes established a camp at Muscle Creek and a section of the Hunter River on land owned by Council and Australian Rail Track Corporation (ARTC). The camp is located close to residential areas and its proximity to a caravan park and public facilities including walk ways, recreational areas, sporting fields, clubs, hotels and the local hospital are the main areas of concern for the community.

    Historically, the camps have been occupied by the threatened Grey-Headed Flying-fox and in recent years, Little Red Flying-foxes. Disturbance to threatened flying foxes and their habitat is limited by legislative requirements.

    Flying-foxes predominantly roost in trees within the riparian zone surrounding Muscle Creek and the Hunter River. It would be ideal to establish suitable habitat in areas outside the current camp locations, as research suggest camps can be encouraged to move out of urban areas if there is suitable habitat nearby.

    Hunter Valley Energy Coal Pty Ltd (HVEC) own multiple parcels of land adjacent to the Hunter River to the north of Denman Road which may be suitable for an alternate flying-fox camp. Officers would like to request HVEC consider flying-fox habitat on some of these land parcels and welcome the opportunity to discuss further.

Infrastructure

12. Clarification is required to whom is responsible for the removal of the historic conveyor between MAC and AGL's Bayswater and Liddell Power Station.

Council staff appreciates the opportunity to comment and would be pleased to provide additional information if requested. Should you need to discuss the above, please contact the undersigned on 02 6549 3700 or email council@muswellbrook.nsw.gov.au.

Yours faithfully

Theresa Folpp
Development Compliance Officer