MOUNT PLEASANT OPERATION

REHABILITATION MANAGEMENT PLAN

Document ID:	Mount Pleasant Operation Rehabilitation Management Plan		
Company:	MACH Energy Australia Pty Ltd		
Effective Date:	27 June 2025	**Status:**	Issued for Use
Approved By:	Andrew Raal	**Version Number:**	03

MOUNT PLEASANT OPERATION REHABILITATION MANAGEMENT PLAN		
Name of Mine:	Mount Pleasant Operation	
Rehabilitation Management Plan Commencement Date:	27 June 2025	
Rehabilitation Management Plan Revision Dates and Version Numbers	Version 01	
	Version 02 – Updated to reflect approval of the Rehabilitation Objectives Statement and Final Landform and Rehabilitation Plan	
	Version 03 – Updated to address the requirements of Development Consent SSD 10418 and the approval of the Rehabilitation Objectives Statement	
Mining Authorisations (Lease/Licence No):	ML 1645	Expiry Date: 16 December 2031
	ML 1713	Expiry Date: 2 February 2036
	ML 1708	Expiry Date: 2 February 2036
	ML 1709	Expiry Date: 2 February 2036
	ML 1750	Expiry Date: 3 March 2038
	ML 1808	Expiry Date: 29 September 2041
	ML 1829	Expiry Date: 10 February 2037
Name of Mine Operator:	MACH Energy Australia Pty Ltd	
Name of Lease Holder:	MACH Energy Australia Pty Ltd and J.C.D Australia Pty Ltd	

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1 INTRODUCTION TO MINING PROJECT

This Rehabilitation Management Plan (RMP) for the Mount Pleasant Operation (MPO) has been prepared in accordance with the New South Wales (NSW) Resources Regulator Form and Way – *Rehabilitation Management Plan for Large Mines* (February 2024), under amendment to the *Mining Regulation 2016* under the *Mining Act 1992.* This RMP has also been developed to satisfy the requirements relevant to rehabilitation management under Development Consent SSD 10418 and Development Consent DA 92/97 and relevant requirements within Mining Lease (ML) 1645, ML 1713, ML 1708, ML 1808, ML 1709, ML 1829 and ML 1750.

This document, along with the supporting Annual Rehabilitation Report and Forward Program, replaces the Mining Operations Plan (MOP).

This RMP has been updated to reflect the requirements of Development Consent SSD 10418 in addition to the approval of the Rehabilitation Objectives by the NSW Resources Regulator in May 2025.

1.1 HISTORY OF OPERATIONS

MPO is located in the Upper Hunter Valley of NSW, approximately 3 kilometres (km) north-west of Muswellbrook and approximately 50 km north-west of Singleton (Figure 1). The village of Aberdeen and locality of Kayuga are also located approximately 5 km north-northeast and 1 km north of the MPO boundary, respectively (Figure 1).

Development of the MPO is undertaken within ML 1645, ML 1713, ML 1708, ML 1808, ML 1709, ML 1829 and ML 1750 and is operated in accordance with the relevant Authorities for the above MLs and in accordance with NSW Development Consent SSD 10418 and Development Consent DA 92/97 (prior to its surrender).

MACH Mount Pleasant Operations Pty Ltd is the manager of the MPO as agent for, and on behalf of, the unincorporated Mount Pleasant Joint Venture between MACH Energy (95 per cent [%] owner) and J.C.D. Australia Pty Ltd (5% owner). This RMP is implemented at the MPO by MACH Energy.

The initial application for Development Consent for the MPO was made in 1997. This was supported by an Environmental Impact Statement (EIS) prepared by ERM Mitchell McCotter (ERM Mitchell McCotter, 1997). On 22 December 1999, the then Minister for Urban Affairs and Planning granted Development Consent DA 92/97 to Coal & Allied. This allowed for the “Construction and operation of an open cut coal mine, coal preparation plant, transport and rail loading facilities and associated facilities” at the MPO.

MACH Energy commenced substantial works at the MPO on 25 November 2016. During 2018 and 2019, MACH Energy completed the following construction activities on-site, including:

- construction completion of the Mine Infrastructure Area (MIA) buildings, including offices, maintenance workshop, tire and fuel bay, bath houses, Sewage Treatment Plant, car park and water tanks;
- construction completion of the following areas:
  - rail spur and loop;
  - Bengalla Link Road Bridge;
  - Hunter River Pump Station and Pipeline;
  - 66 kilovolt (kV) powerline relocation;
  - substation and switchyard; and

  - water management infrastructure including the Mine Water Dam, Environmental Dam 2 (ED2), Clean Water and Fines Emplacement Area (FEA).
- construction completion and wet commissioning of the Coal Handling and Preparation Plant (CHPP) Separable Portion 1, including bypass, reclaim and Fire Water and Train Load Out Systems; and
- continuing construction of the CHPP, including the rejects system.

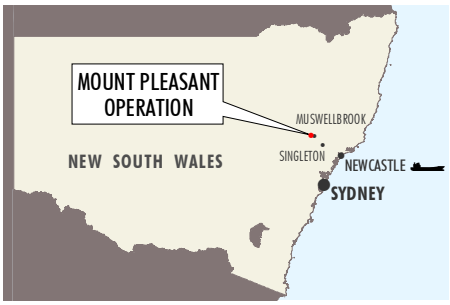
Coal was first mined in July 2018, which formed the base of the ROM stockpile. Off-site coal transport also commenced in 2018 using the rail infrastructure in accordance with Development Consent DA 92/97 (Condition 7, Schedule 2).

Mining related activities have included:

- development of the mining pits, progressing to the north and west;
- deposition of fine rejects within the FEA; and
- development of the Eastern Out-of-Pit Overburden Emplacement.

Rehabilitation of mined areas at MPO has been progressively undertaken to re-establish native vegetation communities. At the end of December 2024, a total of 173 hectares (ha) of rehabilitation has been undertaken on the Eastern Out-of-Pit Overburden Emplacement Area at MPO. Temporary rehabilitation has also been undertaken in areas of disturbance which are not planned to be rehabilitated for extended periods of time. In addition to the progressive rehabilitation of mine landforms, installation of visual bunding and vegetation screening will continue to occur as required during the Forward Program term to provide screening of the MPO from sensitive viewpoints.

Source: NSW Spatial Services (2025)



LEGEND

- Mining Operation
- Proposed Mining Operation (Application Lodged)
- Railway
- Local Government Boundary
- State Forest/Reserve
- National Parks and Wildlife Estate
- Coal - Current Titles

Date prepared: 25-06-2025

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MOUNT PLEASANT COAL MINE
REHABILITATION MANAGEMENT PLAN

Regional Location

Figure 1

MAC-18-03A Rehabilitation MP 2025_ Figure 1_ Rev A

Mount Pleasant Optimisation Project

On 22 January 2021, MACH Energy submitted the *Mount Pleasant Optimisation Project Environmental Impact Statement* in support of a "State Significant Development" Application under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). Key aspects of the Mount Pleasant Optimisation Project (the Project) generally involve (among other things):

- increased open cut extraction within the MPO's existing MLs;
- a staged increase in extraction, handling and processing of ROM coal up to 21 Mtpa;
- upgrades to existing infrastructure and new infrastructure to support mining of the proposed Project; and
- an extension to the time limit on mining operations to 22 December 2048.

MACH Energy commenced development under Development Consent SSD 10418 on 12 February 2024. In accordance with Part A, Condition A15 of Development Consent SSD 10418, upon the commencement of development of Development Consent SSD 10418 and before the surrender of Development Consent DA 92/97, the conditions of Development Consent SSD 10418 prevail to the extent of any inconsistency with the conditions of those consents. Where relevant, this RMP builds on the components of the existing RMP, including previous feedback from government stakeholders and recommendations.

Part A, Condition A14 of Development Consent SSD 10418 requires the surrender of Development Consent DA 92/97 within 12 months of the date of commencement of development under Development Consent SSD 10418, or an alternative timeframe agreed with the Planning Secretary of the DPE (now the Department of Planning, Housing and Infrastructure [DPHI]). In accordance with Part A, Condition A14 of Development Consent SSD 10418, an alternative timeframe was agreed upon with the endorsement of the Planning Secretary. MACH Energy will surrender the existing Development Consent DA 92/97 on 12 February 2026. A copy of the time extension approval by the Planning Secretary is included as Attachment 1.

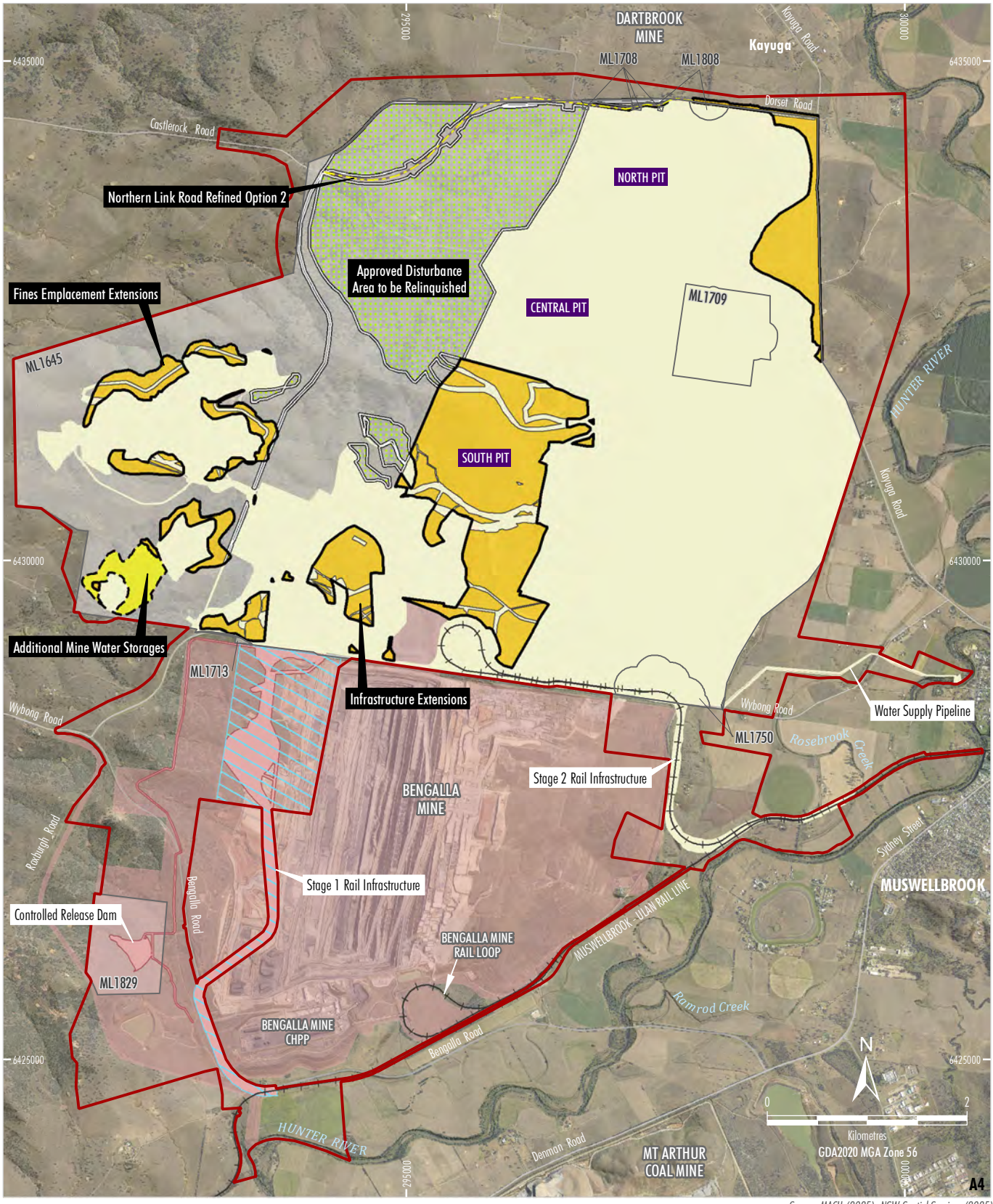
Proposed Operations

The Project approved under Development Consent SSD 10418 would include the following development:

- increased open cut extraction within Mount Pleasant Operation MLs by mining of additional coal reserves, including lower coal seams in North Pit;
- a staged increase in extraction, handling and processing of ROM coal up to 21 Mtpa (i.e. progressive increase in ROM coal mining rate from 10.5 Mtpa over the Project life);
- staged upgrades to the existing CHPP and coal handling infrastructure to facilitate the handling and processing of additional coal;
- rail transport of up to approximately 17 Mtpa of product coal to domestic and export customers;
- upgrades to workshops, electricity distribution and other ancillary infrastructure;
- existing infrastructure relocations to facilitate mining extensions (e.g. local roads, powerlines and water pipelines);
- construction and operation of new water management and water storage infrastructure in support of the mine;
- additional reject dewatering facilities to allow co-disposal of fine rejects with waste rock as part of ROM waste rock operations;

- development of an integrated waste rock emplacement landform that incorporates geomorphic drainage design principles for hydrological stability, and varying topographic relief to be more natural in exterior appearance;
- construction and operation of new ancillary infrastructure in support of mining;
- extension to the time limit on mining operations to 22 December 2048;
- ongoing exploration activities; and
- other associated infrastructure, plant, equipment and activities

Figure 2 shows the indicative Project general arrangement and existing/approved surface development areas that would continue to comprise part of the Project and the areas that would be relinquished.



MAC-18-03A Rehabilitation MP 2025_Figure 2_Rev B

LEGEND

- Project Approval Boundary *
- Coal - Current Titles
- Project Continuation of Existing/Approved Surface Development (DA92/97) [1]
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)
- Existing/Approved Mount Pleasant Operation Infrastructure within Bengalla Mine Approved Disturbance Boundary (SSD-5170) [1]
- Infrastructure removed under the Terms of Condition 37, Schedule 3
- Development Footprint 1 (Stage 1) - General Extension Areas [1]
- Development Footprint 1 (Stage 2) - Mine Water Dam 3 [1]
- Northern Link Road Refined Option 2 Centreline
- Relinquishment Area [2]

* Appendix 1 of Development Consent SSD 10418

NOTES

[1] Excludes some incidental Project components such as water management infrastructure, access tracks, topsoil stockpiles, power supply, temporary offices, other ancillary works and construction disturbance.

[2] Subject to detailed design of Northern Link Road alignment.

Source: MACH (2025); NSW Spatial Services (2025); Department of Planning and Environment (2016) Orthophoto: MACH (Dec 2024)

Date prepared: 25-06-2025

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MOUNT PLEASANT COAL MINE
REHABILITATION MANAGEMENT PLAN

General Arrangement

Figure 2

1.2 CURRENT DEVELOPMENT CONSENT, LEASES AND LICENCES

The key approvals held by MACH Energy for the MPO are detailed in Table 1-1.

Table 1-1
Approvals for the Operation

Approval Number	Description	Issue Date	Expiry Date
State Significant Development SSD 10418	State Significant Development for Mount Pleasant Optimisation Project	06/09/2022	22/12/2048
Development Consent DA 92/97[1]	State Development Consent for Mount Pleasant Coal Mine (as modified)	22/12/1999	22/12/2026
EPBC Act Approval 2011/5795	Commonwealth approval of the Mount Pleasant Coal Mine	29/02/2012	28/10/2040
EPBC Act Approval 2020/8735	Commonwealth approval of the Mount Pleasant Optimisation Project	24/09/2024	22/12/2058
Environment Protection Licence (EPL) 20850	NSW Environment Protection Authority (EPA) Licence for MPO	28/11/2021	Until the licence is surrendered, suspended or revoked

Note: EPBC Act = Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

[1] In accordance with Part A, Condition A14 of Development Consent SSD 10418, MACH Energy obtained written approval from the Planning Secretary allowing for a time extension to surrender Development Consent DA 92/97 by 12 February 2026.

The mining titles held by MACH Energy for the MPO are detailed in Table 1-2.

Table 1-2
MPO Mining and Prospecting Titles

Title	Type	Purpose	Grant Date	Expiry Date	Status
AUTH 459	Authorisation	Prospecting	07/04/1992	07/04/2025[1]	Renewal Pending
ML 1645	Mining Lease	Prospecting and Mining Coal	17/12/2010	16/12/2031	Granted
ML 1713	Mining Lease	Prospecting and Mining Coal	02/02/2015	02/02/2036	Granted
ML 1708	Mining Lease	Prospecting and Mining Coal	02/02/2015	02/02/2036	Granted
ML 1709	Mining Lease	Prospecting and Mining Coal	02/02/2015	02/02/2036	Granted
ML 1750	Mining Lease	Prospecting and Mining Coal	03/03/2017	03/03/2038	Granted
ML 1808	Mining Lease	Prospecting and Mining Coal	29/09/2020	29/09/2041	Granted
ML 1829	Mining Lease	Prospecting and Mining Coal	20/07/2023	10/02/2037	Granted

[1] A renewal request has been submitted and is currently awaiting approval as of 19 June 2025. The existing approval will continue until the renewal is approved.

Water Access Licences held by MACH Energy are summarised in Table 1-3.

Table 1-3
MPO Water Access Licences

Water Sharing Plan	Water Source	Water Access Licence Number	Entitlement (Unit)
Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources, 2009	Hunter Regulated River Alluvial Water Source	18253	74
		18266	68
		18206	24
		18199	5
		18122	33
		18131	60
		21503	21
		18154	5
		18177	5
	Muswellbrook Water Source	23935	41
	Sydney Basin – North Coast Groundwater Source	41437	640
		40298	90
	Krui River Water Source	18336	12
	Dart Brook Water Source	44101	20
	Hunter Regulated River Water Source	879	243
		880	124
		1113	366
		973	3
		974	210
		975	8
		988	156
		989	8
		1307	37.5
		1229	480
		1230	8
		1259	33.2
		1227	99
		1258	5
		992	75
		7808	36
		702	267
		1260	4.8
		993	265
		1308	15.1
		604	183
		605	8
		677	24
		1338	17.5
		662	9
		663	16
		10775	243
		41438	455
		639	134
		638	225

Table 1-3 (Continued)
MPO Water Access Licences

Water Sharing Plan	Water Source	Water Access Licence Number	Entitlement (Unit)
Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources, 2009 (Continued)	Hunter Regulated River Water Source (Continued))	969	39
		1074	5
		8406	168
		8598	3
		8445	12.6
		10531	120
		13785	1

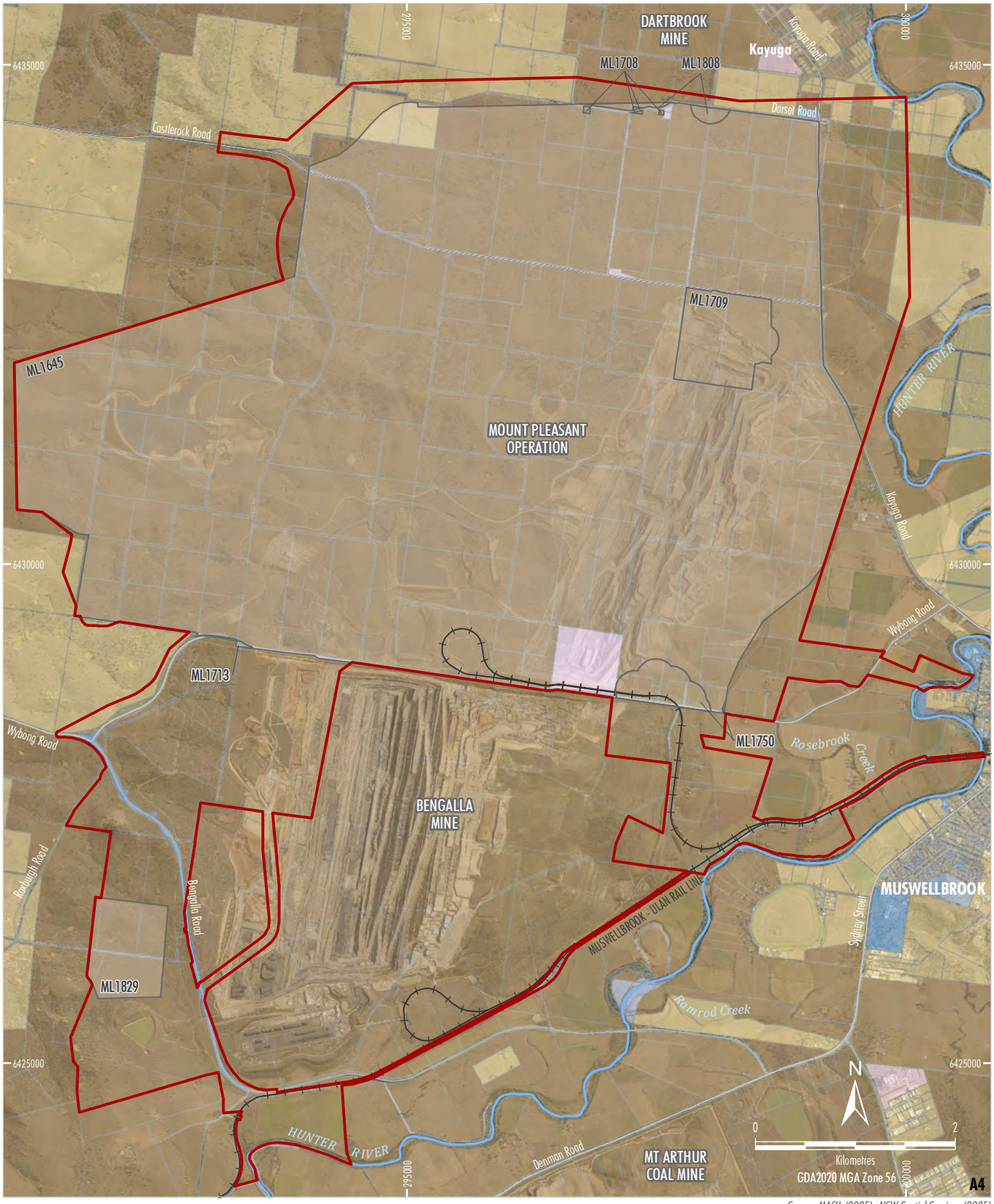
Note: Typically, one (1) Unit represents one (1) megalitre.

1.3 LAND OWNERSHIP AND LAND USE

A schedule of land ownership on and adjacent to the MPO mining titles is contained in Appendix 1 of Development Consent SSD 10418 and shown on Figure 3. The majority of freehold land within the ML boundary is owned by MACH Energy. Land ownership surrounding the MPO is outlined in Appendix A.

The MPO site is situated directly north of the existing Bengalla Mine, with the Mt Arthur Mine further south. Dartbrook Mine and the village of Kayuga are situated beyond the northern boundary of the site, with the township of Aberdeen further north again. Agricultural land and the town of Muswellbrook are located to the east of the site. Land to the west of the site is generally used for grazing.

The land uses in the vicinity of the MPO are predominantly agricultural, mining and residential, with small sections of public road corridors. Large areas within ML 1645 are still predominantly used for cattle grazing. Land uses surrounding the MPO are shown on Figure 4.



MAC-18-03A Rehabilitation MP 2025 _ Figure 3 _ Rev A

LEGEND

- Project Approval Boundary*
- Coal - Current Titles
- Mine-owned Land
- Crown Land
- The State of NSW
- Muswellbrook Shire Council
- Privately-owned Land
- Railway
- Major River

* Appendix 1 of Development Consent SSD 10418

Source: MACH (2025); NSW Spatial Services (2025)
Orthophoto: MACH (Dec 2024)

Date prepared: 25-06-2025

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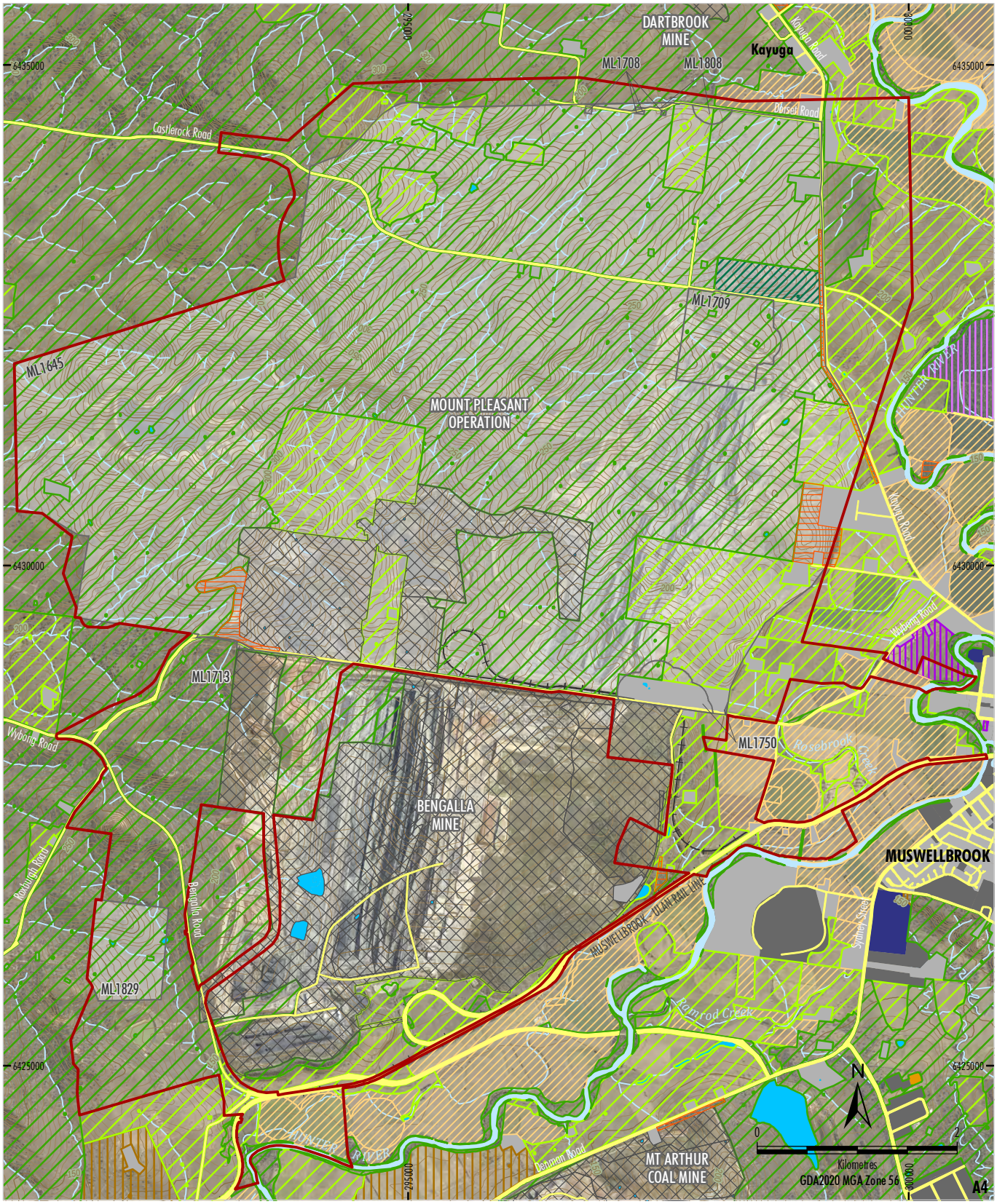
MOUNT PLEASANT COAL MINE
REHABILITATION MANAGEMENT PLAN

Land Ownership

Figure 3



MAC-18-03A Rehabilitation MP 2025_Figure 4_Rev A

LEGEND

- Project Approval Boundary*
- Coal - Current Titles
- Railway
- Watercourse
- Index Contour (50 m Interval)
- Intermediate Contour (5 m Interval)

Existing Landuse as at September 2017

- 1.2.0 Managed resource protection
- 2.1.0 Grazing native vegetation
- 3.1.0 Plantation forests
- 3.2.0 Grazing modified pastures
- 3.3.0 Cropping
- 4.2.0 Grazing irrigated modified pastures
- 4.4.0 Irrigated perennial horticulture
- 4.5.0 Irrigated seasonal 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
- 5.9.0 Waste treatment and disposal
- 6.2.0 Reservoir/dam
- 6.3.0 River

* Appendix 1 of Development Consent SSD 10418

Source: MACH (2025); NSW DCCEEW (2023); NSW Spatial Services (2025)
Orthophoto: MACH (Dec 2025)

Date prepared: 25-06-2025

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MOUNT PLEASANT COAL MINE
REHABILITATION MANAGEMENT PLAN

Land Use

Figure 4

2 FINAL LAND USE

2.1 REGULATORY REQUIREMENTS FOR REHABILITATION

Regulatory requirements relevant to post-mining land use and rehabilitation at the MPO are provided in the following MPO approval documents:

- Development Consent SSD 10418;
- Development Consent DA 92/97 (prior to its surrender);
- the MPO's MLs;
- EPBC Approval 2011/5795; and
- EPBC Approval 2020/8735.

The interactions between the various rehabilitation documents at the MPO are shown on Chart 1.

Chart 1
Relationship between Rehabilitation Management Plan and Other Documents

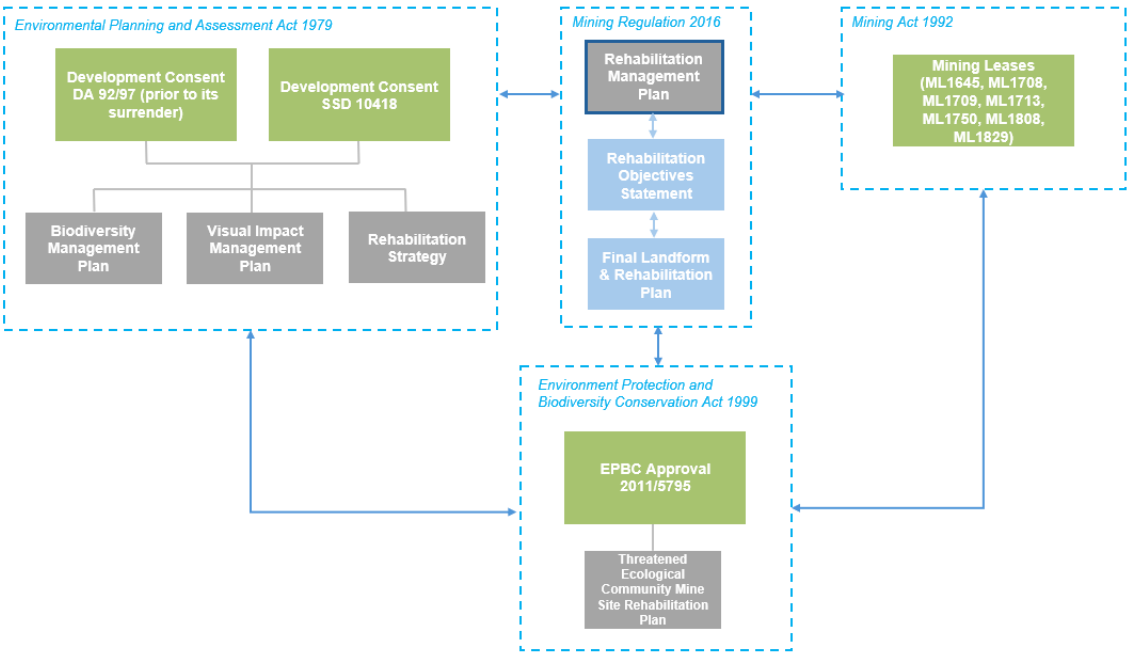


Table 2-1 details the conditions of Development Consent SSD 10418, Development Consent DA 92/97 (prior to its surrender), and ML 1645, ML 1713, ML 1808, ML 1709, ML 1708, ML 1829 and ML 1750 relevant to rehabilitation. Table 2-1 also lists the timing to meet each rehabilitation requirement and identifies the section where each condition has been addressed in this RMP.

Table 2-1
Regulatory Requirements Relating to Post-Mining Land Use and Rehabilitation

<table>
<tr><th>Condition/Requirement</th><th>Specific Area / Domain</th><th>Timing</th><th>RMP Section</th></tr>
<tr><td colspan="4">Part B, Development Consent SSD 10418 (Continued)</td></tr>
<tr><td>Rehabilitation Objectives

B87. The Applicant must rehabilitate the site in accordance with the provisions under the Mining Act 1992. This rehabilitation must be generally consistent with the proposed rehabilitation activities described in the document/s listed in condition A2(c) and shown conceptually in Appendix 6, and must comply with the objectives in Table 10.

Table 10: Rehabilitation objectives
<table>
<tr><th>Feature</th><th>Objective</th></tr>
<tr><td>All areas of the site affected by the development</td><td>• Safe, stable and non-polluting
• Fit for the intended post-mining land use/s
• Establish the final landform and post-mining land use/s as soon as practicable after cessation of mining operations
• Minimise post-mining environmental impacts</td></tr>
<tr><td>Areas proposed for native ecosystem re-establishment</td><td>• Establish/restore self-sustaining native woodland ecosystems
• Establish local plant community types
• Establish:
- riparian habitat, within any diverted and/or re-established creek lines and retained water features;
- habitat, feed and foraging resources for threatened fauna species; and
- vegetation connectivity and wildlife corridors, as far as is reasonable and feasible</td></tr>
</table>
</td><td>Entire Site</td><td>Ongoing</td><td>Section 4</td></tr>
</table>

Table 2-1 (Continued)
Regulatory Requirements Relating to Post-Mining Land Use and Rehabilitation

<table>
<tr><th>Condition/Requirement</th><th>Specific Area / Domain</th><th>Timing</th><th>RMP Section</th></tr>
<tr><td colspan="4">Part B, Development Consent SSD 10418 (Continued)</td></tr>
<tr><td>Table 10: Rehabilitation objectives (Continued)
<table>
<tr><th>Feature</th><th>Objective</th></tr>
<tr><td>Areas proposed for agricultural land</td><td>• Establish/restore grassland areas to support sustainable agricultural activities
• Re-establish agricultural land areas generally in accordance with the final landform plan (Appendix 6)
• Use species found in the local area that are suitable for pasture production
• Implement reasonable and feasible measures to rehabilitate agricultural land areas to LSC Class 3 to 4
• Maintain the agricultural productivity and production if non-operational project-related land
• Locate adjacent to surrounding agricultural land, where practicable</td></tr>
<tr><td>Final Landform</td><td>• Stable for the intended post-mining land use/s
• Integrated with surrounding natural landforms and other mine rehabilitated landforms, to the greatest extent practicable
• Incorporate micro-relief and drainage features that mimic natural topography and mitigate erosion, to the greatest extent practicable
• Maximise surface water drainage to the natural environment i.e. free draining (excluding final void catchment)
• Minimise visual impacts, where practicable</td></tr>
<tr><td>Final void</td><td>• Designed as long-term groundwater sink to prevent the release of saline water into the surrounding environment, unless further mine planning and final landform design processes identify a more suitable outcome for the final void (see condition B89)
• Minimise to the greatest extent practicable having regard to post-mining beneficial land uses for the site:
- the size and depth;
- the drainage catchment;
- any high wall instability risk; and
- the risk of flood interaction
• Maximise potential for beneficial reuse, where practicable</td></tr>
<tr><td>Surface infrastructure of the development</td><td>• To be decommissioned and removed, unless the Resources Regulator agrees otherwise</td></tr>
<tr><td>Water quality</td><td>• Water retained on the site is fit for the intended post-mining land use/s
• Water discharged from the site is suitable for receiving waters and fit for aquatic ecology and riparian vegetation</td></tr>
<tr><td>Community</td><td>• Ensure public safety
• Minimise adverse socio-economic effects associated with mine closure</td></tr>
</table>
Note: The rehabilitation objectives related to the establishment of the native vegetation communities do not constitute an obligation for biodiversity offset</td><td>Entire site</td><td>Ongoing</td><td>Section 4</td></tr>
</table>

Table 2-1 (Continued)
Regulatory Requirements Relating to Post-Mining Land Use and Rehabilitation

Condition/Requirement	Specific Area / Domain	Timing	RMP Section
Part B, Development Consent SSD 10418 (Continued)			
B88. The rehabilitation objectives in Table 10 apply to the entire site, including all landforms constructed under either this consent or previous consents. However, the Applicant is not required to undertake any additional earthmoving works on landforms that have been approved and constructed under previous consents, except where those earthworks are required for the establishment of a stable, non-polluting and free-draining landform	Entire Site	Ongoing	This RMP
Rehabilitation Management Plan *B92. The Applicant must prepare a Rehabilitation Management Plan for the development, in accordance with the provisions under the Mining Act 1992.*	Entire site	Ongoing	This RMP

Table 2-1 (Continued)
Regulatory Requirements Relating to Post-Mining Land Use and Rehabilitation

<table>
<tr><th>Condition/Requirement</th><th>Specific Area / Domain</th><th>Timing</th><th>RMP Section</th></tr>
<tr><td colspan="4">Schedule 3, Development Consent DA 92/97 (MOD 6)</td></tr>
<tr><td>
Rehabilitation Objectives
53. The Applicant must rehabilitate the site in accordance with the provisions under the Mining Act 1992. This rehabilitation must be generally consistent with the conceptual final landform depicted in Figure 4 in Appendix 2, and comply with the objectives in Table 11.
Table 11: Rehabilitation Objectives
<table>
<tr><th>Feature</th><th>Objective</th></tr>
<tr><td>All areas of the site affected by the development</td><td>• Safe, stable and non-polluting
• Fit for the intended post-mining land use/s</td></tr>
<tr><td>Areas proposed for native ecosystem re-establishment</td><td>• Restore self-sustaining native woodland ecosystems characteristic of vegetation communities found in the local area, as shown conceptually in Figure 4 in Appendix 2.
• Establish areas of self-sustaining:
- riparian habitat, within any diverted and/or re-established creek lines and retained water features;
- potential habitat for threatened flora and fauna species; and
- wildlife corridors, as far as is reasonable and feasible, and as shown conceptually in Figure 4 in Appendix 2.</td></tr>
<tr><td>Areas proposed for agricultural land</td><td>• Establish/restore grassland areas to support sustainable agricultural activities
• Achieve the nominated land capability classification</td></tr>
<tr><td>Other land affected by the development</td><td>• Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native plant species (unless the Resources Regulator agrees otherwise)</td></tr>
<tr><td>Final Landform</td><td>• Stable and sustainable for the intended post-mining land use/s
• Integrated with surrounding natural landforms
• Incorporate micro-relief and drainage lines that are consistent with surrounding topography, to the greatest extent practicable
• Maximise surface water drainage to the natural environment (excluding final void catchment)</td></tr>
<tr><td>Final voids</td><td>• Designed as long term groundwater sinks to maximise ground water flows across back filled pits to the final void
• Minimise to the greatest extent practicable:
- the size and depth of final voids;
- the drainage catchment of final voids;
- any high wall instability risk; and
• the risk of flood interaction</td></tr>
</table>
</td><td>Entire Site</td><td>Ongoing</td><td>Section 4</td></tr>
</table>

Table 2-1 (Continued)
Regulatory Requirements Relating to Post-Mining Land Use and Rehabilitation

<table>
<tr><th>Condition/Requirement</th><th>Specific Area / Domain</th><th>Timing</th><th>RMP Section</th></tr>
<tr><td colspan="4">Schedule 3, Development Consent DA 92/97 (MOD 6) (Continued)</td></tr>
<tr><td>Table 11: Rehabilitation Objectives (Continued)
<table>
<tr><th>Feature</th><th>Objective</th></tr>
<tr><td>Surface infrastructure of the development</td><td>• To be decommissioned and removed, unless the Resources Regulator agrees otherwise</td></tr>
<tr><td>Rehabilitation materials</td><td>• Materials from areas disturbed under this consent (including topsoils, substrates and seeds) are to be recovered, managed and used as rehabilitation resources, to the greatest extent practicable</td></tr>
<tr><td>Water quality</td><td>• Water retained on the site is fit for the intended post-mining land use/s
• Water discharged from the site is suitable for receiving waters and fit for aquatic ecology and riparian vegetation</td></tr>
<tr><td>Community</td><td>• Ensure public safety
• Minimise adverse socio-economic effects associated with mine closure</td></tr>
</table></td><td>As above</td><td>As above</td><td>As above</td></tr>
<tr><td>Progressive Rehabilitation
55. The Applicant must rehabilitate the site progressively, that is, as soon as reasonably practicable following disturbance. All reasonable steps must be taken to minimise the total area exposed at any time. Interim stabilisation and temporary vegetation strategies must be employed when areas prone to dust generation, soil erosion and weed incursion cannot be permanently rehabilitated.
Note: It is accepted that some parts of the site that are progressively rehabilitated may be subject to further disturbance at some later stage of the development.</td><td>Entire site</td><td>Ongoing</td><td>Sections 4 and 6.2</td></tr>
<tr><td>55A. The Applicant must implement all reasonable and feasible measures to provide for the interim stabilisation and temporary vegetation of the existing rail loop and infrastructure corridor, as soon as reasonably practicable following the removal of infrastructure as required under condition 37.
Note: The Applicant's obligations under this condition will cease following the transfer or grant of a mining lease over that part of ML 1645 south of Wybong Road to the operator of Bengalla mine (or its nominee).</td><td>Entire site</td><td>Ongoing</td><td>Section 6.2</td></tr>
<tr><td>Rehabilitation Management Plan
56. By the end of April 2019, unless otherwise agreed by the Secretary, the Applicant must prepare a Rehabilitation Management Plan for the development in accordance with the provisions under the Mining Act 1992.</td><td>Entire site</td><td>Ongoing</td><td>This RMP</td></tr>
<tr><td colspan="4">ML 1645, ML 1713, ML 1708, ML 1808, ML 1709, ML 1829 and ML 1750 Requirements</td></tr>
<tr><td>Condition 4, Schedule 8A
Must prevent or minimise harm to environment
(1) The holder of a mining lease must take all reasonable measured to prevent, or if that is not reasonably practicable, to minimise, harm to the environment caused by activities under the mining lease.
(2) In this clause –
harm to the environment has the same meaning as in the Protection of the Environment Operations Act 1997</td><td>Entire site</td><td>Ongoing</td><td>This RMP</td></tr>
</table>

Table 2-1 (Continued)
Regulatory Requirements Relating to Post-Mining Land Use and Rehabilitation

Condition/Requirement	Specific Area / Domain	Timing	RMP Section
ML 1645, ML 1713, ML 1708, ML 1808, ML 1709, ML 1829 and ML 1750 Requirements (Continued)			
Condition 5, Schedule 8A ***Rehabilitation to occur as soon as reasonably practicable after disturbance*** *The holder of a mining lease must rehabilitate land and water in the mining area that is disturbed by activities under the mining lease as soon as reasonably practicable after the disturbance occurs.*	Entire Site	Ongoing	Section 6.2
Condition 6, Schedule 8A ***Rehabilitation must achieve final land use*** *(1) The holder of a mining lease must ensure that rehabilitation of the mining area achieves the final land use for the mining area* *(2) The holder of the mining lease must ensure any planning approvals has been obtained that is necessary to enable the holder to comply with subclause (1)* *(3) The holder of the mining lease must identify and record any reasonably foreseeable hazard that presents a risk to the holder's ability to comply with subclause (1).* ***Note** – Clause 7 requires a rehabilitation risk assessment to be conducted whenever a hazard is identified under this subclause.* *(4) In this clause –* ***final land use** for the mining area means the final landform and land uses to be achieved for the mining area –* *(a) as set out in the rehabilitation objectives statement and rehabilitation completion criteria statement, and* *(b) for a large mine – as spatially depicted in the final landform and rehabilitation plan, and* *(c) if the final land use for the mining area is required by a condition of development consent for activities under the mining lease – as stated in the condition.* ***Planning approval** means –* *(a) a development consent within the meaning of the Environmental Planning and Assessment Act 1979, or* *(b) an approval under that Act, Division 5.1.*	Entire Site	Ongoing	Section 4 Section 2.1 Section 3 N/a
Condition 7, Schedule 8A ***Rehabilitation risk assessment*** *(1) The holder of a mining lease must conduct a risk assessment (a rehabilitation risk assessment) that –* *(a) Identified, assess and evaluates the risks that need to be addressed to achieve the following in relation to the mining lease –* *(i) the rehabilitation objectives,* *(ii) the rehabilitation completion criteria,* *(iii) for large mines – the final land use as spatially depicted in the final landform and rehabilitation plan, and* *(b) identifies the measures that need to be implemented to eliminate, minimise or mitigate the risks.* *(2) The holder of a mining lease must implement the measures identified.* *(3) The holder of a mining lease must conduct a rehabilitation risk assessment –* *(a) for a large mine – before preparing a rehabilitation plan, and* *(b) for a small mine – before preparing the rehabilitation outcome documents for the mine, and*	Entire Site	Ongoing	Section 3 Section 3 Section 3

Table 2-1 (Continued)
Regulatory Requirements Relating to Post-Mining Land Use and Rehabilitation

Condition/Requirement	Specific Area / Domain	Timing	RMP Section
ML 1645, ML 1713, ML 1708, ML 1808, ML 1709, ML 1829and ML 1750 Requirements (Continued)			
Condition 7, Schedule 8A (Continued) *(c) whenever a hazard is identified under clause 6(3) – as soon as reasonably practicable after it is identified, and* *(d) whenever given a written direction to do so by the Secretary.*	Entire Site	Ongoing	Section 3
Condition 10, Schedule 8A ***Rehabilitation management plans for large mines*** *(1) The holder of a mining lease relating to a large mine must prepare a plan (a rehabilitation management plan) for the mining lease that includes the following –* *(a) a description of how the holder proposes to manage all aspects of the rehabilitation of the mining area,* *(b) a description of the steps and actions the holder proposes to take to comply with the conditions of the mining lease that relate to rehabilitation,* *(c) a summary of rehabilitation risk assessments conducted by the holder,* *(d) the risk control measures identified in the rehabilitation risk assessments,* *(e) the rehabilitation outcome documents for the mining lease,* *(f) statement of the performance outcomes for the matters addressed by the rehabilitation outcome documents and the ways in which those outcomes are to be measured and monitored.* *(2) If a rehabilitation outcome document has not been approved by the Secretary, the holder of the mining lese must include a proposed version of the document.* *(3) A rehabilitation management plan is not required to be given to the Secretary for approval.* *(4) The holder of the mining lease –* *(a) Must implement the matters set out in the rehabilitation management plan, and* *(b) If the forward program specifies timeframes for the implementation of the matters – must implement the matters within those timeframes.*	Entire Site	Ongoing	This RMP Section 6.2 Section 5 Section 3 Section 3 Sections 4 and 5 Section 4 Sections 4 and 5 N/a Section 1.2
Condition 12, Schedule 8A ***Rehabilitation outcome documents*** *(1) The holder of a mining lease must prepare the following documents (the **rehabilitation outcome documents**) for the mining lease and give them to the Secretary for approval –* *(a) the **rehabilitation objectives statement**, which sets out the rehabilitation objectives required to achieve the final land use for the mining area,* *(b) the **rehabilitation completion criteria statement**, which sets out criteria, the completion of which will demonstrate the achievement of the rehabilitation objectives,* *(c) for a large mine, the **final landform and rehabilitation plan**, showing a spatial depiction of the final land use.* *(2) If the final land use for the mining area is required by a condition of development consent for activities under the mining lease, the holder of the mining lease must ensure the rehabilitation outcome documents are consistent with that condition.*	Entire Site	Ongoing	Section 4 Section 4 Section 5 N/a

Table 2-1 (Continued)
Regulatory Requirements Relating to Post-Mining Land Use and Rehabilitation

Condition/Requirement	Specific Area / Domain	Timing	RMP Section
EPBC Approval 2011/5795			
Condition 19 *The person undertaking the action must, within 3 years of the commencement of construction, submit to the Minister for approval a Mine Site Rehabilitation Plan for the progressive rehabilitation and revegetation of no less than 1000 ha of White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and derived Native Grassland Ecological Community on the project area (as identified in Appendix A).*	Entire Site	Plan approved on 22 October 2020.	N/a
Condition 21 *The person undertaking the action must submit to the Minister for approval the Mine Closure Plans, at least 6 months prior to the mine closure. The approved Plan must be implemented.*	Entire Site	6 months prior to closure.	N/a

2.2 FINAL LAND USE OPTIONS ASSESSMENT

Development Consent DA 92/97

The final land use goals for the MPO are based on the following:

- successful design and rehabilitation of landforms to ensure structural stability, revegetation success and containment of wastes; and
- post-mining land use compatible with surrounding land uses.

MACH Energy has undertaken a preliminary assessment of potential post-mining land uses (e.g. nature conservation, agriculture) taking into account relevant strategic land use objectives of the area in the vicinity of the MPO and the potential benefits of the post-mining land use to the environment, future landholders and the community. This has included consultation with Muswellbrook Shire Council (MSC) who has indicated a preference for the inclusion of some intensive agricultural/industrial post-mining land uses that provide employment for the local community.

The final land use options assessment took into account:

- Applicable approval conditions, including Development Consent DA 92/97 and MLs.
- Permissible land uses and land zonings as defined by MSC.
- Consultation with MSC, surrounding landowners, neighbouring mines, Registered Aboriginal Parties, and the NSW Resources Regulator.

Accordingly, proposed final land uses for the MPO area include permanent water infrastructure and storage areas, agricultural land, native woodland and grassland areas and the final void.

In February 2021, MACH Energy conducted a ‘think tank’ exercise involving a diverse range of professionals to discuss options for the final land use of the MPO’s final void and to identify which options merit further study.

MACH Energy is aware of the level of local interest with respect to the shape and form of MPO final mine landforms. MACH Energy has therefore developed the following design principles for the MPO final landform:

- The emplacement landform will be designed to look less “engineered” when viewed from Muswellbrook (i.e. incorporation of macro-relief to avoid simple blocky forms).
- Surface water drainage from the waste emplacement landform will incorporate micro-relief to increase drainage stability and avoid major engineered drop structures where practical.
- The final void (and associated drainage network) will be shaped to reflect a less “engineered” profile that is more consistent with the surrounding natural environment.

Development Consent SSD 10418

As mining and final landform development progresses, it is appropriate to adopt the Post-Mining Land Use Domains outlined in Development Consent SSD 10418.

The rehabilitation and design objectives are consistent across both the conceptual final landform under Development Consent DA 92/97 and Development Consent SSD 10418 (Table 2-1) and produce a safe and stable landform with sustainable vegetation communities consistent with the surrounding area. From the Project EIS (MACH Energy, 2021), the final land use goals for the Project are based on the following:

- successful design and rehabilitation of landforms to ensure structural stability, revegetation success and containment of wastes; and
- post-mining land use compatible with surrounding land uses.

The proposed final land uses for the Project have also been designed to satisfy the requirements of Commonwealth Approval EPBC 2011/5795 relevant to post-mining land use and on-site rehabilitation. Accordingly, proposed final land uses for the MPO area include permanent water infrastructure and storage areas, agricultural land, native woodland and grassland areas and the final void (Plan 1).

MACH Energy has identified parts of the Project final landform that would potentially be conducive to high-intensity agricultural use (e.g. existing mine infrastructure areas) (Plan 1). These areas will be rehabilitated to pasture using appropriate grass species. These areas are characterised by:

- Low gradient slopes and flat areas.
- Proximity to existing land used for agricultural purposes.
- Access to MPO supporting infrastructure that could potentially remain in place to support intensive agricultural use (e.g. rail loop, water storages, high capacity water pumps and pipelines, electrical infrastructure, sheds, workshops and other services).

The final land use domains are discussed further in Section 2.4.

Design Integration of Macro and Micro Relief

The emplacement extension and other proposed changes to the final landform that were approved as part of MOD 3 were intended to improve the overall appearance of the MPO landform by incorporating the following concepts:

- The final landform surface of the upper lifts on the eastern side of the emplacement will be varied to break up the horizon line when viewed from the east.
- The toe of the emplacement will be extended in plan to form a more complex shape that better aligns with the underlying and adjoining topography.

These elements of macro-relief on the eastern face of the final landform create a number of spurs and valleys, with the high points on the landform aligning with the spurs to further improve the more natural appearance of the landform from viewpoints to the north-east and south-east. Section 5 provides a conceptual view of the MPO final rehabilitation.

The objective of the final landform is to develop drainage features in the post-mine landform that mitigate erosion potential. This will be achieved by incorporating micro-relief into the drainage design.

The NSW Mineral Council's (2007) *Rehabilitation by Design Practice Notes* and Department of Environment & Climate Change's (DECC's) (2008) *Managing Urban Stormwater Soils and Construction Volume 2E Mines and Quarries* provide principles for the construction of stable batter slopes. These principles include:

- Use of a combination of convex and concave outer batters to convey runoff (i.e. as opposed to fixed slope batters).
- Appropriately spaced benches to reduce the velocity of runoff.
- Gentler slope gradients.

MACH Energy has considered these principles in developing the conceptual final landform provided in Section 5. These plans show the flattened slopes have been incorporated into the landform.

In particular, MACH Energy will implement the following measures to increase the stability of the final landform:

- Establish bench drains where necessary to convey runoff from batter slopes to sub-catchment drainage lines and investigate opportunities to develop small ephemeral wetlands.
- Maximise the number of sub-catchments to reduce the catchment area of individual constructed drainage lines.
- Establish meandering drainage lines that increase the total drainage length and therefore result in gentler stream bed gradients.
- Where practical, design drainage lines to generally produce a convex and concave stream bed profile.
- Establish diverse and variable density native tree and shrub cover on the outer face of the Eastern Out-of-Pit Emplacement and in final landform drainage features to promote stability of the final landform.

The final landform drainage lines will be designed to accommodate natural erosive processes. This will be achieved through consideration of key erosional and geomorphic characteristics such as nature of bed material (e.g. particle size), presence of rock outcrops, bed features (such as cascades, pool and riffle zones) as well as bed and bank vegetation.

Geomorphic features will be incorporated into the design of the relevant final landform drainages. This will also be informed by investigation into the physical characteristics of waste rock and soil materials at the MPO for provision of appropriate rock, sub-soil and topsoil material for use on outer batters and in drainage features. To construct rock-armoured drainage features (i.e. following initial settlement of the geomorphic landform), or for erosion mitigation, some areas initially established to woodland or pasture rehabilitation may need to be re-disturbed by subsequent stages of work.

Further refinement of the conceptual final landform has been undertaken and has involved GeoFluv™ modelling and other similar catchment/drainage review and landform design software to incorporate micro-relief and drainage/erosion control to limit the need for bench drains on the outer batters of the Eastern Out-of-Pit Emplacement.

Throughout the life of the MPO, the conceptual final landform may be revised to reflect the outcomes of the ongoing investigations, in consultation with MSC and relevant NSW Government agencies.

2.3 FINAL LAND USE STATEMENT

The overarching rehabilitation objectives including final land use for the MPO are formalised in Table 10, Part B, Condition B87 of Development Consent SSD 10418 and Table 11, Schedule 3, Condition 53 of Development Consent DA 92/97 (prior to its surrender). The final land use is comprised of the following:

- Agricultural - Grazing comprising of both low and high intensity agricultural areas.
- Native Ecosystem, generally comprising:
  - Plant Community Type (PCT) 3395[1] – White Box – Spotted Gum Grassy Woodland and Derived Native Grassland (DNG);
  - PCT 3315[2] – Spotted Gum – Narrow-leaved Ironbark Woodland; and
  - PCT 3431[3] – Narrow-leaved Ironbark Shrubby Forest Woodland and DNG.
- Water Storage (Excluding Final Void)[4].
- Final Void.

The recent major revision to the classification of native plant assemblages of eastern NSW is discussed further in Section 6.2.5.

The approved final landform and final land use are further described in Section 5. The final landform and land use are designed to achieve the rehabilitation objectives outlined in Development Consent SSD 10418 and Development Consent DA 92/97 (prior to its surrender) and produce a safe and stable landform with sustainable vegetation communities consistent with the surrounding area.

Mine Closure and Lease Relinquishment

Upon the cessation of mining operations, tenure of MLs will be maintained by MACH Energy until such a time when lease relinquishment criteria have been met (Section 4) and rehabilitation is to the satisfaction of relevant regulatory authorities including the NSW Resources Regulator and the DPHI. It is anticipated that lease relinquishment criteria would include:

- Rehabilitated landforms are stable and consistent with the nominated post-mining land use which has been developed in consultation with relevant regulatory agencies and key stakeholders.
- Establishment of self-sustaining vegetation in previously cleared areas.
- All rehabilitation and mine closure completion criteria have been met.
- All ML conditions and other statutory approval conditions (including public safety considerations) have been satisfied.
- Hard-stand areas and infrastructure have been removed (unless otherwise agreed with the ultimate landholder).

In accordance with Condition 21 of EPBC Approval 2011/5795, a Mine Closure Plan for the MPO will be submitted to the Department of Agriculture, Water and the Environment (DAWE) (now the Australian Government Department of Climate Change, Energy, the Environment and Water [AG DCCEEW]) at least 6 months prior to the closure of the MPO.

[1] Previously referred to as PCT 483.

[2] Previously referred to as PCT 1604.

[3] Previously referred to as PCT 1605.

[4] The Final Land Use Domain of 'Water Storage (Excluding Final Void)' is not present in the final land use domains in Development Consent SSD 10418.

The Mine Closure Plan would be prepared in consideration of the International Council on Mining and Metals (2018) *Integrated Mine Closure Good Practice Guide*. Mine closure concepts and management measures will continue to be developed via the RMP, Forward Program and MPO Rehabilitation Strategy revision process in consultation with the DPHI, NSW Resources Regulator and other relevant regulatory agencies.

Lease relinquishment criteria will be detailed in the Mine Closure Plan.

A socio-economic study will be commissioned five years prior to expected mine closure, which will evaluate and address the following:

- developing a contemporary baseline of the MPO workforce and community profile;
- identifying potential socio-effects (positive and negative) of the mine closure on the MPO workforce, associated workforce (subcontractors, suppliers) and the broader community;
- proposing measures to minimise potential negative effects and maximise potential positive effects of mine closure, in consultation with stakeholders; and
- developing a draft implementation program for the measures identified to address social effects.

The findings of the socio-economic study may inform the subsequent versions of MPO Rehabilitation Strategy and this RMP. For example, consultation undertaken to date with MSC has identified a preference for intensive agricultural/industrial post-mining land uses that provide employment for the local community. This has been taken into consideration in the final landform design and rehabilitation domains with proposed areas nominated for such land uses. If this preference changes over time, the MPO Rehabilitation Strategy and this RMP will be updated, considering the progress of final landform established and economic factors.

2.4 FINAL LAND USE AND MINING DOMAINS

2.4.1 Final Land Use Domains

The final land use domains at MPO are detailed in Table 2-2, and have been defined in accordance with the requirements in Development Consent DA 92/97 (prior to its surrender) and Development Consent SSD 10418 and in consideration of the categories in the *Form and Way for Rehabilitation Management Plans for Large Mines* (NSW Resources Regulator, 2024).

Table 2-2
Final Land Use Domains

Code	Final Land Use Domain
A	Native Ecosystem
B	Agricultural - Grazing
J	Final Void

2.4.2 Mining Domains

Table 2-3 provides a summary of each of the mining domains at MPO, in accordance with the categories in the *Form and Way for Rehabilitation Management Plans for Large Mines* (NSW Resources Regulator, 2024).

Table 2-3
Mining Domains

Code	Mining Domain	Description
1	Infrastructure Area	MIA CHPP and associated infrastructure Rail and train loading facilities Electrical infrastructure Water supply infrastructure Lighting infrastructure Workshop Coal stockpiles Explosives storage Crib huts
2	Tailings Storage Facility	FEA Associated ancillary infrastructure including secondary flocculation plant
3	Water Management Area	Water storage dams for clean, sediment and mine water Hunter River water management infrastructure Clean water diversion drains
4	Overburden Emplacement Area	Eastern overburden emplacement area
5	Active Mining Area (Open cut void)	Active mining open cut area Topsoil and subsoil stockpiles

3 REHABILITATION RISK ASSESSMENT

On 29 January 2020 MACH Energy undertook a risk assessment workshop to evaluate the risks associated with successful rehabilitation of the MPO. Participants at the risk assessment workshop included key MPO mine planning and rehabilitation planning personnel, Dr David Freudenberger of the Australian National University, a representative of Ausecology (MPO's rehabilitation monitoring consultants) and representatives from Resource Strategies (MPO's environmental assessment and approval consultants). The risk assessment was facilitated by Mr Peter Standish of Risk Mentor Pty Ltd and undertaken in accordance with the *AS ISO 13000:2018 Risk Management Guidelines*.

A review of the rehabilitation risk assessment outcomes was undertaken by MACH Energy on 22 March 2022 and 10 September 2024 by key MPO mine planning and rehabilitation planning personnel. MACH Energy considers that the risk assessment outcomes remain applicable to the mining and rehabilitation activities proposed to be undertaken under existing approvals and the Forward Program term, and that the proposed activities would unlikely involve any new risks scenarios that have not already been identified and assessed by MACH Energy. A copy of the most recent Rehabilitation Risk Assessment is provided in Attachment 2.

The workshop comprised of sessions that assessed key risks associated with rehabilitation implementation including:

- Active Mining;
- Landform Establishment;
- Growth Medium Development;
- Ecosystem and Land Use Establishment;
- Ecosystem and Land Use Sustainability; and
- Decommissioning.

A total of 45 risks have been identified during the risk assessment undertaken on 10 September 2024 and ongoing risk analysis conducted at MPO. Of these risks, only one risk is ranked as having a high risk (i.e. failure of the FEA embankment), however, this risk is proactively managed and further risk reduction measures are considered impracticable and cost prohibitive. A summary of the risks identified during the risk assessments and the ongoing risk analysis conducted at MPO is provided in Table 3-1.

Table 3-1
Key Risks Identified Through Rehabilitation Risk Assessment

Risk Description	Risk Likelihood Rating	Risk Consequence Rating	Risk Classification	RMP Section
General				
A failure to engage appropriately skilled employees/contractors or subject matter experts, leads to poor rehabilitation design and execution, inadequate rehabilitation monitoring programs, analyses and/or response to deteriorating conditions.	2	D	L	Sections 7 and 11
Insufficient funding for or prioritisation of rehabilitation activities.	1	D	L	Costs addressed separately in the Rehabilitation Cost Estimate
Land Clearance Phase				
Ineffective stripping of topsoil and subsoil, mixing of poor quality soils.	1	C	L	Section 6.2.1
Loss of biological resources from salvage practices (i.e. loss of endemic flora and fauna species).	2	D	L	Section 6.2.1
Impact to protected species.	2	D	L	Section 6.2.1
Rehabilitation Phase – Active Mining				
Failure of the FEA embankment could potentially lead to release of fines material from the site	4	E	H	Section 10
Failure of FEA rehabilitation capping and/or revegetation.	2	D	L	Section 10
Poor geochemistry of exposed surfaces of overburden emplacements leading to off-site contamination and/or revegetation failure	2	D	L	Section 6.2.1
Spontaneous combustion incident results in failure of an area of rehabilitation.	2	D	L	Sections 6.2.1 and 10
Rehabilitation Phase – Decommissioning Phase				
Chemicals, lubricants and constructed (not landform) structures (including demolition activities) which remain at mine completion lead to water quality and public/fauna safety issues from the site	2	D	L	Section 6.2.2
Impacts on heritage items (e.g. re-placement of cultural heritage items into rehabilitation areas).	2	D	L	Section 6.2.1
Rehabilitation Phase – Landform Establishment Phase				
Incorrect geomorphic landform model and/or drainage design leads to unstable landform.	3	D	M	Section 10
Landform and drainage structures not in accordance with geomorphic design.	2	D	L	Sections 4 and 10
Instability due to construction of landform not in accordance with geomorphic design leading to failure (slumping/slip) of an area of overburden emplacement and revegetation failure, and mobilised sediment from the final landform.	2	D	L	Section 10

Table 3-1 (Continued)
Key Risks Identified Through Rehabilitation Risk Assessment

Risk Description	Risk Likelihood Rating	Risk Consequence Rating	Risk Classification	RMP Section
Rehabilitation Phase – Landform Establishment Phase (Continued)				
Instability or failure of water management drain/structure due to construction of structure not in accordance with geomorphic design leading to failure of a rehabilitation area, and mobilised sediment from the final landform.	1	C	L	Section 10
Unpredicted or increased rate of erosion beyond design limits causing failure of an area of rehabilitation	1	C	L	Section 10
Inadequate volume of suitable capping material available to cap the FEA.	2	C	M	Section 6.2.3
Settlement of FEA creates drainage issues.	2	C	M	Section 6.2
Rehabilitation Phase – Growth Medium Development Phase				
Poor soil structure/geochemistry leads to failure to establish required vegetation communities subsequently leads to failure to rehabilitate the MPO to committed standards.	2	D	L	Section 6.2.1
Inadequate or insufficient topsoil to create/enhance the desired ecological communities in mine rehabilitation areas.	2	D	L	Section 6.2.1
Inadequate volume of suitable habitat features/material available for landform construction.	2	D	L	Section 6.2.1
Weed presence or infestation of soil stockpile leads to decreased quality of soil seed bank and increased presence of weeds in rehabilitation areas.	2	C	M	Sections 6.2.6 and 10
Loss of quality in growth medium (erosion, sediment loss, geochemical factors etc.) due to potential delays in revegetation;	1	C	L	Section 6.2.4
Rehabilitation Phase – Ecosystem and Land Use Establishment Phase and Ecosystem and Land Use Sustainability Phase				
Failure of revegetation due to sustained drought leads to a failure to rehabilitate the site to committed standards.	2	C	M	Section 10
Failure of revegetation due to frost/storm/flood/pest infestation leads to a failure to rehabilitate the site to committed standards.	2	C	M	Section 10
Failure of revegetation due to weed infestation leads to a failure to rehabilitate the site to committed standards.	2	C	M	Section 10
Failure to establish required habitats leads to a subsequent inability for species to be reintroduced on the site	2	D	L	Section 10
High fuel loads in rehabilitation areas leads to increased risk of bushfire or bushfire event impacts rehabilitation areas.	2	D	L	Sections 6.2.6 and 10
Contamination of off-site surface waters with sediment or saline/acidic waters due to a storm or flooding event or inadequate quality of rehabilitation.	3	D	M	Section 6.2

Table 3-1 (Continued)
Key Risks Identified Through Rehabilitation Risk Assessment

Risk Description	Risk Likelihood Rating	Risk Consequence Rating	Risk Classification	RMP Section
Rehabilitation Phase – Ecosystem and Land Use Establishment Phase and Ecosystem and Land Use Sustainability Phase (Continued)				
Water quality in retained water management areas/dams during post-mining phase remains unfit for relevant post-mining land use (i.e. agriculture or native ecosystem).	3	D	M	Section 10
Water quality discharged from site during post-mining phase is not yet comparable to surrounding analogue sites and suitable for receiving water, aquatic ecology and riparian vegetation.	3	D	M	Section 10
Groundwater released from site (dominantly through water pressure from waters in the final void and within the overburden emplacement or migrated hydrocarbons from workshops etc.) leading to degradation of groundwater quality for surrounding users and being expressed in surface intersecting aquifers.	2	D	L	Section 10
Not implementing rehabilitation in accordance with MPO rehabilitation requirements leading to inability to achieve landform and biodiversity completion criteria.	2	D	L	Section 4
Inappropriate topsoiling, planting and/or direct seeding techniques resulting in a failure of rehabilitation.	2	D	L	Section 6.2.1
Inadequate or insufficient (incorrect species mix/quality) seed/seedlings for rehabilitation works.	3	D	M	Section 6.2.5
Perennial pasture establishment on Agricultural Land rehabilitation areas is not comparable to with representative grazed analogue site.	1	C	L	Section 10
Agricultural land rehabilitation area has not achieved its relevant Land Capability Class.	1	C	L	Section 6.2.5 and 10
Incompatible neighbouring landowner practices (including interactions with the Bengalla Mine) leading to failure of rehabilitation and revegetation works.	2	D	L	Section 10
Evidence of acid forming material leading to failure of an area of rehabilitation.	2	C	M	Sections 6.2.1 and 10
Geotechnical monitoring results indicate instability of active pit or final void (post-closure) which leads to a degradation of site safety with potential impacts on public safety and inability to meet final void completion criteria.	2	D	L	Section 6.2.3
Final void monitoring results indicate final void system is inconsistent with final void water balance modelling.	3	D	M	Section 10

Table 3-1 (Continued)
Key Risks Identified Through Rehabilitation Risk Assessment

Risk Description	Risk Likelihood Rating	Risk Consequence Rating	Risk Classification	RMP Section
Rehabilitation Phase – Ecosystem and Land Use Establishment Phase and Ecosystem and Land Use Sustainability Phase (Continued)				
Insect and bird predation of seed.	2	C	M	Section 6.2.4
Inadequate seed supply of required species for ecosystem establishment.	2	D	L	Section 6.2.5
Poor seed quality and handling resulting in poor propagation and growth.	2	D	L	Section 6.2.5
Negative impacts of seasonal and or adverse weather conditions affecting timing and development.	1	C	L	Section 6.2.5

4 REHABILITATION OBJECTIVES AND REHABILITATION COMPLETION CRITERIA

4.1 REHABILITATION OBJECTIVES AND REHABILITATION COMPLETION CRITERIA

The overall objective for the final rehabilitated landform is to establish a safe, stable and non-polluting landform that is compatible with the surrounding landscape and fit for the intended post-mining land use.

In accordance with clause 12, Schedule 8A of the *Mining Regulation 2016*, the NSW Resources Regulator has approved the MPO Rehabilitation Objectives Statement under Development Consent DA 92/97 and Development Consent SSD 10418 on 29 May 2025. This RMP has been amended to align with the MPO Rehabilitation Objectives Statement approved by the NSW Resources Regulator in accordance with clause 11, Schedule 8A of the *Mining Regulation 2016*.

Accordingly, the rehabilitation objectives completion criteria (Table 4-1) have been updated to align with the approved MPO Rehabilitation Objectives Statement. The rehabilitation objectives and rehabilitation completion criteria reflect the MPO's overarching rehabilitation objectives provided in Part B, Condition B87 of Development Consent SSD 10418 and the MPO domain rehabilitation objectives.

Table 4-1
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain A – Native Ecosystem	**Domain 1** – Infrastructure Area	A1	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	Removal of all services (power, water, communications) that have been connected on the site as part of the operation.	All utility infrastructure removed.	Statement provided, utility service disconnection record / notification.
					Heritage obligations (e.g. development consent under *the Environmental Planning and Assessment Act 1979*, approvals under the *Heritage Act 1977*, etc.) have been met (e.g. archival recording, building retention or building demolition with footings preserved).	Permits and approval documents issued. All archival reports required are complete and submitted.	Copy of any relevant approval documentation and archival reports/records.
					Removal of all plant, equipment and associated infrastructure including processing facilities, stockpile areas, rail infrastructure and loading facilities, underground hydrocarbon storage tanks, office complex, portable offices, exploration core samples, camp facilities, storage racks, samples.	Infrastructure removed.	As-constructed final landform plan, photos, decommissioning reports etc.
					Removal of all footings or removal to a certain depth.	Footings removed and or removed to specified depths to avoid exposure pathways to subsequent final land use.	Surveyed and marked on the as-constructed final landform plan.
					Removal of all water management infrastructure (including pumps, pipes and power).	Infrastructure removed.	Statement provided and before/after photos.
					All drill cores have been removed and taken either to an authorised storage or a disposal location.	Cores removed and relocated.	Statement provided, receipt records from storage or disposal location.
					Surveying and sealing of all drill holes, boreholes and gas wells in accordance with departmental guidelines and relevant standards.	Sealing completed and verified.	Engineering report/statement, plug and abandonment log, photos, as-constructed drawings, records of fill materials and concrete plugs, filling methods etc.
		A1	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community	Potential hazards (e.g. electrical, mechanical) have been effectively isolated and secured.	Hazards isolated and secured.	Statement provided by suitably qualified engineer.
					Damage to access tracks has been repaired and stabilised.	Repairs complete.	As-constructed final landform plan, photos etc.
					Where applicable, necessary approvals are in place (e.g. development consent under the *Environmental Planning and Assessment Act 1979*) where buildings and infrastructure are to be retained as part of final land use.	Permits and approval documents issued.	Copy of any relevant approvals.
					Heritage obligations (e.g. development consent under *the Environmental Planning and Assessment Act 1979*, approvals under the *Heritage Act 1977*, etc.) have been met (e.g. archival recording, building retention and restoration).	Permits and approval documents issued. All archival reports required are complete and submitted.	Copy of any relevant approval documentation and archival reports/records.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain A – Native Ecosystem (Continued)	**Domain 1** – Infrastructure Area (Continued)	As above	As above	As above	The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.
					Infrastructure is in a condition (e.g. structural, electrical, other hazards) that is suitable for the intended final land use.	Formal acceptance from the subsequent landowner that infrastructure is in a condition that is suitable for the intended final land use in accordance with formal agreement.	Formal acceptance from landowner.
		A1	Retention of infrastructure.	All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc.)	Potential hazards (e.g. electrical, mechanical) have been effectively isolated and secured.	Hazards isolated and secured.	Statement provided by suitably qualified engineer.
					Damage to access tracks has been repaired and stabilised.	Repairs complete.	As-constructed final landform plan, photos etc.
					Where applicable, necessary approvals are in place (e.g. development consent under the *Environmental Planning and Assessment Act 1979*) where buildings and infrastructure are to be retained as part of final land use.	Permits and approval documents issued.	Copy of any relevant approvals.
					Heritage obligations (e.g. development consent under *the Environmental Planning and Assessment Act 1979*, approvals under the *Heritage Act 1977*, etc.) have been met (e.g. archival recording, building retention and restoration).	Permits and approval documents issued. All archival reports required are complete and submitted.	Copy of any relevant approval documentation and archival reports/records.
					The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.
					Infrastructure is in a condition (e.g. structural, electrical, other hazards) that is suitable for the intended final land use.	Formal acceptance from the subsequent landowner that infrastructure is in a condition that is suitable for the intended final land use in accordance with formal agreement.	Formal acceptance from landowner.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain A – Native Ecosystem (Continued)	**Domain 1** – Infrastructure Area (Continued)	A1	Land and water contamination	There is no residual soil contamination on site that is incompatible with the final land use or that poses a threat of environmental harm	Waste material and/or visible contamination areas on site surface.	There are no visible signs of contamination following the removal of plant, equipment and materials. All rubbish/ waste materials removed from site.	Statement provided and before/after photos.
					Soil testing for contaminants of concern as listed by Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999) applicable to land use type.	Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999).	Contamination Remediation Report prepared by Land Contamination Consultant. Site Contamination Audit Report and Site Audit Statement prepared by EPA Accredited Auditor (where required).
		A1	Landform Stability	The final landform is stable for the long-term and does not present a risk of environmental harm downstream/downslope of the site or a safety risk to the public/stock/native fauna	Visual – indicators of erosion and land instability. Visual – indicators that surface water management structure are functioning as designed. Measured – erosion rates from field trials and or surveys on both target analogue sites (representative of final land use) and rehabilitated profiles (tonnes / ha). Measured – Survey of rehabilitated landform to verify final landform construction in accordance with Final Landform and Rehabilitation Plan. Measured – survey of rehabilitated landform to specifically monitor settlement and/or material loss via erosion. Modelled – long term erosional stability (e.g. Landform Evolution Modelling) to verify the long-term stability of rehabilitated landform. Modelled – long term geotechnical stability (e.g. stability analysis) to verify the long-term stability of rehabilitated landform.	Visual – minimal erosion that would not require moderate to significant ongoing management and maintenance works. Visual – no signs of land instability such as mass movement. Visual – no areas of active gully erosion. Visual – no evidence of tunnel erosion. Visual – no evidence of active scour likely to compromise surface water management structure. Survey verifies final landform complies with final landform construction in accordance with Final Landform and Rehabilitation Plan. Survey verifies that settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Erosion rate monitoring verifies that erosion levels are within the range of target analogue sites representative of final land use.	Before and after photos, rehabilitation monitoring reports, as constructed surveys, erosion surveys, independent geotechnical reports (where required) and or erosion modelling reports (where required) that indicate long-term stability of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, stability will need to be evaluated over a number of years.
						Significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design. High risk landforms (such as steep slopes, high walls) have been constructed in accordance with geotechnical design.	An engineering assessment undertaken by a suitably qualified person concludes that significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain A – Native Ecosystem (Continued)	**Domain 1** – Infrastructure Area (Continued)	A1	Landform Stability	Landform that is commensurate with surrounding natural landform and where appropriate, incorporates geomorphic design principles	Visual – indicators of erosion and land instability. Visual – indicators that surface water management structure are functioning as designed. Measured – erosion rates from field trials and or surveys on both target analogue sites (representative of final land use) and rehabilitated profiles (tonnes / ha). Measured – Survey of rehabilitated landform to verify final landform construction in accordance with Final Landform and Rehabilitation Plan. Measured – survey of rehabilitated landform to specifically monitor settlement and/or material loss via erosion. Modelled – long term erosional stability (e.g. Landform Evolution Modelling) to verify the long-term stability of rehabilitated landform. Modelled – long term geotechnical stability (e.g. stability analysis) to verify the long-term stability of rehabilitated landform.	Visual – minimal erosion that would not require moderate to significant ongoing management and maintenance works. Visual – no signs of land instability such as mass movement. Visual – no areas of active gully erosion. Visual – no evidence of tunnel erosion. Visual – no evidence of active scour likely to compromise surface water management structure. Survey verifies final landform complies with final landform construction in accordance with Final Landform and Rehabilitation Plan. Survey verifies that settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Erosion rate monitoring verifies that erosion levels are within the range of target analogue sites representative of final land use.	Before and after photos, rehabilitation monitoring reports, as constructed surveys, erosion surveys, independent geotechnical reports (where required) and or erosion modelling reports (where required) that indicate long-term stability of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, stability will need to be evaluated over a number of years.
						Significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.	An engineering assessment undertaken by a suitably qualified person concludes that significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.
						High risk landforms (such as steep slopes, high walls) have been constructed in accordance with geotechnical design.	
		A1	Management of waste and process material	Residual waste materials stored on site (e.g. tailings, coarse rejects and other wastes) will be appropriately contained / encapsulated so it does not pose any hazards or constraints for intended final land use	Visual –capping material placement, type across emplacement Visual – indication of capping performance on final landform – vegetation health Visual – emplacement seepage and other indicators of groundwater issues – wet spots etc. Measured – survey of emplacement capping to verify construction and to monitor settlement. Quality assurance records for the construction of the emplacement material including (where relevant) capping material, liner system, seepage control etc. Measured- surface and groundwater levels to verify water balance modelling and capping function. Measured – contamination levels in surface and groundwater surrounding emplacement for contaminants of concern associated with waste material emplaced.	Visual – verification that capping, type and placement consistent with design. Visual – no signs of compromised capping performance indicated by vegetation health – such as tree death (deeper root systems), Visual – no areas of unexpected seepage, Survey verifies that capping placement consistent with design and settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Quality assurance records verify capping constructed and in accordance with design specifications relevant to site risks and target final land use. For example: • Capping depth, • Capping material type, • Capillary breaks, • Seepage control.	Photos, rehabilitation monitoring reports, as constructed surveys, quality assurance records for construction, erosion surveys, independent geotechnical reports (where required), groundwater/surface water monitoring reports. The structural integrity of the infrastructure and capping has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use and water material adequately contained.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain A – Native Ecosystem (Continued)	**Domain 1** – Infrastructure Area (Continued)	As above	As above	As above	As above	Groundwater and surface monitoring verify capping function (e.g. 'store and release') and design performance permeability/seepage. Groundwater and surface water monitoring verify adequate containment of waste materials and seepage/leachate is not contributing to land/groundwater contamination.	As above
		A1	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation	Appropriate bushfire hazard controls (where required) have been implemented on the advice from the NSW Rural Fire Service.	Bushfire controls implemented.	Statement provided and before/after photos.
		A1	Water Quality	Runoff water quality from mine site is similar to, or better than the pre-disturbance runoff water quality	Water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 and or EPL (further guidance available on the NSW EPA website).	Water quality discharged from rehabilitated mining operation meet specifications in EPL and or ANZECC guidelines for specific environment.	Water quality monitoring reports. EPL relinquished by EPA. Independent hydrological assessment report. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.
		A1	Water Approvals	Water Approvals Structures that take or divert water hold sufficient licence shares to account for water take (where necessary)	Final landform considers advice from relevant Government Agency whether sufficient licence shares are available in the water source to account for water stored in voids and dams in the proposed final landform	Water approvals / licences are granted by relevant NSW Government Agency	Confirmation from relevant Government Agency that relevant water approvals / licences are able to be granted.
					Indicators as specified by Australian River Assessment System (AUSRIVAS).	Assessment of biological health in accordance with Australian River Assessment System (AUSRIVAS).	Independent biological health assessment report. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years
		A1	Groundwater	Groundwater quality is similar to, or better than the pre-disturbance groundwater quality	Water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 and or EPL.	Water quality discharged from rehabilitated mining operation meet specifications in EPL and or ANZECC guidelines for specific environment.	Independent hydrological assessment report, groundwater monitoring reports.
		A1	Groundwater	Impacts to groundwater regime are within range as predicted in pre-mining environmental assessment	Groundwater quality both on and off a mining lease represent an acceptable level of change from a defined reference condition.	Groundwater levels, groundwater flow.	Water quality monitoring reports. Independent hydrological assessment report.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain A – Native Ecosystem (Continued)	**Domain 1** – Infrastructure Area (Continued)	A1	Ecological rehabilitation	The vegetation composition of the rehabilitation contains species that are commensurate with native vegetation communities of PCT483 Grey Box/White Box Grassy Open Woodland (now known as PCT3395) and legacy PCT1605 Narrow leaved Ironbark/Native Olive Shrubby Open Forest (now known as PCT3431) found in the local area	Native plant species recorded from fixed monitoring plots are characteristic of the target vegetation community.	Native plant species are characteristic of the target vegetation community(s) when compared to analogue sites.	Before and after photos, rehabilitation monitoring reports, independent ecological reports (where required) that validate rehabilitation completion criteria have been met. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.
		A1	Ecological rehabilitation	The vegetation structure of the rehabilitation is similar to that of native vegetation communities of PCT483 Grey Box/White Box Grassy Open Woodland (now known as PCT3395) and legacy PCT1605 Narrow leaved Ironbark/Native Olive Shrubby Open Forest (now known as PCT3431) found in the local area	Cover and abundance of plant growth forms recorded from monitoring plots are characteristic of the target vegetation community, or an ongoing trend toward becoming characteristic is evident from the monitoring data.	Cover, abundance and height range of native plant growth forms are characteristic of, or trending towards, the target vegetation community type(s).	Before and after photos, rehabilitation monitoring reports, independent ecological reports (where required) that validate rehabilitation completion criteria have been met. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.
		A1	Ecological rehabilitation	Levels of ecosystem function have been established that demonstrate the rehabilitation is self-sustainable	Indicators of nutrient cycling are suitable for sustaining the target vegetation community.	Litter cover is within 10th-90th percentile variation range of reference sites/data	Rehabilitation monitoring reports, independent soil reports (where required) that demonstrate long-term function of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years
		A1	Ecological rehabilitation	Vegetation and wildlife corridor connectivity established as far is reasonable and feasible	Habitat Corridors established as required.	Habitat corridors are established and consistent with target vegetation community compositions.	Rehabilitation monitoring reports.
Domain A – Native Ecosystem	**Domain 3** – Water Management Area	A3	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	Removal of all services (power, water, communications) that have been connected on the site as part of the operation.	All utility infrastructure removed.	Statement provided, utility service disconnection record / notification.
					Heritage obligations (e.g. development consent under *the Environmental Planning and Assessment Act 1979*, approvals under the *Heritage Act 1977*, etc.) have been met (e.g. archival recording, building retention or building demolition with footings preserved).	Permits and approval documents issued. All archival reports required are complete and submitted.	Copy of any relevant approval documentation and archival reports/records.
					Removal of all plant, equipment and associated infrastructure including processing facilities, stockpile areas, rail infrastructure and loading facilities, underground hydrocarbon storage tanks, office complex, portable offices, exploration core samples, camp facilities, storage racks, samples.	Infrastructure removed.	As-constructed final landform plan, photos, decommissioning reports etc.
					Removal of all footings or removal to a certain depth.	Footings removed and or removed to specified depths to avoid exposure pathways to subsequent final land use.	Surveyed and marked on the as-constructed final landform plan.
					Removal of all water management infrastructure (including pumps, pipes and power).	Infrastructure removed.	Statement provided and before/after photos.

Table 4-1 (Continued)

Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain A – Native Ecosystem (Continued)	**Domain 3** – Water Management Area (Continued)	As above	As above	As above	All drill cores have been removed and taken either to an authorised storage or a disposal location.	Cores removed and relocated.	Statement provided, receipt records from storage or disposal location.
					Surveying and sealing of all drill holes, boreholes and gas wells in accordance with departmental guidelines and relevant standards.	Sealing completed and verified.	Engineering report/statement, plug and abandonment log, photos, as-constructed drawings, records of fill materials and concrete plugs, filling methods etc.
		A3	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community	Potential hazards (e.g. electrical, mechanical) have been effectively isolated and secured.	Hazards isolated and secured.	Statement provided by suitably qualified engineer.
					Damage to access tracks has been repaired and stabilised.	Repairs complete.	As-constructed final landform plan, photos etc.
					Where applicable, necessary approvals are in place (e.g. development consent under the *Environmental Planning and Assessment Act 1979*) where buildings and infrastructure are to be retained as part of final land use.	Permits and approval documents issued.	Copy of any relevant approvals.
					Heritage obligations (e.g. development consent under *the Environmental Planning and Assessment Act 1979*, approvals under the *Heritage Act 1977*, etc.) have been met (e.g. archival recording, building retention and restoration).	Permits and approval documents issued. All archival reports required are complete and submitted.	Copy of any relevant approval documentation and archival reports/records.
					The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.
					Infrastructure is in a condition (e.g. structural, electrical, other hazards) that is suitable for the intended final land use.	Formal acceptance from the subsequent landowner that infrastructure is in a condition that is suitable for the intended final land use in accordance with formal agreement.	Formal acceptance from landowner.
		A3	Retention of infrastructure	All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc)	Potential hazards (e.g. electrical, mechanical) have been effectively isolated and secured.	Hazards isolated and secured.	Statement provided by suitably qualified engineer.
					Damage to access tracks has been repaired and stabilised.	Repairs complete.	As-constructed final landform plan, photos etc.
					Where applicable, necessary approvals are in place (e.g. development consent under the *Environmental Planning and Assessment Act 1979*) where buildings and infrastructure are to be retained as part of final land use	Permits and approval documents issued.	Copy of any relevant approvals.
					Heritage obligations (e.g. development consent under *the Environmental Planning and Assessment Act 1979*, approvals under the *Heritage Act 1977*, etc.) have been met (e.g. archival recording, building retention and restoration).	Permits and approval documents issued. All archival reports required are complete and submitted.	Copy of any relevant approval documentation and archival reports/records.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain A – Native Ecosystem (Continued)	**Domain 3** – Water Management Area (Continued)	As above	As above	As above	The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.
					Infrastructure is in a condition (e.g. structural, electrical, other hazards) that is suitable for the intended final land use.	Formal acceptance from the subsequent landowner that infrastructure is in a condition that is suitable for the intended final land use in accordance with formal agreement.	Formal acceptance from landowner.
		A3	Land and water contamination	There is no residual soil contamination on site that is incompatible with the final land use or that poses a threat of environmental harm	Waste material and/or visible contamination areas on site surface.	There are no visible signs of contamination following the removal of plant, equipment and materials.	Statement provided and before/after photos.
						All rubbish/ waste materials removed from site.	
					Soil testing for contaminants of concern as listed by Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999) applicable to land use type.	Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999).	Contamination Remediation Report prepared by Land Contamination Consultant. Site Contamination Audit Report and Site Audit Statement prepared by EPA Accredited Auditor (where required).
		A3	Landform Stability	The final landform is stable for the long-term and does not present a risk of environmental harm downstream/downslope of the site or a safety risk to the public/stock/native fauna	Visual – indicators of erosion and land instability. Visual – indicators that surface water management structure are functioning as designed. Measured – erosion rates from field trials and or surveys on both target analogue sites (representative of final land use) and rehabilitated profiles (tonnes / ha). Measured – Survey of rehabilitated landform to verify final landform construction in accordance with Final Landform and Rehabilitation Plan. Measured – survey of rehabilitated landform to specifically monitor settlement and/or material loss via erosion. Modelled – long term erosional stability (e.g. Landform Evolution Modelling) to verify the long-term stability of rehabilitated landform. Modelled – long term geotechnical stability (e.g. stability analysis) to verify the long-term stability of rehabilitated landform.	Visual – minimal erosion that would not require moderate to significant ongoing management and maintenance works. Visual – no signs of land instability such as mass movement. Visual – no areas of active gully erosion. Visual – no evidence of tunnel erosion. Visual – no evidence of active scour likely to compromise surface water management structure. Survey verifies final landform complies with final landform construction in accordance with Final Landform and Rehabilitation Plan. Survey verifies that settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Erosion rate monitoring verifies that erosion levels are within the range of target analogue sites representative of final land use.	Before and after photos, rehabilitation monitoring reports, as constructed surveys, erosion surveys, independent geotechnical reports (where required) and or erosion modelling reports (where required) that indicate long-term stability of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, stability will need to be evaluated over a number of years.
						Significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.	An engineering assessment undertaken by a suitably qualified person concludes that significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.
						High risk landforms (such as steep slopes, high walls) have been constructed in accordance with geotechnical design.	

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain A – Native Ecosystem (Continued)	**Domain 3** – Water Management Area (Continued)	A3	Landform Stability	Landform that is commensurate with surrounding natural landform and where appropriate, incorporates geomorphic design principles	Visual – indicators of erosion and land instability. Visual – indicators that surface water management structure are functioning as designed. Measured – erosion rates from field trials and or surveys on both target analogue sites (representative of final land use) and rehabilitated profiles (tonnes / ha). Measured – Survey of rehabilitated landform to verify final landform construction in accordance with Final Landform and Rehabilitation Plan. Measured - survey of rehabilitated landform to specifically monitor settlement and/or material loss via erosion. Modelled – long term erosional stability (e.g. Landform Evolution Modelling) to verify the long-term stability of rehabilitated landform. Modelled – long term geotechnical stability (e.g. stability analysis) to verify the long-term stability of rehabilitated landform.	Visual – minimal erosion that would not require moderate to significant ongoing management and maintenance works. Visual – no signs of land instability such as mass movement. Visual – no areas of active gully erosion. Visual – no evidence of tunnel erosion. Visual – no evidence of active scour likely to compromise surface water management structure. Survey verifies final landform complies with final landform construction in accordance with Final Landform and Rehabilitation Plan. Survey verifies that settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Erosion rate monitoring verifies that erosion levels are within the range of target analogue sites representative of final land use.	Before and after photos, rehabilitation monitoring reports, as constructed surveys, erosion surveys, independent geotechnical reports (where required) and or erosion modelling reports (where required) that indicate long-term stability of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, stability will need to be evaluated over a number of years.
						Significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.	An engineering assessment undertaken by a suitably qualified person concludes that significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.
						High risk landforms (such as steep slopes, high walls) have been constructed in accordance with geotechnical design.	

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain A – Native Ecosystem (Continued)	**Domain 3** – Water Management Area (Continued)	A3	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation	Appropriate bushfire hazard controls (where required) have been implemented on the advice from the NSW Rural Fire Service.	Bushfire controls implemented.	Statement provided and before/after photos.
		A3	Water Quality	Runoff water quality from mine site is similar to, or better than the pre-disturbance runoff water quality	Water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 and or EPL (further guidance available on the NSW EPA website).	Water quality discharged from rehabilitated mining operation meet specifications in EPL and or ANZECC guidelines for specific environment.	Water quality monitoring reports. EPL relinquished by EPA. Independent hydrological assessment report. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.
		A3	Water Approvals	Water Approvals Structures that take or divert water hold sufficient licence shares to account for water take (where necessary)	Final landform considers advice from relevant Government Agency whether sufficient licence shares are available in the water source to account for water stored in voids and dams in the proposed final landform.	Water approvals / licences are granted by relevant NSW Government Agency.	Confirmation from relevant Government Agency that relevant water approvals / licences are able to be granted.
					Indicators as specified by Australian River Assessment System (AUSRIVAS).	Assessment of biological health in accordance with Australian River Assessment System (AUSRIVAS).	Independent biological health assessment report. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years
		A3	Groundwater	Groundwater quality is similar to, or better than the pre-disturbance groundwater quality	Water quality parameters selected from *Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000* and/or EPL.	Water quality discharged from rehabilitated mining operation meet specifications in EPL and or ANZECC guidelines for specific environment.	Independent hydrological assessment report, groundwater monitoring reports.
		A3	Groundwater	Impacts to groundwater regime are within range as predicted in pre-mining environmental assessment	Groundwater quality both on and off a mining lease represent an acceptable level of change from a defined reference condition.	Groundwater levels, groundwater flow.	Water quality monitoring reports. Independent hydrological assessment report.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain A – Native Ecosystem (Continued)	**Domain 3** – Water Management Area (Continued)	A3	Ecological rehabilitation	The vegetation composition of the rehabilitation contains species that are commensurate with native vegetation communities of PCT483 Grey Box/White Box Grassy Open Woodland (now known as PCT3395) and legacy PCT1605 Narrow leaved Ironbark/Native Olive Shrubby Open Forest (now known as PCT3431) found in the local area	Native plant species recorded from fixed monitoring plots are characteristic of the target vegetation community.	Native plant species are characteristic of the target vegetation community(s) when compared to analogue sites.	Before and after photos, rehabilitation monitoring reports, independent ecological reports (where required) that validate rehabilitation completion criteria have been met. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.
		A3	Ecological rehabilitation	The vegetation structure of the rehabilitation is similar to that of native vegetation communities of PCT483 Grey Box/White Box Grassy Open Woodland (now known as PCT3395) and legacy PCT1605 Narrow leaved Ironbark/Native Olive Shrubby Open Forest (now known as PCT3431) found in the local area	Cover and abundance of plant growth forms recorded from monitoring plots are characteristic of the target vegetation community, or an ongoing trend toward becoming characteristic is evident from the monitoring data.	Cover, abundance and height range of native plant growth forms are characteristic of, or trending towards, the target vegetation community type(s).	Before and after photos, rehabilitation monitoring reports, independent ecological reports (where required) that validate rehabilitation completion criteria have been met. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.
		A3	Ecological rehabilitation	Levels of ecosystem function have been established that demonstrate the rehabilitation is self-sustainable	Indicators of nutrient cycling are suitable for sustaining the target vegetation community.	Litter cover is within 10th-90th percentile variation range of reference sites/data	Rehabilitation monitoring reports, independent soil reports (where required) that demonstrate long-term function of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.
		A3	Ecological rehabilitation	Vegetation and wildlife corridor connectivity established as far is reasonable and feasible	Habitat Corridors established as required.	Habitat corridors are established and consistent with target vegetation community compositions.	Rehabilitation monitoring reports.
Domain A – Native Ecosystem	**Domain 4** – Overburden Emplacement Area	A4	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	Removal of all services (power, water, communications) that have been connected on the site as part of the operation.	All utility infrastructure removed.	Statement provided, utility service disconnection record / notification.
					Heritage obligations (e.g. development consent under *the Environmental Planning and Assessment Act 1979*, approvals under the *Heritage Act 1977*, etc.) have been met (e.g. archival recording, building retention or building demolition with footings preserved).	Permits and approval documents issued. All archival reports required are complete and submitted.	Copy of any relevant approval documentation and archival reports/records.
					Removal of all plant, equipment and associated infrastructure including processing facilities, stockpile areas, rail infrastructure and loading facilities, underground hydrocarbon storage tanks, office complex, portable offices, exploration core samples, camp facilities, storage racks, samples.	Infrastructure removed.	As-constructed final landform plan, photos, decommissioning reports etc.
					Removal of all footings or removal to a certain depth.	Footings removed and or removed to specified depths to avoid exposure pathways to subsequent final land use.	Surveyed and marked on the as constructed final landform plan.
					Removal of all water management infrastructure (including pumps, pipes and power).	Infrastructure removed.	Statement provided and before/after photos.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain A – Native Ecosystem (Continued)	**Domain 4** – Overburden Emplacement Area (Continued)	As above	As above	As above	All drill cores have been removed and taken either to an authorised storage or a disposal location.	Cores removed and relocated.	Statement provided, receipt records from storage or disposal location.
					Surveying and sealing of all drill holes, boreholes and gas wells in accordance with departmental guidelines and relevant standards.	Sealing completed and verified.	Engineering report/statement, plug and abandonment log, photos, as-constructed drawings, records of fill materials and concrete plugs, filling methods etc.
		A4	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community	Potential hazards (e.g. electrical, mechanical) have been effectively isolated and secured.	Hazards isolated and secured.	Statement provided by suitably qualified engineer.
					Damage to access tracks has been repaired and stabilised.	Repairs complete.	As-constructed final landform plan, photos etc.
					Where applicable, necessary approvals are in place (e.g. development consent under the *Environmental Planning and Assessment Act 1979*) where buildings and infrastructure are to be retained as part of final land use.	Permits and approval documents issued.	Copy of any relevant approvals.
					Heritage obligations (e.g. development consent under *the Environmental Planning and Assessment Act 1979*, approvals under the *Heritage Act 1977*, etc.) have been met (e.g. archival recording, building retention and restoration).	Permits and approval documents issued. All archival reports required are complete and submitted.	Copy of any relevant approval documentation and archival reports/records.
					The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.
					Infrastructure is in a condition (e.g. structural, electrical, other hazards) that is suitable for the intended final land use.	Formal acceptance from the subsequent landowner that infrastructure is in a condition that is suitable for the intended final land use in accordance with formal agreement.	Formal acceptance from landowner.
		A4	Retention of infrastructure	All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc).	Potential hazards (e.g. electrical, mechanical) have been effectively isolated and secured.	Hazards isolated and secured.	Statement provided by suitably qualified engineer.
					Damage to access tracks has been repaired and stabilised.	Repairs complete.	As-constructed final landform plan, photos etc.
					Where applicable, necessary approvals are in place (e.g. development consent under the *Environmental Planning and Assessment Act 1979*) where buildings and infrastructure are to be retained as part of final land use	Permits and approval documents issued.	Copy of any relevant approvals.
					Heritage obligations (e.g. development consent under *the Environmental Planning and Assessment Act 1979*, approvals under the *Heritage Act 1977*, etc.) have been met (e.g. archival recording, building retention and restoration).	Permits and approval documents issued. All archival reports required are complete and submitted.	Copy of any relevant approval documentation and archival reports/records.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain A – Native Ecosystem (Continued)	**Domain 4** – Overburden Emplacement Area (Continued)	As above	As above	As above	The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.
					Infrastructure is in a condition (e.g. structural, electrical, other hazards) that is suitable for the intended final land use.	Formal acceptance from the subsequent landowner that infrastructure is in a condition that is suitable for the intended final land use in accordance with formal agreement.	Formal acceptance from landowner.
		A4	Land and water contamination	There is no residual soil contamination on site that is incompatible with the final land use or that poses a threat of environmental harm.	Waste material and/or visible contamination areas on site surface.	There are no visible signs of contamination following the removal of plant, equipment and materials	Statement provided and before/after photos.
						All rubbish/ waste materials removed from site.	
					Soil testing for contaminants of concern as listed by Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999) applicable to land use type.	Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999).	Contamination Remediation Report prepared by Land Contamination Consultant. Site Contamination Audit Report and Site Audit Statement prepared by EPA Accredited Auditor (where required).
		A4	Landform Stability	The final landform is stable for the long-term and does not present a risk of environmental harm downstream/downslope of the site or a safety risk to the public/stock/native fauna.	Visual - indicators of erosion and land instability. Visual - indicators that surface water management structure are functioning as designed. Measured – erosion rates from field trials and or surveys on both target analogue sites (representative of final land use) and rehabilitated profiles (tonnes / ha). Measured - Survey of rehabilitated landform to verify final landform construction in accordance with Final Landform and Rehabilitation Plan. Measured - survey of rehabilitated landform to specifically monitor settlement and/or material loss via erosion. Modelled – long term erosional stability (e.g. Landform Evolution Modelling) to verify the long-term stability of rehabilitated landform. Modelled – long term geotechnical stability (e.g. stability analysis) to verify the long-term stability of rehabilitated landform.	Visual- minimal erosion that would not require moderate to significant ongoing management and maintenance works. Visual – no signs of land instability such as mass movement. Visual - no areas of active gully erosion. Visual - no evidence of tunnel erosion. Visual – no evidence of active scour likely to compromise surface water management structure. Survey verifies final landform complies with final landform construction in accordance with Final Landform and Rehabilitation Plan. Survey verifies that settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Erosion rate monitoring verifies that erosion levels are within the range of target analogue sites representative of final land use.	Before and after photos, rehabilitation monitoring reports, as constructed surveys, erosion surveys, independent geotechnical reports (where required) and or erosion modelling reports (where required) that indicate long-term stability of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, stability will need to be evaluated over a number of years.
						Significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.	An engineering assessment undertaken by a suitably qualified person concludes that significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.
						High risk landforms (such as steep slopes, high walls) have been constructed in accordance with geotechnical design.	

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain A – Native Ecosystem (Continued)	**Domain 4** – Overburden Emplacement Area (Continued)	A4	Landform Stability	Landform that is commensurate with surrounding natural landform and where appropriate, incorporates geomorphic design principles.	Visual - indicators of erosion and land instability. Visual - indicators that surface water management structure are functioning as designed. Measured – erosion rates from field trials and or surveys on both target analogue sites (representative of final land use) and rehabilitated profiles (tonnes / ha). Measured - Survey of rehabilitated landform to verify final landform construction in accordance with Final Landform and Rehabilitation Plan. Measured - survey of rehabilitated landform to specifically monitor settlement and/or material loss via erosion. Modelled – long term erosional stability (e.g. Landform Evolution Modelling) to verify the long-term stability of rehabilitated landform. Modelled – long term geotechnical stability (e.g. stability analysis) to verify the long-term stability of rehabilitated landform.	Visual- minimal erosion that would not require moderate to significant ongoing management and maintenance works. Visual – no signs of land instability such as mass movement. Visual - no areas of active gully erosion. Visual - no evidence of tunnel erosion. Visual – no evidence of active scour likely to compromise surface water management structure. Survey verifies final landform complies with final landform construction in accordance with Final Landform and Rehabilitation Plan. Survey verifies that settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Erosion rate monitoring verifies that erosion levels are within the range of target analogue sites representative of final land use.	Before and after photos, rehabilitation monitoring reports, as constructed surveys, erosion surveys, independent geotechnical reports (where required) and or erosion modelling reports (where required) that indicate long-term stability of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, stability will need to be evaluated over a number of years.
						Significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.	An engineering assessment undertaken by a suitably qualified person concludes that significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.
						High risk landforms (such as steep slopes, high walls) have been constructed in accordance with geotechnical design.	
		A4	Management of waste and process material	Residual waste materials stored on site (e.g. tailings, coarse rejects and other wastes) will be appropriately contained / encapsulated so it does not pose any hazards or constraints for intended final land use.	Visual –capping material placement, type across emplacement Visual – indication of capping performance on final landform – vegetation health Visual – emplacement seepage and other indicators of groundwater issues – wet spots etc. Measured - survey of emplacement capping to verify construction and to monitor settlement. Quality assurance records for the construction of the emplacement material including (where relevant) capping material, liner system, seepage control etc Measured- surface and groundwater levels to verify water balance modeling and capping function Measured – contamination levels in surface and groundwater surrounding emplacement for contaminants of concern associated with waste material emplaced.	Visual – verification that capping, type and placement consistent with design. Visual – no signs of compromised capping performance indicated by vegetation health – such as tree death (deeper root systems) Visual – no areas of unexpected seepage Survey verifies that capping placement consistent with design and settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Quality assurance records verify capping constructed and in accordance with design specifications relevant to site risks and target final land use. For example: • Capping depth • Capping material type • Capillary breaks • Seepage control.	Photos, rehabilitation monitoring reports, as- constructed surveys, quality assurance records for construction, erosion surveys, independent geotechnical reports (where required), groundwater/surface water monitoring reports. The structural integrity of the infrastructure and capping has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use and water material adequately contained.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain A – Native Ecosystem (Continued)	**Domain 4** – Overburden Emplacement Area (Continued)	As above	As above	As above	As above	Groundwater and surface monitoring verify capping function e.g. 'store and release' and design performance permeability/seepage. Groundwater and surface water monitoring verify adequate containment of waste materials and seepage/leachate is not contributing to land/groundwater contamination.	As above
		A4	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.	Appropriate bushfire hazard controls (where required) have been implemented on the advice from the NSW Rural Fire Service.	Bushfire controls implemented.	Statement provided and before/after photos
		A4	Water Quality	Runoff water quality from mine site is similar to, or better than the pre-disturbance runoff water quality.	Water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 and or EPL (further guidance available on the NSW EPA website).	Water quality discharged from rehabilitated mining operation meet specifications in EPL and or ANZECC guidelines for specific environment.	Water quality monitoring reports. EPL relinquished by EPA. Independent hydrological assessment report. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.
		A4	Water Quality	Incorporate micro-relief and drainage lines that are consistent with surrounding topography, to the greatest extent practicable.	Landform design.	Suitably qualified and experienced Geomorphologist confirms landform design incorporates micro-relief and drainage lines consistent with the surrounding topography.	Completed Inspection Test Plan.
		A4	Water Quality	Maximise surface water drainage to the natural environment.	Free draining landform.	Modelling of landform design indicates the landform is free draining (excluding the retained final void) to allow effective catchment contribution and yield to the Hunter River.	Modelling results. LIDAR and timeline imagery results.
		A4	Water Approvals	Water Approvals Structures that take or divert water hold sufficient licence shares to account for water take (where necessary).	Final landform considers advice from relevant Government Agency whether sufficient licence shares are available in the water source to account for water stored in voids and dams in the proposed final landform	Water approvals / licences are granted by relevant NSW Government Agency	Confirmation from relevant Government Agency that relevant water approvals / licences are able to be granted.
					Indicators as specified by Australian River Assessment System (AUSRIVAS).	Assessment of biological health in accordance with Australian River Assessment System (AUSRIVAS).	Independent biological health assessment report. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years
		A4	Groundwater	Groundwater quality is similar to, or better than the pre-disturbance groundwater quality.	Water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 and or EPL.	Water quality discharged from rehabilitated mining operation meet specifications in EPL and or ANZECC guidelines for specific environment.	Independent hydrological assessment report, groundwater monitoring reports.
		A4	Groundwater	Impacts to groundwater regime are within range as predicted in pre-mining environmental assessment.	Groundwater quality both on and off a mining lease represent an acceptable level of change from a defined reference condition.	Groundwater levels, groundwater flow.	Water quality monitoring reports. Independent hydrological assessment report.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain A – Native Ecosystem (Continued)	**Domain 4** – Overburden Emplacement Area (Continued)	A4	Ecological rehabilitation	The vegetation composition of the rehabilitation contains species that are commensurate with native vegetation communities of PCT483 Grey Box/White Box Grassy Open Woodland (now known as PCT 3395) and legacy PCT1605 Narrow leaved Ironbark/Native Olive Shrubby Open Forest (now known as PCT3431) found in the local area.	Native plant species recorded from fixed monitoring plots are characteristic of the target vegetation community.	Native plant species are characteristic of the target vegetation community(s) when compared to analogue sites.	Before and after photos, rehabilitation monitoring reports, independent ecological reports (where required) that validate rehabilitation completion criteria have been met. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.
		A4	Ecological rehabilitation	The vegetation structure of the rehabilitation is similar to that of native vegetation communities of PCT483 Grey Box/White Box Grassy Open Woodland (now known as PCT3395) and legacy PCT1605 Narrow leaved Ironbark/Native Olive Shrubby Open Forest (now known as PCT3431found in the local area.	Cover and abundance of plant growth forms recorded from monitoring plots are characteristic of the target vegetation community, or an ongoing trend toward becoming characteristic is evident from the monitoring data.	Cover, abundance and height range of native plant growth forms are characteristic of, or trending towards, the target vegetation community type(s).	Before and after photos, rehabilitation monitoring reports, independent ecological reports (where required) that validate rehabilitation completion criteria have been met. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.
		A4	Ecological rehabilitation	Levels of ecosystem function have been established that demonstrate the rehabilitation is self-sustainable.	Indicators of nutrient cycling are suitable for sustaining the target vegetation community.	Litter cover is within 10th-90th percentile variation range of reference sites/data	Rehabilitation monitoring reports, independent soil reports (where required) that demonstrate long-term function of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years
		A4	Ecological rehabilitation	Vegetation and wildlife corridor connectivity established as far is reasonable and feasible.	Habitat Corridors established as required.	Habitat corridors are established and consistent with target vegetation community compositions.	Rehabilitation monitoring reports.
Domain A – Native Ecosystem	**Domain 5** – Active Mining Area (Open Cut Void)	A5	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	Removal of all services (power, water, communications) that have been connected on the site as part of the operation.	All utility infrastructure removed.	Statement provided, utility service disconnection record / notification.
					Heritage obligations (e.g. development consent under *the Environmental Planning and Assessment Act 1979*, approvals under the *Heritage Act 1977*, etc.) have been met (e.g. archival recording, building retention or building demolition with footings preserved).	Permits and approval documents issued. All archival reports required are complete and submitted.	Copy of any relevant approval documentation and archival reports/records.
					Removal of all plant, equipment and associated infrastructure including processing facilities, stockpile areas, rail infrastructure and loading facilities, underground hydrocarbon storage tanks, office complex, portable offices, exploration core samples, camp facilities, storage racks, samples.	Infrastructure removed.	As-constructed final landform plan, photos, decommissioning reports etc.
					Removal of all footings or removal to a certain depth.	Footings removed and or removed to specified depths to avoid exposure pathways to subsequent final land use.	Surveyed and marked on the as-constructed final landform plan.
					Removal of all water management infrastructure (including pumps, pipes and power).	Infrastructure removed.	Statement provided and before/after photos.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain A – Native Ecosystem (Continued)	**Domain 5** – Active Mining Area (Open Cut Void) (Continued)	As above	As above	As above	All drill cores have been removed and taken either to an authorised storage or a disposal location.	Cores removed and relocated.	Statement provided, receipt records from storage or disposal location.
					Surveying and sealing of all drill holes, boreholes and gas wells in accordance with departmental guidelines and relevant standards.	Sealing completed and verified.	Engineering report/statement, plug and abandonment log, photos, as-constructed drawings, records of fill materials and concrete plugs, filling methods etc.
		A5	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community	Potential hazards (e.g. electrical, mechanical) have been effectively isolated and secured.	Hazards isolated and secured.	Statement provided by suitably qualified engineer.
					Damage to access tracks has been repaired and stabilised.	Repairs complete.	As-constructed final landform plan, photos etc.
					Where applicable, necessary approvals are in place (e.g. development consent under the *Environmental Planning and Assessment Act 1979*) where buildings and infrastructure are to be retained as part of final land use	Permits and approval documents issued.	Copy of any relevant approvals.
					Heritage obligations (e.g. development consent under *the Environmental Planning and Assessment Act 1979*, approvals under the *Heritage Act 1977*, etc.) have been met (e.g. archival recording, building retention and restoration).	Permits and approval documents issued. All archival reports required are complete and submitted.	Copy of any relevant approval documentation and archival reports/records.
					The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.
					Infrastructure is in a condition (e.g. structural, electrical, other hazards) that is suitable for the intended final land use.	Formal acceptance from the subsequent landowner that infrastructure is in a condition that is suitable for the intended final land use in accordance with formal agreement.	Formal acceptance from landowner.
		A5	Retention of infrastructure	All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc).	Potential hazards (e.g. electrical, mechanical) have been effectively isolated and secured.	Hazards isolated and secured.	Statement provided by suitably qualified engineer.
					Damage to access tracks has been repaired and stabilised.	Repairs complete.	As-constructed final landform plan, photos etc.
					Where applicable, necessary approvals are in place (e.g. development consent under the *Environmental Planning and Assessment Act 1979*) where buildings and infrastructure are to be retained as part of final land use	Permits and approval documents issued.	Copy of any relevant approvals.
					Heritage obligations (e.g. development consent under *the Environmental Planning and Assessment Act 1979*, approvals under the *Heritage Act 1977*, etc.) have been met (e.g. archival recording, building retention and restoration).	Permits and approval documents issued. All archival reports required are complete and submitted.	Copy of any relevant approval documentation and archival reports/records.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain A – Native Ecosystem (Continued)	**Domain 5** – Active Mining Area (Open Cut Void) (Continued)	As above	As above	As above	The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.
					Infrastructure is in a condition (e.g. structural, electrical, other hazards) that is suitable for the intended final land use.	Formal acceptance from the subsequent landowner that infrastructure is in a condition that is suitable for the intended final land use in accordance with formal agreement.	Formal acceptance from landowner.
		A5	Land and water contamination	There is no residual soil contamination on site that is incompatible with the final land use or that poses a threat of environmental harm.	Waste material and/or visible contamination areas on site surface.	There are no visible signs of contamination following the removal of plant, equipment and materials	Statement provided and before/after photos.
						All rubbish/ waste materials removed from site.	
					Soil testing for contaminants of concern as listed by Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999) applicable to land use type.	Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999).	Contamination Remediation Report prepared by Land Contamination Consultant. Site Contamination Audit Report and Site Audit Statement prepared by EPA Accredited Auditor (where required).
		A5	Landform Stability	The final landform is stable for the long-term and does not present a risk of environmental harm downstream/downslope of the site or a safety risk to the public/stock/native fauna.	Visual - indicators of erosion and land instability. Visual - indicators that surface water management structure are functioning as designed. Measured – erosion rates from field trials and or surveys on both target analogue sites (representative of final land use) and rehabilitated profiles (tonnes / ha). Measured - Survey of rehabilitated landform to verify final landform construction in accordance with Final Landform and Rehabilitation Plan. Measured - survey of rehabilitated landform to specifically monitor settlement and/or material loss via erosion. Modelled – long term erosional stability (e.g. Landform Evolution Modelling) to verify the long-term stability of rehabilitated landform. Modelled – long term geotechnical stability (e.g. stability analysis) to verify the long-term stability of rehabilitated landform.	Visual- minimal erosion that would not require moderate to significant ongoing management and maintenance works. Visual – no signs of land instability such as mass movement. Visual - no areas of active gully erosion. Visual - no evidence of tunnel erosion. Visual – no evidence of active scour likely to compromise surface water management structure. Survey verifies final landform complies with final landform construction in accordance with Final Landform and Rehabilitation Plan. Survey verifies that settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Erosion rate monitoring verifies that erosion levels are within the range of target analogue sites representative of final land use.	Before and after photos, rehabilitation monitoring reports, as constructed surveys, erosion surveys, independent geotechnical reports (where required) and or erosion modelling reports (where required) that indicate long-term stability of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, stability will need to be evaluated over a number of years.
						Significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.	An engineering assessment undertaken by a suitably qualified person concludes that significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.
						High risk landforms (such as steep slopes, high walls) have been constructed in accordance with geotechnical design.	

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain A – Native Ecosystem (Continued)	**Domain 5** – Active Mining Area (Open Cut Void) (Continued)	A5	Landform Stability	Landform that is commensurate with surrounding natural landform and where appropriate, incorporates geomorphic design principles.	Visual - indicators of erosion and land instability. Visual - indicators that surface water management structure are functioning as designed. Measured – erosion rates from field trials and or surveys on both target analogue sites (representative of final land use) and rehabilitated profiles (tonnes / ha). Measured - Survey of rehabilitated landform to verify final landform construction in accordance with Final Landform and Rehabilitation Plan. Measured - survey of rehabilitated landform to specifically monitor settlement and/or material loss via erosion. Modelled – long term erosional stability (e.g. Landform Evolution Modelling) to verify the long-term stability of rehabilitated landform. Modelled – long term geotechnical stability (e.g. stability analysis) to verify the long-term stability of rehabilitated landform.	Visual- minimal erosion that would not require moderate to significant ongoing management and maintenance works. Visual – no signs of land instability such as mass movement. Visual - no areas of active gully erosion. Visual - no evidence of tunnel erosion. Visual – no evidence of active scour likely to compromise surface water management structure. Survey verifies final landform complies with final landform construction in accordance with Final Landform and Rehabilitation Plan. Survey verifies that settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Erosion rate monitoring verifies that erosion levels are within the range of target analogue sites representative of final land use.	Before and after photos, rehabilitation monitoring reports, as constructed surveys, erosion surveys, independent geotechnical reports (where required) and or erosion modelling reports (where required) that indicate long-term stability of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, stability will need to be evaluated over a number of years.
						Significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.	An engineering assessment undertaken by a suitably qualified person concludes that significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.
						High risk landforms (such as steep slopes, high walls) have been constructed in accordance with geotechnical design.	
		A5	Management of waste and process material	Residual waste materials stored on site (e.g. tailings, coarse rejects and other wastes) will be appropriately contained / encapsulated so it does not pose any hazards or constraints for intended final land use.	Visual –capping material placement, type across emplacement Visual – indication of capping performance on final landform – vegetation health Visual – emplacement seepage and other indicators of groundwater issues – wet spots etc. Measured - survey of emplacement capping to verify construction and to monitor settlement. Quality assurance records for the construction of the emplacement material including (where relevant) capping material, liner system, seepage control etc Measured- surface and groundwater levels to verify water balance modelling and capping function Measured – contamination levels in surface and groundwater surrounding emplacement for contaminants of concern associated with waste material emplaced.	Visual – verification that capping, type and placement consistent with design. Visual – no signs of compromised capping performance indicated by vegetation health – such as tree death (deeper root systems) Visual – no areas of unexpected seepage Survey verifies that capping placement consistent with design and settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Quality assurance records verify capping constructed and in accordance with design specifications relevant to site risks and target final land use. For example: • Capping depth • Capping material type • Capillary breaks • Seepage control.	Photos, rehabilitation monitoring reports, as- constructed surveys, quality assurance records for construction, erosion surveys, independent geotechnical reports (where required), groundwater/surface water monitoring reports. The structural integrity of the infrastructure and capping has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use and water material adequately contained.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain A – Native Ecosystem (Continued)	**Domain 5** – Active Mining Area (Open Cut Void) (Continued)	As above	As above	As above	As above	Groundwater and surface monitoring verify capping function e.g. 'store and release' and design performance permeability/seepage. Groundwater and surface water monitoring verify adequate containment of waste materials and seepage/leachate is not contributing to land/groundwater contamination.	As above
		A5	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation	Appropriate bushfire hazard controls (where required) have been implemented on the advice from the NSW Rural Fire Service.	Bushfire controls implemented.	Statement provided and before/after photos.
		A5	Water Quality	Runoff water quality from mine site is similar to, or better than the pre-disturbance runoff water quality	Water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 and or EPL (further guidance available on the NSW EPA website).	Water quality discharged from rehabilitated mining operation meet specifications in EPL and or ANZECC guidelines for specific environment.	Water quality monitoring reports. EPL relinquished by EPA. Independent hydrological assessment report. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.
		A5	Water Approvals	Water Approvals Structures that take or divert water hold sufficient licence shares to account for water take (where necessary)	Final landform considers advice from relevant Government Agency whether sufficient licence shares are available in the water source to account for water stored in voids and dams in the proposed final landform	Water approvals / licences are granted by relevant NSW Government Agency.	Confirmation from relevant Government Agency that relevant water approvals / licences are able to be granted.
					Indicators as specified by Australian River Assessment System (AUSRIVAS).	Assessment of biological health in accordance with Australian River Assessment System (AUSRIVAS).	Independent biological health assessment report. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years
		A5	Groundwater	Groundwater quality is similar to, or better than the pre-disturbance groundwater quality	Water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 and or EPL.	Water quality discharged from rehabilitated mining operation meet specifications in EPL and or ANZECC guidelines for specific environment.	Independent hydrological assessment report, groundwater monitoring reports.
		A5	Groundwater	Impacts to groundwater regime are within range as predicted in pre-mining environmental assessment	Groundwater quality both on and off a mining lease represent an acceptable level of change from a defined reference condition.	Groundwater levels, groundwater flow.	Water quality monitoring reports. Independent hydrological assessment report.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain A – Native Ecosystem (Continued)	**Domain 5** – Active Mining Area (Open Cut Void) (Continued)	A5	Ecological rehabilitation	The vegetation composition of the rehabilitation contains species that are commensurate with native vegetation communities of PCT483 Grey Box/White Box Grassy Open Woodland (now known as PCT3395) and legacy PCT1605 Narrow leaved Ironbark/Native Olive Shrubby Open Forest (now known as PCT 3431) found in the local area	Native plant species recorded from fixed monitoring plots are characteristic of the target vegetation community.	Native plant species are characteristic of the target vegetation community(s) when compared to analogue sites.	Before and after photos, rehabilitation monitoring reports, independent ecological reports (where required) that validate rehabilitation completion criteria have been met. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.
		A5	Ecological rehabilitation	The vegetation structure of the rehabilitation is similar to that of native vegetation communities of PCT483 Grey Box/White Box Grassy Open Woodland (bow known as PCT3395) and legacy PCT1605 Narrow leaved Ironbark/Native Olive Shrubby Open Forest (now known as PCT3431) found in the local area	Cover and abundance of plant growth forms recorded from monitoring plots are characteristic of the target vegetation community, or an ongoing trend toward becoming characteristic is evident from the monitoring data.	Cover, abundance and height range of native plant growth forms are characteristic of, or trending towards, the target vegetation community type(s).	Before and after photos, rehabilitation monitoring reports, independent ecological reports (where required) that validate rehabilitation completion criteria have been met. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.
		A5	Ecological rehabilitation	Levels of ecosystem function have been established that demonstrate the rehabilitation is self-sustainable	Indicators of nutrient cycling are suitable for sustaining the target vegetation community.	Litter cover is within 10th-90th percentile variation range of reference sites/data.	Rehabilitation monitoring reports, independent soil reports (where required) that demonstrate long-term function of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years
		A5	Ecological rehabilitation	Vegetation and wildlife corridor connectivity established as far is reasonable and feasible	Habitat Corridors established as required.	Habitat corridors are established and consistent with target vegetation community compositions.	Rehabilitation monitoring reports.
Domain B – Agricultural - Grazing	**Domain 1** – Infrastructure Area	B1	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	Removal of all services (power, water, communications) that have been connected on the site as part of the operation	All utility infrastructure removed.	Statement provided, utility service disconnection record / notification.
					Heritage obligations (e.g. development consent under *the Environmental Planning and Assessment Act 1979*, approvals under the *Heritage Act 1977*, etc.) have been met (e.g. archival recording, building retention or building demolition with footings preserved).	Permits and approval documents issued. All archival reports required are complete and submitted.	Copy of any relevant approval documentation and archival reports/records.
					Removal of all plant, equipment and associated infrastructure including processing facilities, stockpile areas, rail infrastructure and loading facilities, underground hydrocarbon storage tanks, office complex, portable offices, exploration core samples, camp facilities, storage racks, samples.	Infrastructure removed.	As-constructed final landform plan, photos, decommissioning reports etc.
					Removal of all footings or removal to a certain depth.	Footings removed and or removed to specified depths to avoid exposure pathways to subsequent final land use.	Surveyed and marked on the as-constructed final landform plan.
					Removal of all water management infrastructure (including pumps, pipes and power).	Infrastructure removed.	Statement provided and before/after photos.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain B – Agricultural - Grazing (Continued)	**Domain 1** – Infrastructure Area (Continued)	As above	As above	As above	All drill cores have been removed and taken either to an authorised storage or a disposal location.	Cores removed and relocated.	Statement provided, receipt records from storage or disposal location.
					Surveying and sealing of all drill holes, boreholes and gas wells in accordance with departmental guidelines and relevant standards.	Sealing completed and verified.	Engineering report/statement, plug and abandonment log, photos, as-constructed drawings, records of fill materials and concrete plugs, filling methods etc.
		B1	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community	Potential hazards (e.g. electrical, mechanical) have been effectively isolated and secured.	Hazards isolated and secured.	Statement provided by suitably qualified engineer.
					Damage to access tracks has been repaired and stabilised.	Repairs complete.	As-constructed final landform plan, photos etc.
					Where applicable, necessary approvals are in place (e.g. development consent under the *Environmental Planning and Assessment Act 1979*) where buildings and infrastructure are to be retained as part of final land use	Permits and approval documents issued.	Copy of any relevant approvals.
					Heritage obligations (e.g. development consent under *the Environmental Planning and Assessment Act 1979*, approvals under the *Heritage Act 1977*, etc.) have been met (e.g. archival recording, building retention and restoration).	Permits and approval documents issued. All archival reports required are complete and submitted.	Copy of any relevant approval documentation and archival reports/records.
					The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.
					Infrastructure is in a condition (e.g. structural, electrical, other hazards) that is suitable for the intended final land use.	Formal acceptance from the subsequent landowner that infrastructure is in a condition that is suitable for the intended final land use in accordance with formal agreement.	Formal acceptance from landowner.
		B1	Retention of infrastructure	All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc).	Potential hazards (e.g. electrical, mechanical) have been effectively isolated and secured.	Hazards isolated and secured.	Statement provided by suitably qualified engineer.
					Damage to access tracks has been repaired and stabilised.	Repairs complete.	As-constructed final landform plan, photos etc.
					Where applicable, necessary approvals are in place (e.g. development consent under the *Environmental Planning and Assessment Act 1979*) where buildings and infrastructure are to be retained as part of final land use	Permits and approval documents issued.	Copy of any relevant approvals.
					Heritage obligations (e.g. development consent under *the Environmental Planning and Assessment Act 1979*, approvals under the *Heritage Act 1977*, etc.) have been met (e.g. archival recording, building retention and restoration).	Permits and approval documents issued. All archival reports required are complete and submitted.	Copy of any relevant approval documentation and archival reports/records.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain B – Agricultural - Grazing (Continued)	**Domain 1** – Infrastructure Area (Continued)	As above	As above	As above	The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.
					Infrastructure is in a condition (e.g. structural, electrical, other hazards) that is suitable for the intended final land use.	Formal acceptance from the subsequent landowner that infrastructure is in a condition that is suitable for the intended final land use in accordance with formal agreement.	Formal acceptance from landowner.
		B1	Land and water contamination	There is no residual soil contamination on site that is incompatible with the final land use or that poses a threat of environmental harm.	Waste material and/or visible contamination areas on site surface.	There are no visible signs of contamination following the removal of plant, equipment and materials All rubbish/ waste materials removed from site.	Statement provided and before/after photos.
					Soil testing for contaminants of concern as listed by Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999) applicable to land use type.	Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999).	Contamination Remediation Report prepared by Land Contamination Consultant. Site Contamination Audit Report and Site Audit Statement prepared by EPA Accredited Auditor (where required).
		B1	Landform Stability	The final landform is stable for the long-term and does not present a risk of environmental harm downstream/downslope of the site or a safety risk to the public/stock/native fauna.	Visual - indicators of erosion and land instability. Visual - indicators that surface water management structure are functioning as designed. Measured – erosion rates from field trials and or surveys on both target analogue sites (representative of final land use) and rehabilitated profiles (tonnes / ha). Measured - Survey of rehabilitated landform to verify final landform construction in accordance with Final Landform and Rehabilitation Plan. Measured - survey of rehabilitated landform to specifically monitor settlement and/or material loss via erosion. Modelled – long term erosional stability (e.g. Landform Evolution Modelling) to verify the long-term stability of rehabilitated landform. Modelled – long term geotechnical stability (e.g. stability analysis) to verify the long-term stability of rehabilitated landform.	Visual- minimal erosion that would not require moderate to significant ongoing management and maintenance works. Visual – no signs of land instability such as mass movement. Visual - no areas of active gully erosion. Visual - no evidence of tunnel erosion. Visual – no evidence of active scour likely to compromise surface water management structure. Survey verifies final landform complies with final landform construction in accordance with Final Landform and Rehabilitation Plan. Survey verifies that settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Erosion rate monitoring verifies that erosion levels are within the range of target analogue sites representative of final land use.	Before and after photos, rehabilitation monitoring reports, as constructed surveys, erosion surveys, independent geotechnical reports (where required) and or erosion modelling reports (where required) that indicate long-term stability of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, stability will need to be evaluated over a number of years.
						Significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design. High risk landforms (such as steep slopes, high walls) have been constructed in accordance with geotechnical design.	An engineering assessment undertaken by a suitably qualified person concludes that significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain B – Agricultural - Grazing (Continued)	**Domain 1** – Infrastructure Area (Continued)	B1	Landform Stability	Landform that is commensurate with surrounding natural landform and where appropriate, incorporates geomorphic design principles.	Visual - indicators of erosion and land instability. Visual - indicators that surface water management structure are functioning as designed. Measured – erosion rates from field trials and or surveys on both target analogue sites (representative of final land use) and rehabilitated profiles (tonnes / ha). Measured - Survey of rehabilitated landform to verify final landform construction in accordance with Final Landform and Rehabilitation Plan. Measured - survey of rehabilitated landform to specifically monitor settlement and/or material loss via erosion. Modelled – long term erosional stability (e.g. Landform Evolution Modelling) to verify the long-term stability of rehabilitated landform. Modelled – long term geotechnical stability (e.g. stability analysis) to verify the long-term stability of rehabilitated landform.	Visual- minimal erosion that would not require moderate to significant ongoing management and maintenance works. Visual – no signs of land instability such as mass movement. Visual - no areas of active gully erosion. Visual - no evidence of tunnel erosion. Visual – no evidence of active scour likely to compromise surface water management structure. Survey verifies final landform complies with final landform construction in accordance with Final Landform and Rehabilitation Plan. Survey verifies that settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Erosion rate monitoring verifies that erosion levels are within the range of target analogue sites representative of final land use.	Before and after photos, rehabilitation monitoring reports, as constructed surveys, erosion surveys, independent geotechnical reports (where required) and or erosion modelling reports (where required) that indicate long-term stability of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, stability will need to be evaluated over a number of years.
						Significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.	An engineering assessment undertaken by a suitably qualified person concludes that significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.
						High risk landforms (such as steep slopes, high walls) have been constructed in accordance with geotechnical design.	
		B1	Management of waste and process material	Residual waste materials stored on site (e.g. tailings, coarse rejects and other wastes) will be appropriately contained / encapsulated so it does not pose any hazards or constraints for intended final land use.	Visual –capping material placement, type across emplacement Visual – indication of capping performance on final landform – vegetation health Visual – emplacement seepage and other indicators of groundwater issues – wet spots etc. Measured - survey of emplacement capping to verify construction and to monitor settlement. Quality assurance records for the construction of the emplacement material including (where relevant) capping material, liner system, seepage control etc Measured- surface and groundwater levels to verify water balance modeling and capping function Measured – contamination levels in surface and groundwater surrounding emplacement for contaminants of concern associated with waste material emplaced.	Visual – verification that capping, type and placement consistent with design. Visual – no signs of compromised capping performance indicated by vegetation health – such as tree death (deeper root systems) Visual – no areas of unexpected seepage Survey verifies that capping placement consistent with design and settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Quality assurance records verify capping constructed and in accordance with design specifications relevant to site risks and target final land use. For example: • Capping depth • Capping material type • Capillary breaks • Seepage control.	Photos, rehabilitation monitoring reports, as- constructed surveys, quality assurance records for construction, erosion surveys, independent geotechnical reports (where required), groundwater/surface water monitoring reports. The structural integrity of the infrastructure and capping has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use and water material adequately contained.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain B – Agricultural - Grazing (Continued)	**Domain 1** – Infrastructure Area (Continued)	As above	As above	As above	As above	Groundwater and surface monitoring verify capping function e.g. 'store and release' and design performance permeability/seepage. Groundwater and surface water monitoring verify adequate containment of waste materials and seepage/leachate is not contributing to land/groundwater contamination.	As above
		B1	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.	Appropriate bushfire hazard controls (where required) have been implemented on the advice from the NSW Rural Fire Service.	Bushfire controls implemented.	Statement provided and before/after photos
		B1	Water Quality	Runoff water quality from mine site is similar to, or better than the pre-disturbance runoff water quality.	Water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 and or EPL (further guidance available on the NSW EPA website).	Water quality discharged from rehabilitated mining operation meet specifications in EPL and or ANZECC guidelines for specific environment.	Water quality monitoring reports. EPL relinquished by EPA. Independent hydrological assessment report. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.
		B1	Water Approvals	Water Approvals Structures that take or divert water hold sufficient licence shares to account for water take (where necessary).	Final landform considers advice from relevant Government Agency whether sufficient licence shares are available in the water source to account for water stored in voids and dams in the proposed final landform	Water approvals / licences are granted by relevant NSW Government Agency	Confirmation from relevant Government Agency that relevant water approvals / licences are able to be granted.
					Indicators as specified by Australian River Assessment System (AUSRIVAS).	Assessment of biological health in accordance with Australian River Assessment System (AUSRIVAS).	Independent biological health assessment report. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years
		B1	Groundwater	Groundwater quality is similar to, or better than the pre-disturbance groundwater quality.	Water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 and or EPL.	Water quality discharged from rehabilitated mining operation meet specifications in EPL and or ANZECC guidelines for specific environment.	Independent hydrological assessment report, groundwater monitoring reports.
		B1	Groundwater	Impacts to groundwater regime are within range as predicted in pre-mining environmental assessment.	Groundwater quality both on and off a mining lease represent an acceptable level of change from a defined reference condition.	Groundwater levels, groundwater flow.	Water quality monitoring reports. Independent hydrological assessment report.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain B – Agricultural - Grazing (Continued)	**Domain 1** – Infrastructure Area (Continued)	B1	Agricultural revegetation	Revegetation is sustainable for the long-term and only requires maintenance that is consistent with the intended final land use.	Routine Soil Test (bulked soil cores 0-10 cm) –Includes: Total Carbon (TC), Total Nitrogen (TN), Organic Matter, TC/TN Ratio; Bray I and II Phosphorus; Colwell Phosphorus; Available cations (Calcium, Magnesium, Potassium, Ammonium, Nitrate, Phosphate, Sulfur); Available Micronutrients (Zinc, Manganese, Iron, Copper, Boron, Silicon); Exchangeable (Sodium, Potassium, Calcium, Magnesium, Hydrogen, Aluminium, Cation Exchange Capacity); pH and EC (1:5 water); Basic Colour, Basic Texture. Commodity data (e.g. stocking rates, livestock weights, crop yields, pasture composition). Resilience demonstrated by the effects of drought and fire on composition, structure and other function attributes of pasture and cropping lands.	Land and Soil Capability classification or Agricultural Land Classification criteria met. The re-established topsoil / subsoil substrate is capable of supporting the targeted pasture / cropping regime on a sustained basis. Cropping / Pasture establishment is consistent with the range of species utilised within the region. Cropping / Pasture establishment is in good health and provides adequate cover. Cropping yields from rehabilitated areas are similar to adjacent cropping land. Appropriate and reliable access to water for livestock. Appropriate animal refuge areas for livestock (e.g. wooded/treed areas) during extreme weather conditions. Resilience to drought and fire. Detail on reinstatement of Biophysical Strategic Agricultural Land (BSAL) like soils to be provided by proponent.	Rehabilitation monitoring reports, independent soil reports, environmental monitoring records, independent agronomist reports. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.
		B1	Agricultural revegetation	Land use capability is capable of supporting the target agricultural land use (e.g. high intensity agriculture).	Routine Soil Test (bulked soil cores 0-10 cm) –Includes: Total Carbon (TC), Total Nitrogen (TN), Organic Matter, TC/TN Ratio; Bray I and II Phosphorus; Colwell Phosphorus; Available cations (Calcium, Magnesium, Potassium, Ammonium, Nitrate, Phosphate, Sulfur); Available Micronutrients (Zinc, Manganese, Iron, Copper, Boron, Silicon); Exchangeable (Sodium, Potassium, Calcium, Magnesium, Hydrogen, Aluminium, Cation Exchange Capacity); pH and EC (1:5 water); Basic Colour, Basic Texture. Commodity data (e.g. stocking rates, livestock weights, crop yields, pasture composition). Resilience demonstrated by the effects of drought and fire on composition, structure and other function attributes of pasture and cropping lands.	Land and Soil Capability classification or Agricultural Land Classification criteria met. The re-established topsoil / subsoil substrate is capable of supporting the targeted pasture / cropping regime on a sustained basis. Cropping / Pasture establishment is consistent with the range of species utilised within the region. Cropping / Pasture establishment is in good health and provides adequate cover. Cropping yields from rehabilitated areas are similar to adjacent cropping land. Appropriate and reliable access to water for livestock. Appropriate animal refuge areas for livestock (e.g. wooded/treed areas) during extreme weather conditions. Resilience to drought and fire. Detail on reinstatement of BSAL like soils to be provided by proponent.	Rehabilitation monitoring reports, independent soil reports, environmental monitoring records, independent agronomist reports. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain B – Agricultural - Grazing (Continued)	**Domain 1** – Infrastructure Area (Continued)	B1	Agricultural revegetation	Land use capability is capable of supporting the target agricultural land use (e.g. low intensity agriculture).	Routine Soil Test (bulked soil cores 0-10 cm) –Includes: Total Carbon (TC), Total Nitrogen (TN), Organic Matter, TC/TN Ratio; Bray I and II Phosphorus; Colwell Phosphorus; Available cations (Calcium, Magnesium, Potassium, Ammonium, Nitrate, Phosphate, Sulfur); Available Micronutrients (Zinc, Manganese, Iron, Copper, Boron, Silicon); Exchangeable (Sodium, Potassium, Calcium, Magnesium, Hydrogen, Aluminium, Cation Exchange Capacity); pH and EC (1:5 water); Basic Colour, Basic Texture. Commodity data (e.g. stocking rates, livestock weights, crop yields, pasture composition). Resilience demonstrated by the effects of drought and fire on composition, structure and other function attributes of pasture and cropping lands.	Land and Soil Capability classification or Agricultural Land Classification criteria met. The re-established topsoil / subsoil substrate is capable of supporting the targeted pasture / cropping regime on a sustained basis. Cropping / Pasture establishment is consistent with the range of species utilised within the region. Cropping / Pasture establishment is in good health and provides adequate cover. Cropping yields from rehabilitated areas are similar to adjacent cropping land. Appropriate and reliable access to water for livestock. Appropriate animal refuge areas for livestock (e.g. wooded/treed areas) during extreme weather conditions. Resilience to drought and fire. Detail on reinstatement of BSAL like soils to be provided by proponent.	Rehabilitation monitoring reports, independent soil reports, environmental monitoring records, independent agronomist reports. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.
Domain B – Agricultural - Grazing	**Domain 2** – Tailings Storage Facility	B2	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	Removal of all services (power, water, communications) that have been connected on the site as part of the operation.	All utility infrastructure removed.	Statement provided, utility service disconnection record / notification.
					Heritage obligations (e.g. development consent under *the Environmental Planning and Assessment Act 1979*, approvals under the *Heritage Act 1977*, etc.) have been met (e.g. archival recording, building retention or building demolition with footings preserved).	Permits and approval documents issued. All archival reports required are complete and submitted.	Copy of any relevant approval documentation and archival reports/records.
					Removal of all plant, equipment and associated infrastructure including processing facilities, stockpile areas, rail infrastructure and loading facilities, underground hydrocarbon storage tanks, office complex, portable offices, exploration core samples, camp facilities, storage racks, samples.	Infrastructure removed.	As-constructed final landform plan, photos, decommissioning reports etc.
					Removal of all footings or removal to a certain depth.	Footings removed and or removed to specified depths to avoid exposure pathways to subsequent final land use.	Surveyed and marked on the as-constructed final landform plan.
					Removal of all water management infrastructure (including pumps, pipes and power).	Infrastructure removed.	Statement provided and before/after photos.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain B – Agricultural - Grazing (Continued)	**Domain 2** – Tailings Storage Facility (Continued)	As above	As above	As above	All drill cores have been removed and taken either to an authorised storage or a disposal location.	Cores removed and relocated.	Statement provided, receipt records from storage or disposal location.
					Surveying and sealing of all drill holes, boreholes and gas wells in accordance with departmental guidelines and relevant standards.	Sealing completed and verified.	Engineering report/statement, plug and abandonment log, photos, as-constructed drawings, records of fill materials and concrete plugs, filling methods etc.
		B2	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community	Potential hazards (e.g. electrical, mechanical) have been effectively isolated and secured.	Hazards isolated and secured.	Statement provided by suitably qualified engineer.
					Damage to access tracks has been repaired and stabilised.	Repairs complete.	As-constructed final landform plan, photos etc.
					Where applicable, necessary approvals are in place (e.g. development consent under the *Environmental Planning and Assessment Act 1979*) where buildings and infrastructure are to be retained as part of final land use	Permits and approval documents issued.	Copy of any relevant approvals.
					Heritage obligations (e.g. development consent under *the Environmental Planning and Assessment Act 1979*, approvals under the *Heritage Act 1977*, etc.) have been met (e.g. archival recording, building retention and restoration).	Permits and approval documents issued. All archival reports required are complete and submitted.	Copy of any relevant approval documentation and archival reports/records.
					The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.
					Infrastructure is in a condition (e.g. structural, electrical, other hazards) that is suitable for the intended final land use.	Formal acceptance from the subsequent landowner that infrastructure is in a condition that is suitable for the intended final land use in accordance with formal agreement.	Formal acceptance from landowner.
		B2	Retention of infrastructure	All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc).	Potential hazards (e.g. electrical, mechanical) have been effectively isolated and secured.	Hazards isolated and secured.	Statement provided by suitably qualified engineer.
					Damage to access tracks has been repaired and stabilised.	Repairs complete.	As-constructed final landform plan, photos etc.
					Where applicable, necessary approvals are in place (e.g. development consent under the *Environmental Planning and Assessment Act 1979*) where buildings and infrastructure are to be retained as part of final land use	Permits and approval documents issued.	Copy of any relevant approvals.
					Heritage obligations (e.g. development consent under *the Environmental Planning and Assessment Act 1979*, approvals under the *Heritage Act 1977*, etc.) have been met (e.g. archival recording, building retention and restoration).	Permits and approval documents issued. All archival reports required are complete and submitted.	Copy of any relevant approval documentation and archival reports/records.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain B – Agricultural - Grazing (Continued)	**Domain 2** – Tailings Storage Facility (Continued)	As above	As above	As above	The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.
					Infrastructure is in a condition (e.g. structural, electrical, other hazards) that is suitable for the intended final land use.	Formal acceptance from the subsequent landowner that infrastructure is in a condition that is suitable for the intended final land use in accordance with formal agreement.	Formal acceptance from landowner.
		B2	Land and water contamination	There is no residual soil contamination on site that is incompatible with the final land use or that poses a threat of environmental harm.	Waste material and/or visible contamination areas on site surface.	There are no visible signs of contamination following the removal of plant, equipment and materials	Statement provided and before/after photos.
						All rubbish/ waste materials removed from site.	
					Soil testing for contaminants of concern as listed by Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999) applicable to land use type.	Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999).	Contamination Remediation Report prepared by Land Contamination Consultant. Site Contamination Audit Report and Site Audit Statement prepared by EPA Accredited Auditor (where required).
		B2	Landform Stability	The final landform is stable for the long-term and does not present a risk of environmental harm downstream/downslope of the site or a safety risk to the public/stock/native fauna.	Visual - indicators of erosion and land instability. Visual - indicators that surface water management structure are functioning as designed. Measured – erosion rates from field trials and or surveys on both target analogue sites (representative of final land use) and rehabilitated profiles (tonnes / ha). Measured - Survey of rehabilitated landform to verify final landform construction in accordance with Final Landform and Rehabilitation Plan. Measured - survey of rehabilitated landform to specifically monitor settlement and/or material loss via erosion. Modelled – long term erosional stability (e.g. Landform Evolution Modelling) to verify the long-term stability of rehabilitated landform. Modelled – long term geotechnical stability (e.g. stability analysis) to verify the long-term stability of rehabilitated landform.	Visual- minimal erosion that would not require moderate to significant ongoing management and maintenance works. Visual – no signs of land instability such as mass movement. Visual - no areas of active gully erosion. Visual - no evidence of tunnel erosion. Visual – no evidence of active scour likely to compromise surface water management structure. Survey verifies final landform complies with final landform construction in accordance with Final Landform and Rehabilitation Plan. Survey verifies that settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Erosion rate monitoring verifies that erosion levels are within the range of target analogue sites representative of final land use.	Before and after photos, rehabilitation monitoring reports, as constructed surveys, erosion surveys, independent geotechnical reports (where required) and or erosion modelling reports (where required) that indicate long-term stability of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, stability will need to be evaluated over a number of years.
						Significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.	An engineering assessment undertaken by a suitably qualified person concludes that significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.
						High risk landforms (such as steep slopes, high walls) have been constructed in accordance with geotechnical design.	

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain B – Agricultural - Grazing (Continued)	**Domain 2** – Tailings Storage Facility (Continued)	B2	Landform Stability	Landform that is commensurate with surrounding natural landform and where appropriate, incorporates geomorphic design principles.	Visual - indicators of erosion and land instability. Visual - indicators that surface water management structure are functioning as designed. Measured – erosion rates from field trials and or surveys on both target analogue sites (representative of final land use) and rehabilitated profiles (tonnes / ha). Measured - Survey of rehabilitated landform to verify final landform construction in accordance with Final Landform and Rehabilitation Plan. Measured - survey of rehabilitated landform to specifically monitor settlement and/or material loss via erosion. Modelled – long term erosional stability (e.g. Landform Evolution Modelling) to verify the long-term stability of rehabilitated landform. Modelled – long term geotechnical stability (e.g. stability analysis) to verify the long-term stability of rehabilitated landform.	Visual- minimal erosion that would not require moderate to significant ongoing management and maintenance works. Visual – no signs of land instability such as mass movement. Visual - no areas of active gully erosion. Visual - no evidence of tunnel erosion. Visual – no evidence of active scour likely to compromise surface water management structure. Survey verifies final landform complies with final landform construction in accordance with Final Landform and Rehabilitation Plan. Survey verifies that settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Erosion rate monitoring verifies that erosion levels are within the range of target analogue sites representative of final land use.	Before and after photos, rehabilitation monitoring reports, as constructed surveys, erosion surveys, independent geotechnical reports (where required) and or erosion modelling reports (where required) that indicate long-term stability of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, stability will need to be evaluated over a number of years.
						Significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.	An engineering assessment undertaken by a suitably qualified person concludes that significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.
						High risk landforms (such as steep slopes, high walls) have been constructed in accordance with geotechnical design.	
		B2	Management of waste and process material	Residual waste materials stored on site (e.g. tailings, coarse rejects and other wastes) will be appropriately contained / encapsulated so it does not pose any hazards or constraints for intended final land use.	Visual –capping material placement, type across emplacement Visual – indication of capping performance on final landform – vegetation health Visual – emplacement seepage and other indicators of groundwater issues – wet spots etc. Measured - survey of emplacement capping to verify construction and to monitor settlement. Quality assurance records for the construction of the emplacement material including (where relevant) capping material, liner system, seepage control etc Measured- surface and groundwater levels to verify water balance modeling and capping function Measured – contamination levels in surface and groundwater surrounding emplacement for contaminants of concern associated with waste material emplaced.	Visual – verification that capping, type and placement consistent with design. Visual – no signs of compromised capping performance indicated by vegetation health – such as tree death (deeper root systems) Visual – no areas of unexpected seepage Survey verifies that capping placement consistent with design and settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Quality assurance records verify capping constructed and in accordance with design specifications relevant to site risks and target final land use. For example: • Capping depth • Capping material type • Capillary breaks • Seepage control.	Photos, rehabilitation monitoring reports, as- constructed surveys, quality assurance records for construction, erosion surveys, independent geotechnical reports (where required), groundwater/surface water monitoring reports. The structural integrity of the infrastructure and capping has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use and water material adequately contained.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain B – Agricultural - Grazing (Continued)	**Domain 2** – Tailings Storage Facility (Continued)	As above	As above	As above	As above	Groundwater and surface monitoring verify capping function e.g. 'store and release' and design performance permeability/seepage. Groundwater and surface water monitoring verify adequate containment of waste materials and seepage/leachate is not contributing to land/groundwater contamination.	As above
		B2	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.	Appropriate bushfire hazard controls (where required) have been implemented on the advice from the NSW Rural Fire Service.	Bushfire controls implemented.	Statement provided and before/after photos
		B2	Water Quality	Runoff water quality from mine site is similar to, or better than the pre-disturbance runoff water quality.	Water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 and or EPL (further guidance available on the NSW EPA website).	Water quality discharged from rehabilitated mining operation meet specifications in EPL and or ANZECC guidelines for specific environment.	Water quality monitoring reports. EPL relinquished by EPA. Independent hydrological assessment report. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.
		B2	Water Approvals	Water Approvals Structures that take or divert water hold sufficient licence shares to account for water take (where necessary).	Final landform considers advice from relevant Government Agency whether sufficient licence shares are available in the water source to account for water stored in voids and dams in the proposed final landform	Water approvals / licences are granted by relevant NSW Government Agency	Confirmation from relevant Government Agency that relevant water approvals / licences are able to be granted.
					Indicators as specified by Australian River Assessment System (AUSRIVAS).	Assessment of biological health in accordance with Australian River Assessment System (AUSRIVAS).	Independent biological health assessment report. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years
		B2	Groundwater	Groundwater quality is similar to, or better than the pre-disturbance groundwater quality.	Water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 and or EPL.	Water quality discharged from rehabilitated mining operation meet specifications in EPL and or ANZECC guidelines for specific environment.	Independent hydrological assessment report, groundwater monitoring reports.
		B2	Groundwater	Impacts to groundwater regime are within range as predicted in pre-mining environmental assessment.	Groundwater quality both on and off a mining lease represent an acceptable level of change from a defined reference condition.	Groundwater levels, groundwater flow.	Water quality monitoring reports. Independent hydrological assessment report.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain B – Agricultural - Grazing (Continued)	**Domain 2** – Tailings Storage Facility (Continued)	B2	Agricultural revegetation	Revegetation is sustainable for the long-term and only requires maintenance that is consistent with the intended final land use.	Routine Soil Test (bulked soil cores 0-10 cm) –Includes: Total Carbon (TC), Total Nitrogen (TN), Organic Matter, TC/TN Ratio; Bray I and II Phosphorus; Colwell Phosphorus; Available cations (Calcium, Magnesium, Potassium, Ammonium, Nitrate, Phosphate, Sulfur); Available Micronutrients (Zinc, Manganese, Iron, Copper, Boron, Silicon); Exchangeable (Sodium, Potassium, Calcium, Magnesium, Hydrogen, Aluminium, Cation Exchange Capacity); pH and EC (1:5 water); Basic Colour, Basic Texture. Commodity data (e.g. stocking rates, livestock weights, crop yields, pasture composition). Resilience demonstrated by the effects of drought and fire on composition, structure and other function attributes of pasture and cropping lands.	Land and Soil Capability classification or Agricultural Land Classification criteria met. The re-established topsoil / subsoil substrate is capable of supporting the targeted pasture / cropping regime on a sustained basis. Cropping / Pasture establishment is consistent with the range of species utilised within the region. Cropping / Pasture establishment is in good health and provides adequate cover. Cropping yields from rehabilitated areas are similar to adjacent cropping land. Appropriate and reliable access to water for livestock. Appropriate animal refuge areas for livestock (e.g. wooded/treed areas) during extreme weather conditions. Resilience to drought and fire. Detail on reinstatement of Biophysical Strategic Agricultural Land (BSAL) like soils to be provided by proponent.	Rehabilitation monitoring reports, independent soil reports, environmental monitoring records, independent agronomist reports. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.
		B2	Agricultural revegetation	Land use capability is capable of supporting the target agricultural land use (e.g. high intensity agriculture).	Routine Soil Test (bulked soil cores 0-10 cm) –Includes: Total Carbon (TC), Total Nitrogen (TN), Organic Matter, TC/TN Ratio; Bray I and II Phosphorus; Colwell Phosphorus; Available cations (Calcium, Magnesium, Potassium, Ammonium, Nitrate, Phosphate, Sulfur); Available Micronutrients (Zinc, Manganese, Iron, Copper, Boron, Silicon); Exchangeable (Sodium, Potassium, Calcium, Magnesium, Hydrogen, Aluminium, Cation Exchange Capacity); pH and EC (1:5 water); Basic Colour, Basic Texture. Commodity data (e.g. stocking rates, livestock weights, crop yields, pasture composition). Resilience demonstrated by the effects of drought and fire on composition, structure and other function attributes of pasture and cropping lands.	Land and Soil Capability classification or Agricultural Land Classification criteria met. The re-established topsoil / subsoil substrate is capable of supporting the targeted pasture / cropping regime on a sustained basis. Cropping / Pasture establishment is consistent with the range of species utilised within the region. Cropping / Pasture establishment is in good health and provides adequate cover. Cropping yields from rehabilitated areas are similar to adjacent cropping land. Appropriate and reliable access to water for livestock. Appropriate animal refuge areas for livestock (e.g. wooded/treed areas) during extreme weather conditions. Resilience to drought and fire. Detail on reinstatement of BSAL like soils to be provided by proponent.	Rehabilitation monitoring reports, independent soil reports, environmental monitoring records, independent agronomist reports. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain B – Agricultural - Grazing (Continued)	**Domain 2** – Tailings Storage Facility (Continued)	B2	Agricultural revegetation	Land use capability is capable of supporting the target agricultural land use (e.g. low intensity agriculture).	Routine Soil Test (bulked soil cores 0-10 cm) –Includes: Total Carbon (TC), Total Nitrogen (TN), Organic Matter, TC/TN Ratio; Bray I and II Phosphorus; Colwell Phosphorus; Available cations (Calcium, Magnesium, Potassium, Ammonium, Nitrate, Phosphate, Sulfur); Available Micronutrients (Zinc, Manganese, Iron, Copper, Boron, Silicon); Exchangeable (Sodium, Potassium, Calcium, Magnesium, Hydrogen, Aluminium, Cation Exchange Capacity); pH and EC (1:5 water); Basic Colour, Basic Texture. Commodity data (e.g. stocking rates, livestock weights, crop yields, pasture composition). Resilience demonstrated by the effects of drought and fire on composition, structure and other function attributes of pasture and cropping lands.	Land and Soil Capability classification or Agricultural Land Classification criteria met. The re-established topsoil / subsoil substrate is capable of supporting the targeted pasture / cropping regime on a sustained basis. Cropping / Pasture establishment is consistent with the range of species utilised within the region. Cropping / Pasture establishment is in good health and provides adequate cover. Cropping yields from rehabilitated areas are similar to adjacent cropping land. Appropriate and reliable access to water for livestock. Appropriate animal refuge areas for livestock (e.g. wooded/treed areas) during extreme weather conditions. Resilience to drought and fire. Detail on reinstatement of BSAL like soils to be provided by proponent.	Rehabilitation monitoring reports, independent soil reports, environmental monitoring records, independent agronomist reports. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.
Domain B – Agricultural - Grazing	**Domain 3** – Water Management Area	B3	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	Removal of all services (power, water, communications) that have been connected on the site as part of the operation.	All utility infrastructure removed.	Statement provided, utility service disconnection record / notification.
					Heritage obligations (e.g. development consent under *the Environmental Planning and Assessment Act 1979*, approvals under the *Heritage Act 1977*, etc.) have been met (e.g. archival recording, building retention or building demolition with footings preserved).	Permits and approval documents issued. All archival reports required are complete and submitted.	Copy of any relevant approval documentation and archival reports/records.
					Removal of all plant, equipment and associated infrastructure including processing facilities, stockpile areas, rail infrastructure and loading facilities, underground hydrocarbon storage tanks, office complex, portable offices, exploration core samples, camp facilities, storage racks, samples.	Infrastructure removed.	As-constructed final landform plan, photos, decommissioning reports etc.
					Removal of all footings or removal to a certain depth.	Footings removed and or removed to specified depths to avoid exposure pathways to subsequent final land use.	Surveyed and marked on the as-constructed final landform plan.
					Removal of all water management infrastructure (including pumps, pipes and power).	Infrastructure removed.	Statement provided and before/after photos.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain B – Agricultural - Grazing (Continued)	**Domain 3** – Water Management Area (Continued)	As above	As above	As above	All drill cores have been removed and taken either to an authorised storage or a disposal location.	Cores removed and relocated.	Statement provided, receipt records from storage or disposal location.
					Surveying and sealing of all drill holes, boreholes and gas wells in accordance with departmental guidelines and relevant standards.	Sealing completed and verified.	Engineering report/statement, plug and abandonment log, photos, as-constructed drawings, records of fill materials and concrete plugs, filling methods etc.
		B3	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community	Potential hazards (e.g. electrical, mechanical) have been effectively isolated and secured.	Hazards isolated and secured.	Statement provided by suitably qualified engineer.
					Damage to access tracks has been repaired and stabilised.	Repairs complete.	As-constructed final landform plan, photos etc.
					Where applicable, necessary approvals are in place (e.g. development consent under the *Environmental Planning and Assessment Act 1979*) where buildings and infrastructure are to be retained as part of final land use	Permits and approval documents issued.	Copy of any relevant approvals.
					Heritage obligations (e.g. development consent under *the Environmental Planning and Assessment Act 1979*, approvals under the *Heritage Act 1977*, etc.) have been met (e.g. archival recording, building retention and restoration).	Permits and approval documents issued. All archival reports required are complete and submitted.	Copy of any relevant approval documentation and archival reports/records.
					The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.
					Infrastructure is in a condition (e.g. structural, electrical, other hazards) that is suitable for the intended final land use.	Formal acceptance from the subsequent landowner that infrastructure is in a condition that is suitable for the intended final land use in accordance with formal agreement.	Formal acceptance from landowner.
		B3	Retention of infrastructure	All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc).	Potential hazards (e.g. electrical, mechanical) have been effectively isolated and secured.	Hazards isolated and secured.	Statement provided by suitably qualified engineer.
					Damage to access tracks has been repaired and stabilised.	Repairs complete.	As-constructed final landform plan, photos etc.
					Where applicable, necessary approvals are in place (e.g. development consent under the *Environmental Planning and Assessment Act 1979*) where buildings and infrastructure are to be retained as part of final land use	Permits and approval documents issued.	Copy of any relevant approvals.
					Heritage obligations (e.g. development consent under *the Environmental Planning and Assessment Act 1979*, approvals under the *Heritage Act 1977*, etc.) have been met (e.g. archival recording, building retention and restoration).	Permits and approval documents issued. All archival reports required are complete and submitted.	Copy of any relevant approval documentation and archival reports/records.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain B – Agricultural - Grazing (Continued)	**Domain 3** – Water Management Area (Continued)	As above	As above	As above	The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.
					Infrastructure is in a condition (e.g. structural, electrical, other hazards) that is suitable for the intended final land use.	Formal acceptance from the subsequent landowner that infrastructure is in a condition that is suitable for the intended final land use in accordance with formal agreement.	Formal acceptance from landowner.
		B3	Land and water contamination	There is no residual soil contamination on site that is incompatible with the final land use or that poses a threat of environmental harm.	Waste material and/or visible contamination areas on site surface.	There are no visible signs of contamination following the removal of plant, equipment and materials	Statement provided and before/after photos.
						All rubbish/ waste materials removed from site.	
					Soil testing for contaminants of concern as listed by Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999) applicable to land use type.	Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999).	Contamination Remediation Report prepared by Land Contamination Consultant. Site Contamination Audit Report and Site Audit Statement prepared by EPA Accredited Auditor (where required).
		B3	Landform Stability	The final landform is stable for the long-term and does not present a risk of environmental harm downstream/downslope of the site or a safety risk to the public/stock/native fauna.	Visual - indicators of erosion and land instability. Visual - indicators that surface water management structure are functioning as designed. Measured – erosion rates from field trials and or surveys on both target analogue sites (representative of final land use) and rehabilitated profiles (tonnes / ha). Measured - Survey of rehabilitated landform to verify final landform construction in accordance with Final Landform and Rehabilitation Plan. Measured - survey of rehabilitated landform to specifically monitor settlement and/or material loss via erosion. Modelled – long term erosional stability (e.g. Landform Evolution Modelling) to verify the long-term stability of rehabilitated landform. Modelled – long term geotechnical stability (e.g. stability analysis) to verify the long-term stability of rehabilitated landform.	Visual- minimal erosion that would not require moderate to significant ongoing management and maintenance works. Visual – no signs of land instability such as mass movement. Visual - no areas of active gully erosion. Visual - no evidence of tunnel erosion. Visual – no evidence of active scour likely to compromise surface water management structure. Survey verifies final landform complies with final landform construction in accordance with Final Landform and Rehabilitation Plan. Survey verifies that settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Erosion rate monitoring verifies that erosion levels are within the range of target analogue sites representative of final land use.	Before and after photos, rehabilitation monitoring reports, as constructed surveys, erosion surveys, independent geotechnical reports (where required) and or erosion modelling reports (where required) that indicate long-term stability of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, stability will need to be evaluated over a number of years.
						Significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.	An engineering assessment undertaken by a suitably qualified person concludes that significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.
						High risk landforms (such as steep slopes, high walls) have been constructed in accordance with geotechnical design.	

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain B – Agricultural - Grazing (Continued)	**Domain 3** – Water Management Area (Continued)	B3	Landform Stability	Landform that is commensurate with surrounding natural landform and where appropriate, incorporates geomorphic design principles.	Visual - indicators of erosion and land instability. Visual - indicators that surface water management structure are functioning as designed. Measured – erosion rates from field trials and or surveys on both target analogue sites (representative of final land use) and rehabilitated profiles (tonnes / ha). Measured - Survey of rehabilitated landform to verify final landform construction in accordance with Final Landform and Rehabilitation Plan. Measured - survey of rehabilitated landform to specifically monitor settlement and/or material loss via erosion. Modelled – long term erosional stability (e.g. Landform Evolution Modelling) to verify the long-term stability of rehabilitated landform. Modelled – long term geotechnical stability (e.g. stability analysis) to verify the long-term stability of rehabilitated landform.	Visual- minimal erosion that would not require moderate to significant ongoing management and maintenance works. Visual – no signs of land instability such as mass movement. Visual - no areas of active gully erosion. Visual - no evidence of tunnel erosion. Visual – no evidence of active scour likely to compromise surface water management structure. Survey verifies final landform complies with final landform construction in accordance with Final Landform and Rehabilitation Plan. Survey verifies that settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Erosion rate monitoring verifies that erosion levels are within the range of target analogue sites representative of final land use.	Before and after photos, rehabilitation monitoring reports, as constructed surveys, erosion surveys, independent geotechnical reports (where required) and or erosion modelling reports (where required) that indicate long-term stability of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, stability will need to be evaluated over a number of years.
						Significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.	An engineering assessment undertaken by a suitably qualified person concludes that significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.
						High risk landforms (such as steep slopes, high walls) have been constructed in accordance with geotechnical design.	

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain B – Agricultural - Grazing (Continued)	**Domain 3** – Water Management Area (Continued)	B3	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.	Appropriate bushfire hazard controls (where required) have been implemented on the advice from the NSW Rural Fire Service.	Bushfire controls implemented.	Statement provided and before/after photos
		B3	Water Quality	Runoff water quality from mine site is similar to, or better than the pre-disturbance runoff water quality.	Water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 and or EPL (further guidance available on the NSW EPA website).	Water quality discharged from rehabilitated mining operation meet specifications in EPL and or ANZECC guidelines for specific environment.	Water quality monitoring reports. EPL relinquished by EPA. Independent hydrological assessment report. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.
		B3	Water Approvals	Water Approvals Structures that take or divert water hold sufficient licence shares to account for water take (where necessary).	Final landform considers advice from relevant Government Agency whether sufficient licence shares are available in the water source to account for water stored in voids and dams in the proposed final landform	Water approvals / licences are granted by relevant NSW Government Agency	Confirmation from relevant Government Agency that relevant water approvals / licences are able to be granted.
					Indicators as specified by Australian River Assessment System (AUSRIVAS).	Assessment of biological health in accordance with Australian River Assessment System (AUSRIVAS).	Independent biological health assessment report. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years
		B3	Groundwater	Groundwater quality is similar to, or better than the pre-disturbance groundwater quality.	Water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 and or EPL.	Water quality discharged from rehabilitated mining operation meet specifications in EPL and or ANZECC guidelines for specific environment.	Independent hydrological assessment report, groundwater monitoring reports.
		B3	Groundwater	Impacts to groundwater regime are within range as predicted in pre-mining environmental assessment.	Groundwater quality both on and off a mining lease represent an acceptable level of change from a defined reference condition.	Groundwater levels, groundwater flow.	Water quality monitoring reports. Independent hydrological assessment report.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain B – Agricultural - Grazing (Continued)	**Domain 3** – Water Management Area (Continued)	B3	Agricultural revegetation	Revegetation is sustainable for the long-term and only requires maintenance that is consistent with the intended final land use.	Routine Soil Test (bulked soil cores 0-10 cm) –Includes: Total Carbon (TC), Total Nitrogen (TN), Organic Matter, TC/TN Ratio; Bray I and II Phosphorus; Colwell Phosphorus; Available cations (Calcium, Magnesium, Potassium, Ammonium, Nitrate, Phosphate, Sulfur); Available Micronutrients (Zinc, Manganese, Iron, Copper, Boron, Silicon); Exchangeable (Sodium, Potassium, Calcium, Magnesium, Hydrogen, Aluminium, Cation Exchange Capacity); pH and EC (1:5 water); Basic Colour, Basic Texture. Commodity data (e.g. stocking rates, livestock weights, crop yields, pasture composition). Resilience demonstrated by the effects of drought and fire on composition, structure and other function attributes of pasture and cropping lands.	Land and Soil Capability classification or Agricultural Land Classification criteria met. The re-established topsoil / subsoil substrate is capable of supporting the targeted pasture / cropping regime on a sustained basis. Cropping / Pasture establishment is consistent with the range of species utilised within the region. Cropping / Pasture establishment is in good health and provides adequate cover. Cropping yields from rehabilitated areas are similar to adjacent cropping land. Appropriate and reliable access to water for livestock. Appropriate animal refuge areas for livestock (e.g. wooded/treed areas) during extreme weather conditions. Resilience to drought and fire. Detail on reinstatement of Biophysical Strategic Agricultural Land (BSAL) like soils to be provided by proponent.	Rehabilitation monitoring reports, independent soil reports, environmental monitoring records, independent agronomist reports. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.
		B3	Agricultural revegetation	Land use capability is capable of supporting the target agricultural land use (e.g. high intensity agriculture).	Routine Soil Test (bulked soil cores 0-10 cm) –Includes: Total Carbon (TC), Total Nitrogen (TN), Organic Matter, TC/TN Ratio; Bray I and II Phosphorus; Colwell Phosphorus; Available cations (Calcium, Magnesium, Potassium, Ammonium, Nitrate, Phosphate, Sulfur); Available Micronutrients (Zinc, Manganese, Iron, Copper, Boron, Silicon); Exchangeable (Sodium, Potassium, Calcium, Magnesium, Hydrogen, Aluminium, Cation Exchange Capacity); pH and EC (1:5 water); Basic Colour, Basic Texture. Commodity data (e.g. stocking rates, livestock weights, crop yields, pasture composition). Resilience demonstrated by the effects of drought and fire on composition, structure and other function attributes of pasture and cropping lands.	Land and Soil Capability classification or Agricultural Land Classification criteria met. The re-established topsoil / subsoil substrate is capable of supporting the targeted pasture / cropping regime on a sustained basis. Cropping / Pasture establishment is consistent with the range of species utilised within the region. Cropping / Pasture establishment is in good health and provides adequate cover. Cropping yields from rehabilitated areas are similar to adjacent cropping land. Appropriate and reliable access to water for livestock. Appropriate animal refuge areas for livestock (e.g. wooded/treed areas) during extreme weather conditions. Resilience to drought and fire. Detail on reinstatement of BSAL like soils to be provided by proponent.	Rehabilitation monitoring reports, independent soil reports, environmental monitoring records, independent agronomist reports. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain B – Agricultural - Grazing (Continued)	**Domain 3** – Water Management Area (Continued)	B3	Agricultural revegetation	Land use capability is capable of supporting the target agricultural land use (e.g. low intensity agriculture).	Routine Soil Test (bulked soil cores 0-10 cm) –Includes: Total Carbon (TC), Total Nitrogen (TN), Organic Matter, TC/TN Ratio; Bray I and II Phosphorus; Colwell Phosphorus; Available cations (Calcium, Magnesium, Potassium, Ammonium, Nitrate, Phosphate, Sulfur); Available Micronutrients (Zinc, Manganese, Iron, Copper, Boron, Silicon); Exchangeable (Sodium, Potassium, Calcium, Magnesium, Hydrogen, Aluminium, Cation Exchange Capacity); pH and EC (1:5 water); Basic Colour, Basic Texture. Commodity data (e.g. stocking rates, livestock weights, crop yields, pasture composition). Resilience demonstrated by the effects of drought and fire on composition, structure and other function attributes of pasture and cropping lands.	Land and Soil Capability classification or Agricultural Land Classification criteria met. The re-established topsoil / subsoil substrate is capable of supporting the targeted pasture / cropping regime on a sustained basis. Cropping / Pasture establishment is consistent with the range of species utilised within the region. Cropping / Pasture establishment is in good health and provides adequate cover. Cropping yields from rehabilitated areas are similar to adjacent cropping land. Appropriate and reliable access to water for livestock. Appropriate animal refuge areas for livestock (e.g. wooded/treed areas) during extreme weather conditions. Resilience to drought and fire. Detail on reinstatement of BSAL like soils to be provided by proponent.	Rehabilitation monitoring reports, independent soil reports, environmental monitoring records, independent agronomist reports. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years.
Domain J – Final Void	**Domain 5** – Active Mining Area (Open Cut Void)	J5	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	Removal of all services (power, water, communications) that have been connected on the site as part of the operation.	All utility infrastructure removed.	Statement provided, utility service disconnection record / notification.
					Heritage obligations (e.g. development consent under *the Environmental Planning and Assessment Act 1979*, approvals under the *Heritage Act 1977*, etc.) have been met (e.g. archival recording, building retention or building demolition with footings preserved).	Permits and approval documents issued. All archival reports required are complete and submitted.	Copy of any relevant approval documentation and archival reports/records.
					Removal of all plant, equipment and associated infrastructure including processing facilities, stockpile areas, rail infrastructure and loading facilities, underground hydrocarbon storage tanks, office complex, portable offices, exploration core samples, camp facilities, storage racks, samples.	Infrastructure removed.	As-constructed final landform plan, photos, decommissioning reports etc.
					Removal of all footings or removal to a certain depth.	Footings removed and or removed to specified depths to avoid exposure pathways to subsequent final land use.	Surveyed and marked on the as-constructed final landform plan.
					Removal of all water management infrastructure (including pumps, pipes and power).	Infrastructure removed.	Statement provided and before/after photos.

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain J – Final Void (Continued)	**Domain 5** – Active Mining Area (Open Cut Void) (Continued)	As above	As above	As above	All drill cores have been removed and taken either to an authorised storage or a disposal location.	Cores removed and relocated.	Statement provided, receipt records from storage or disposal location.
					Surveying and sealing of all drill holes, boreholes and gas wells in accordance with departmental guidelines and relevant standards.	Sealing completed and verified.	Engineering report/statement, plug and abandonment log, photos, as-constructed drawings, records of fill materials and concrete plugs, filling methods etc.
		J5	Land and water contamination	There is no residual soil contamination on site that is incompatible with the final land use or that poses a threat of environmental harm	Waste material and/or visible contamination areas on site surface.	There are no visible signs of contamination following the removal of plant, equipment and materials	Statement provided and before/after photos.
						All rubbish/ waste materials removed from site.	
					Soil testing for contaminants of concern as listed by Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999) applicable to land use type.	Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999).	Contamination Remediation Report prepared by Land Contamination Consultant. Site Contamination Audit Report and Site Audit Statement prepared by EPA Accredited Auditor (where required).
		J5	Landform Stability	Public Safety - Final void is safe, stable and non-polluting	Visual - indicators of erosion and land instability. Visual - indicators that surface water management structure are functioning as designed. Measured – erosion rates from field trials and or surveys on both target analogue sites (representative of final land use) and rehabilitated profiles (tonnes / ha). Measured - Survey of rehabilitated landform to verify final landform construction in accordance with Final Landform and Rehabilitation Plan. Measured - survey of rehabilitated landform to specifically monitor settlement and/or material loss via erosion. Modelled – long term erosional stability (e.g. Landform Evolution Modelling) to verify the long-term stability of rehabilitated landform. Modelled – long term geotechnical stability (e.g. stability analysis) to verify the long-term stability of rehabilitated landform.	Visual- minimal erosion that would not require moderate to significant ongoing management and maintenance works. Visual – no signs of land instability such as mass movement. Visual - no areas of active gully erosion. Visual - no evidence of tunnel erosion. Visual – no evidence of active scour likely to compromise surface water management structure. Survey verifies final landform complies with final landform construction in accordance with Final Landform and Rehabilitation Plan. Survey verifies that settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Erosion rate monitoring verifies that erosion levels are within the range of target analogue sites representative of final land use.	Before and after photos, rehabilitation monitoring reports, as constructed surveys, erosion surveys, independent geotechnical reports (where required) and or erosion modelling reports (where required) that indicate long-term stability of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, stability will need to be evaluated over a number of years.
						Significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.	An engineering assessment undertaken by a suitably qualified person concludes that significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design.
						High risk landforms (such as steep slopes, high walls) have been constructed in accordance with geotechnical design.	

Table 4-1 (Continued)
Approved Rehabilitation Objectives and Proposed Completion Criteria

Final Land Use Domain	Mining Domain	Spatial Reference Field	Rehabilitation Objective Category	Rehabilitation Objective	Indicator[1]	Rehabilitation Completion Criteria[1]	Justification or Validation Method[1]
Domain J – Final Void (Continued)	**Domain 5** – Active Mining Area (Open Cut Void) (Continued)	J5	Groundwater	Groundwater quality is similar to, or better than the pre-disturbance groundwater quality.	Water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 and or EPL.	Water quality discharged from rehabilitated mining operation meet specifications in EPL and or ANZECC guidelines for specific environment.	Independent hydrological assessment report, groundwater monitoring reports.
		J5	Groundwater	Impacts to groundwater regime are within range as predicted in pre-mining environmental assessment.	Groundwater quality both on and off a mining lease represent an acceptable level of change from a defined reference condition.	Groundwater levels, groundwater flow.	Water quality monitoring reports. Independent hydrological assessment report.
		J5	Groundwater	Designed as long-term groundwater sinks to maximise ground water flows across back filled pits to the final void	Groundwater modelling and monitoring.	Modelling and monitoring indicates that final landform and void design is a groundwater sink.	Groundwater modelling and monitoring results.
		J5	Water Approvals	Water Approvals Structures that take or divert water hold sufficient licence shares to account for water take (where necessary).	Final landform considers advice from relevant Government Agency whether sufficient licence shares are available in the water source to account for water stored in voids and dams in the proposed final landform	Water approvals / licences are granted by relevant NSW Government Agency	Confirmation from relevant Government Agency that relevant water approvals / licences are able to be granted.
					Indicators as specified by Australian River Assessment System (AUSRIVAS).	Assessment of biological health in accordance with Australian River Assessment System (AUSRIVAS).	Independent biological health assessment report. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years

[1] In accordance with the *Form and Way: Rehabilitation Management Plan for Large Mines* (NSW Resources Regulator, 2024), this column includes example completion criteria described in the *Guideline: Rehabilitation Objectives and Rehabilitation Completion Criteria* (NSW Resources Regulator, 2023) and does not necessarily reflect MACH Energy's rehabilitation benchmark values or validation methodologies to demonstrate rehabilitation completion. In accordance with *Guideline: Rehabilitation Objectives and Rehabilitation Completion Criteria* (NSW Resources Regulator, 2023), MACH Energy will submit a Rehabilitation Completion Criteria Statement for approval by the NSW Resources Regulator no later than 3 years before rehabilitation of the whole (or an identified part) of the MPO is proposed to be completed.

4.2 REHABILITATION OBJECTIVES AND REHABILITATION COMPLETION CRITERIA – STAKEHOLDER CONSULTATION

Relevant to rehabilitation, key stakeholders were consulted during the preparation of the MPO EIS and subsequent Modifications to Development Consent DA 92/97 and during the preparation of the Project EIS and the assessment process for Development Consent SSD 10418. Significant consultation in regard to rehabilitation was undertaken as part of MODs 3 and 4 which has informed the concepts in this RMP, in particular the design and rehabilitation concepts for the Eastern Out of Pit Overburden Emplacement. The outcomes of commitments made by MACH Energy as a result of this consultation are reflected in the modified Development Consent DA 92/97 approved on 16 November 2018 and are also reflected in the rehabilitation concepts for the MPO final landforms described in Section 5.

As required by Condition 56, Schedule 3 of the Development Consent DA 92/97, MACH Energy consulted with DPIE (now DPHI), DPIE-Water (now Department of Climate Change, Energy, the Environment and Water – Water Group [DCCEEW – Water), the Biodiversity and Conservation Diversion (BCD), the Department of Primary Industries (DPI) – Agriculture and the MSC during the preparation of the previous MPO MOP/RMP (1 July 2021 – 30 June 2023).

The consultation undertaken during the preparation of all previous MPO MOPs/RMPs, including the most recent MOP/RMP (1 July 2021 – 30 June 2023) is considered relevant to the preparation of this RMP and the Rehabilitation Objectives and Completion Criteria described in Section 4.1 as the overarching final land use, rehabilitation procedures, monitoring and completion criteria are generally consistent with those presented in the approved MOP/RMP (1 July 2021 – 30 June 2023).

Additionally, the landform design and post-mining land use approved under Development Consent SSD 10418 has been informed by extensive consultation with the NSW Resources Regulator, MSC, the Community Consultative Committee (CCC) and DPIE (now DPHI).

As described in Section 4.1, the NSW Resources Regulator has approved the MPO Rehabilitation Objectives Statement. This RMP has been amended to align with the approved MPO Rehabilitation Objective Statements (Table 4-1) in accordance with clause 11, Schedule 8A of the *Mining Regulation 2016*. Following submission of the rehabilitation completion criteria, this RMP will be further amended to substitute the proposed version (Table 4-1) with the version approved by the NSW Resources Regulator. A summary of the consultation recently completed at MPO relevant to rehabilitation is provided in Table 4-2.

Table 4-2
Stakeholder Consultation for Rehabilitation

Stakeholder	Consultation Activity/Outcome
CCC	The CCC has been provided with an opportunity to comment on the various Modifications submitted for the MPO and the Project EIS (MACH Energy, 2021) as part of the public exhibition process. Feedback on MPO rehabilitation concepts provided by the CCC to date has included: • Support for the use of analogue (reference/control) sites to assess rehabilitation success and concerns regarding interactions between the MPO and the Bengalla Mine. The use of analogue sites has been incorporated into the completion criteria for the MPO's rehabilitation domains (Section 4.1). Potential interaction between the MPO's rehabilitation and neighbouring land uses (including the Bengalla Mine) has been risk assessed (Section 3), and appropriate action and responses have been developed (Section 10). • A preference by members of the community for a final landform that integrates with the surrounding landscape (i.e. does not form the shape of a 'bread loaf') (Section 2.2).

Table 4-3 (Continued)
Stakeholder Consultation for Rehabilitation

Stakeholder	Consultation Activity/Outcome
MSC	***Development Consent DA 92/97*** During consultation with the MSC undertaken to date, the MSC has indicated that its key rehabilitation focus is the design of the Eastern Out of Pit Overburden Emplacement and its consistency with the surrounding landscape. The MSC has also provided comments regarding tree plantings for visual screens, final void minimisation and dust management. In accordance with the requirements of Condition 54, Schedule 3 of Development Consent DA 92/97 relevant to preparation of the MPO Rehabilitation Strategy, MACH Energy submitted the Rehabilitation Strategy to the MSC for consultation purposes. MACH Energy responded to MSC's comments on the Rehabilitation Strategy and the outcomes from this consultation have also been incorporated where relevant in this RMP. Feedback from the MSC during a meeting held on 18 April 2019, primarily concerned rehabilitation of the eastern face of the Eastern Out of Pit Overburden Emplacement and the timing associated with the MOD 4 infrastructure works. The indicative schedule for the MOD 4 infrastructure works was addressed by MACH Energy at the meeting. Sections 5 and 6 of this RMP provide details of the rehabilitation concepts for the eastern face of the Eastern Out of Pit Overburden Emplacement and the progression of rehabilitation for this landform. As required by Condition 56, Schedule 3 of the Development Consent DA 92/97, the previous MOP/RMP (1 July 2021 – 30 June 2023) was provided to the MSC for comment/review. No comments were received from the MSC in response. ***Development Consent SSD 10418*** In accordance with Part B, Condition B89 of Development Consent SSD 10418 relevant to the preparation of the MPO Rehabilitation Strategy, MACH Energy submitted the Rehabilitation Strategy to the MSC for consultation purposes. MACH Energy responded to MSC's comments on the Rehabilitation Strategy and the outcomes from this consultation have also been incorporated where relevant in this RMP.
DPE (now DPHI)	***Development Consent DA 92/97*** In accordance with Condition 56, Schedule 3 of the Development Consent DA 92/97, the previous MOP/RMP (1 July 2021 – 30 June 2023) was provided to DPIE (now DPHI) for review/comment. Review comments from DPIE were provided in May 2021 and primarily requested further information to justify the refinement to the target revegetation communities for the MPO final landform. MACH Energy responded directly to DPIE and updated the MOP/RMP where relevant to address DPIE's (now DPHI) comments. Outcomes from this consultation have been incorporated into this RMP. ***Development Consent SSD 10418*** The MPO Rehabilitation Strategy was updated to address the requirements of Development Consent SSD 10418 and submitted to DPHI in February 2025. Feedback from DPHI was received and MACH Energy submitted a revised Rehabilitation Strategy to address their comments.
NSW Resources Regulator	***Development Consent DA 92/97*** MACH Energy held discussions with the NSW Resources Regulator in January 2021 to discuss the scope and term of this previous MOP/RMP (1 July 2021 – 30 June 2023). Further discussions with the Resources Regulator regarding the previous MOP/RMP occurred during the agency's site visit on 23 February 2021. Feedback from the NSW Resources Regulator was received in June 2021. MACH Energy responded directly to the NSW Resources Regulator and revised the MOP/RMP where relevant to address their comments. Outcomes from this consultation have been incorporated into this RMP.

Table 4-3 (Continued)
Stakeholder Consultation for Rehabilitation

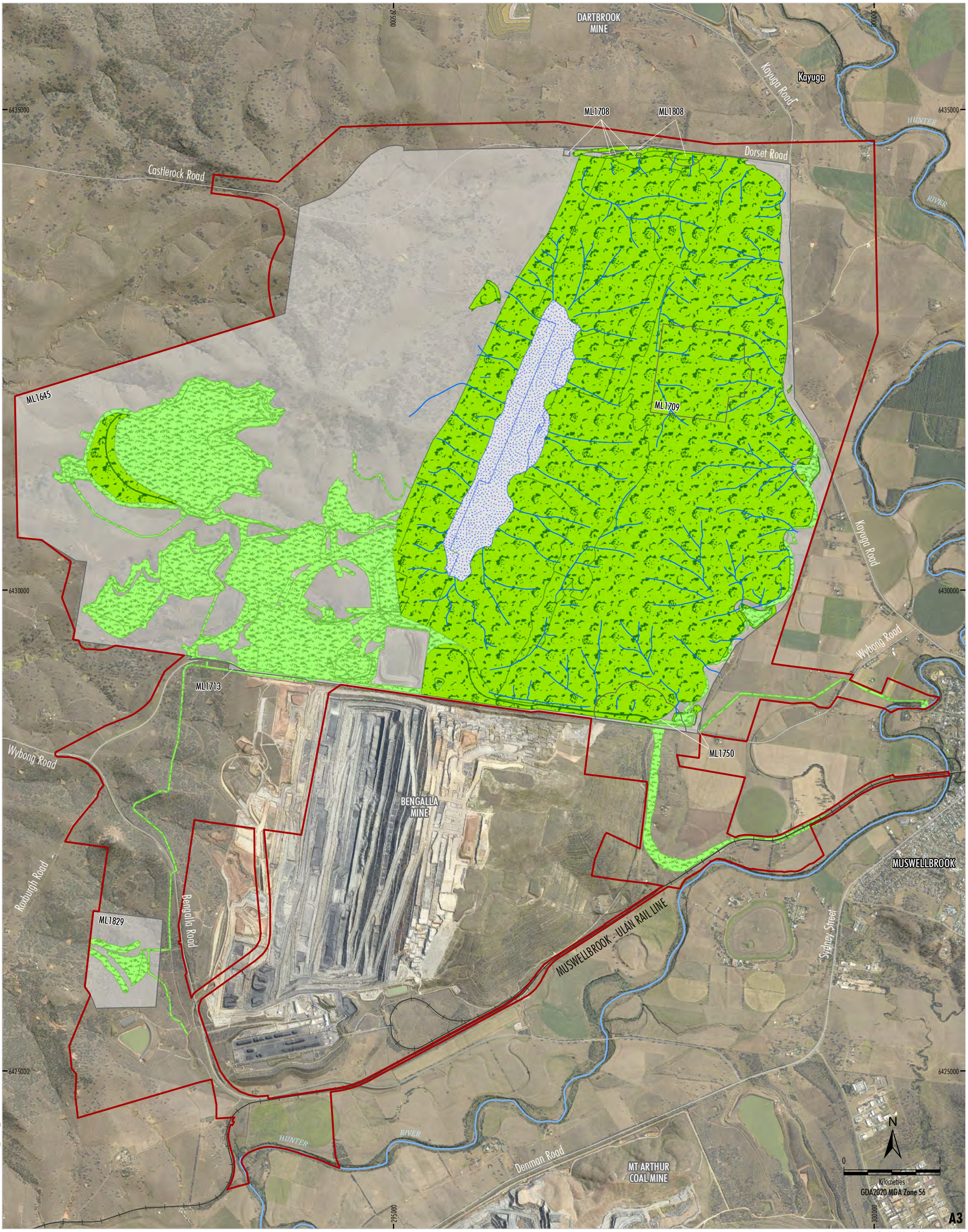
Stakeholder	Consultation Activity/Outcome
NSW Resources Regulator (continued	MACH Energy submitted the MPO Rehabilitation Objectives and Final Landform and Rehabilitation Plan on 1 August 2022 under Development Consent DA 92/97 in accordance with Schedule 8A of the *Mining Regulation 2016*. On 20 March 2023, MACH Energy received comments from the NSW Resources Regulator on the MPO Rehabilitation Objectives and Final Landform and Rehabilitation Plan under Development Consent DA 92/97. MACH Energy held a meeting on 17 April 2023 with the NSW Resources Regulator to discuss the comments received. In response to these comments, MACH Energy resubmitted the MPO Rehabilitation Objectives and Final Landform and Rehabilitation Plan under Development Consent DA 92/97 on 28 April 2023. MACH Energy received further comments from the NSW Resources Regulator on the MPO Rehabilitation Objectives and Final Landform and Rehabilitation Plan under Development Consent DA 92/97 on 31 August 2023. Subsequently, MACH Energy submitted the revised MPO Rehabilitation Objectives and Final Landform and Rehabilitation Plan under Development Consent DA 92/97 on 28 September 2023. The NSW Resources Regulator approved the MPO Rehabilitation Objectives and Final Landform and Rehabilitation Plan under Development Consent DA 92/97 on 29 September 2023.
	Development Consent SSD 10418 MACH Energy submitted the MPO Rehabilitation Objectives Statement and Final Landform and Rehabilitation Plan on 15 August in accordance with Schedule 8A of the *Mining Regulation 2016* to reflect the commencement of Development Consent SSD 10418. Following feedback from NSW Resources Regulator in November 2024 and March 2025, the MPO Rehabilitation Objectives Statement was updated by MACH Energy and approved by the NSW Resources Regulator on 29 May 2025. The Final Landform and Rehabilitation Plan was updated to align with the approved MPO Rehabilitation Objectives Statement and submitted to the NSW Resources Regulator for approval in June 2025.
DPE-Water BCD DPI-Agriculture	***Development Consent DA 92/97*** In accordance with Condition 56, Schedule 3 of the Development Consent DA 92/97, the previous MOP/RMP (1 July 2021 – 30 June 2023) was provided to DPE-Water, BCD and DPI-Agriculture for review/comment. No comments from DPE-Water, BCD and DPI-Agriculture relevant to rehabilitation were provided in response. ***Development Consent SSD 10418*** The MPO Rehabilitation Strategy was updated to address the requirements of Development Consent SSD 10418 and submitted to BCD (now CPHR) in February 2025 for consultation. Where relevant, feedback from CPHR has been addressed in this RMP.

Note: CCC = Community Consultative Committee.

5 FINAL LANDFORM AND REHABILITATION PLAN

Following the approval of the MPO Rehabilitation Objectives Statement on 29 May 2025 (Section 4), in accordance with clause 12, Schedule 8A of the *Mining Regulation 2016*, the MPO Final Landform and Rehabilitation Plan was updated to align with the approval of the MPO Rehabilitation Objectives Statement and has been submitted to the NSW Resources Regulator for approval. This RMP has been amended to incorporate the revised Final Landform and Rehabilitation Plan (i.e. Plans 1 and 2) which has been updated to align with the approved MPO Rehabilitation Objectives Statement, as approved by the NSW Resources Regulator in accordance with clause 11, Schedule 8A of the *Mining Regulation 2016*.

The MPO Final Landform and Rehabilitation Plan is provided in Plan 1 and Plan 2. These figures have been prepared in accordance with the requirements in the *Form and Way – Rehabilitation Management Plan for Large Mines* (February 2024), and an electronic copy of the spatial data has been uploaded to the Mine Rehabilitation Portal.



LEGEND

- Project Approval Boundary*
- Coal - Current Titles
- Railway
- Major River

Final Landuse Domain

- Agricultural – Grazing
- Final Void
- Native Ecosystem
- Drainage Line

* Appendix 1 of Development Consent SSD 10418

Source: MACH (2025); NSW Spatial Services (2025)
Orthophoto: MACH (Dec 2024)

Date prepared: 25-06-2025

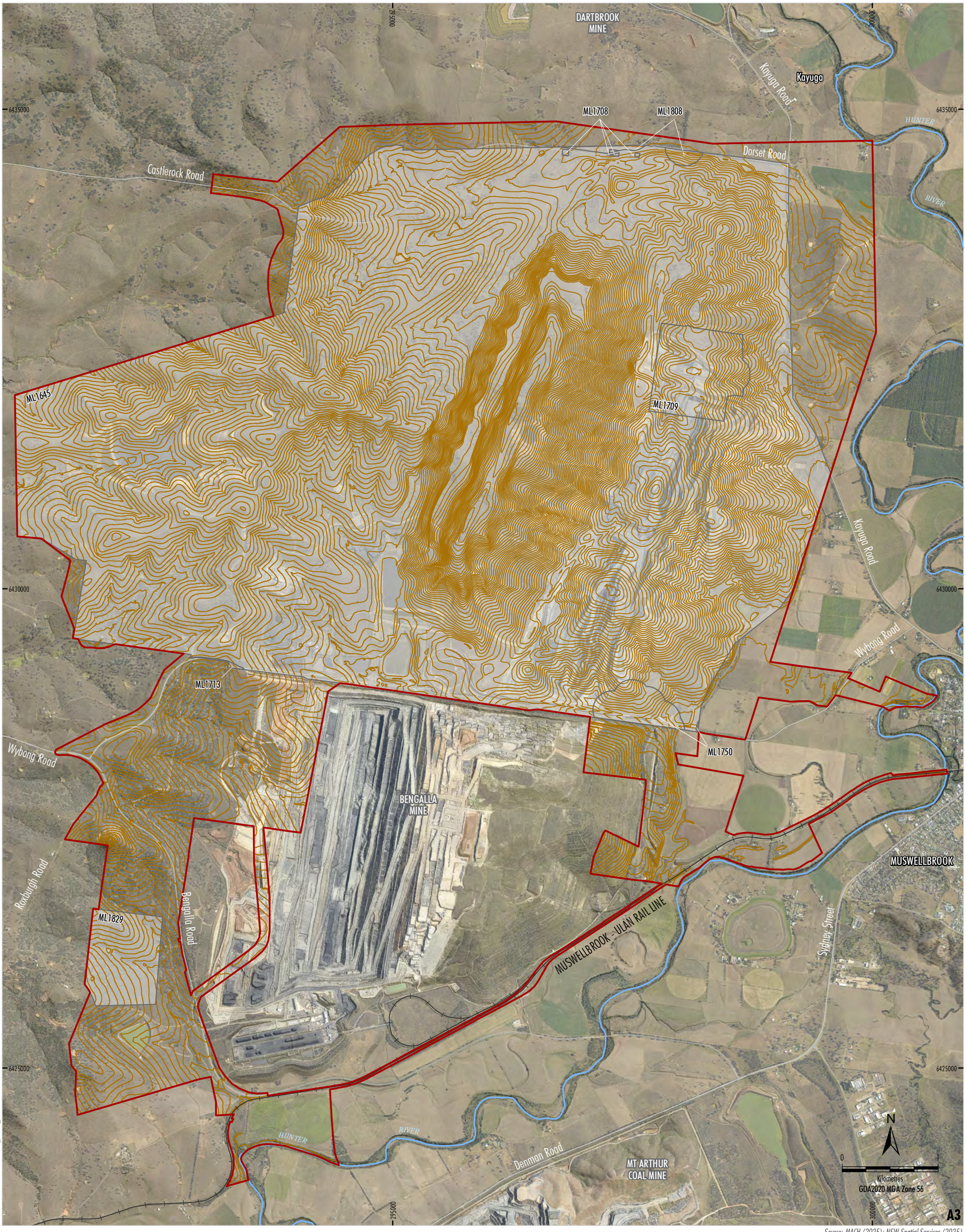
MACHEnergy

MOUNT PLEASANT COAL MINE
REHABILITATION MANAGEMENT PLAN

Final Land Use and Landform Features

Plan 1

MAC-18 -03A Rehabilitation MP 2025_ PLAN 1_ Rev A



MAC-18-03A Rehabilitation MP 2025_PLAN 2_Rev A

LEGEND

- Project Approval Boundary*
- Coal - Current Titles
- Railway
- Major River
- Final Landform Contour (5 m Interval)

* Appendix 1 of Development Consent SSD 10418

Source: MACH (2025); NSW Spatial Services (2025)
Orthophoto: MACH (Dec 2024)

Date prepared: 25-06-2025

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MOUNT PLEASANT COAL MINE
REHABILITATION MANAGEMENT PLAN

Final Landform Contours

Plan 2

6 REHABILITATION IMPLEMENTATION

6.1 LIFE OF MINE REHABILITATION SCHEDULE

Rehabilitation is undertaken progressively as soon reasonably practicable following disturbance from mining activities. Plans 3A to 3G provide the indicative progression of mining activities and rehabilitation at MPO. It is noted that mining and rehabilitation planning are also discussed in the Mount Pleasant Coal Mine Annual Rehabilitation Report and Forward Program submitted annually by 31 March via the NSW Resources Regulator portal (and available on the MACH Energy website).

MACH Energy prepares internal annual rehabilitation plans which provide a more detailed guide for how and where rehabilitation works are to be undertaken for the next year. The plans include (but are not limited to):

- **Detailed rehabilitation specifications** to be adhered to, including:
  - specifications for landform design; final landform surface profiling;
  - drainage design;
  - topsoil replacement;
  - deep ripping on the contour;
  - planting and seeding; and
  - habitat feature placement.
- **Key rehabilitation stages when Inspection Test Plan (ITP) checks must be undertaken** (note, ITP checks are quality assurance checks which are undertaken to ensure the rehabilitation specifications have been met). MACH Energy implements ITPs for Landform Design, Landform Construction Profiling, Topsoil Placement, Drainage Construction and Ripping and Seeding. Each ITP is required to be signed off by relevant MACH Energy personnel.
- A **rehabilitation schedule**, including **planned rehabilitation areas** and **species lists** and densities for target PCTs.
- Inspection, maintenance and reporting requirements.

MACH Energy's ITP process will be conducted, firstly, during the landform design phase to confirm the design model has been developed in accordance with relevant specifications and, secondly, after landform construction to verify construction has been undertaken as per design. ITPs are then conducted for the remaining steps of the rehabilitation, as mentioned above.

Upon the cessation of mining operations, tenure of MLs will be maintained by MACH Energy until such a time when lease relinquishment criteria have been met and rehabilitation is to the satisfaction of relevant regulatory authorities including the NSW Resources Regulator and the DPHI. It is anticipated that lease relinquishment criteria would include:

- Rehabilitated landforms are stable and consistent with the nominated post-mining land use which has been developed in consultation with relevant regulatory agencies and key stakeholders.
- Establishment of self-sustaining vegetation in previously cleared areas.
- All rehabilitation and mine closure completion criteria have been met.
- All ML conditions and other statutory approval conditions (including public safety considerations) have been satisfied.
- Hard-stand areas and infrastructure have been removed (unless otherwise agreed with the ultimate landholder).

As discussed in Section 2.3, in accordance with Condition 21 of EPBC Approval 2011/5795, a Mine Closure Plan for the MPO will be submitted to the DAWE (now AG DCCEEW) at least 6 months prior to the closure of the MPO.

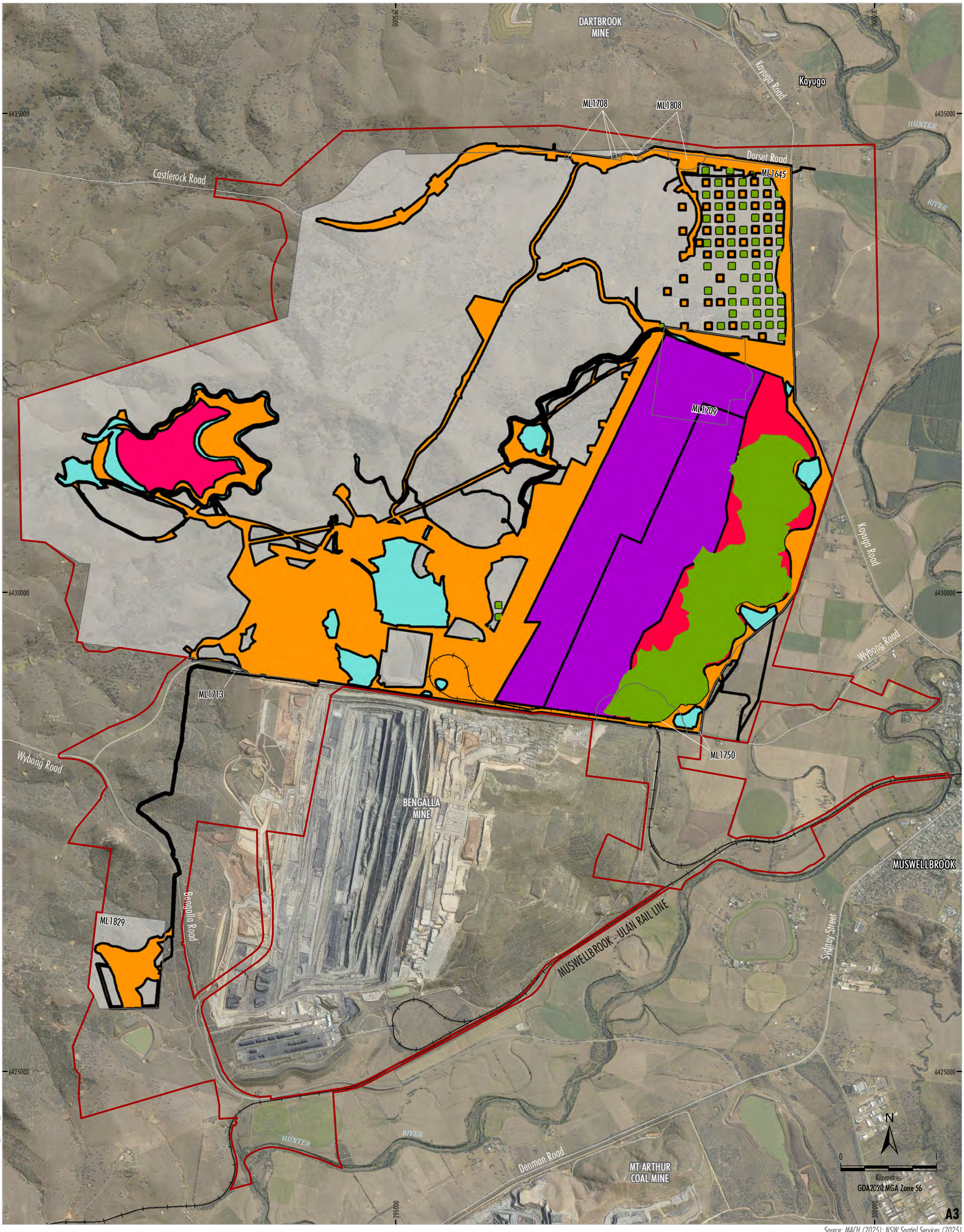
Consistent with the Project EIS (MACH Energy, 2021) and Development Consent SSD 10418, key rehabilitation assumptions and principles include:

- MACH Energy will decommission and remove all Project infrastructure unless a suitable post-mining use is identified for the infrastructure in consultation with the NSW Resources Regulator and MSC.
- The emplacement landform has been designed to look less “engineered” when viewed from Muswellbrook (i.e. incorporation of macro-relief to avoid simple blocky forms).
- Surface water drainage from the waste emplacement landform will incorporate micro-relief to increase drainage stability, avoid major engineered drop structures and limit erosion.
- The final void (and associated drainage network) will be shaped to reflect a less engineered profile that is more consistent with the surrounding natural environment.
- The final void has been designed as a long-term groundwater sink to maximise groundwater flows from the Eastern Out-of-Pit Emplacement to the final void.
- FEA will be rehabilitated at closure. MACH Energy has completed the FEA Stage 1 Rehabilitation and Closure Strategy (SLR Consulting Australia Pty Ltd [SLR], 2021) and will continue to develop and update this Strategy following each staged lift of the FEA (Section 6.2).

MACH Energy is committed to minimising the risk to the community through effective mine planning and thorough the development of effective final void design. MACH Energy has re-designed the final void to:

- backfill approximately 1.5 km of the northern part of the final void;
- reduce the depth of the final void in the North and Central Pit areas and decrease the slope of the internal batters;
- apply geomorphic design concepts to parts of the Project landform that drain to the final void; and
- push down the western highwall to an overall angle of approximately 18 degrees (°).

As a result of the above, the final void is considered safe, geotechnically stable and minimises the catchment reporting to the void whilst still maintaining geomorphic design concepts (i.e. providing sufficient slope length to improve post-mining stability and reduce long-term erosion risk) (MACH Energy, 2021). Additionally, the stable mining slopes associated with the final void highwalls would be flattened to a slope with an overall angle of about 18° or less. The factors of safety (FoS) for the rock buttress is approximately 1.5 and therefore the slopes that it supports are conserved to be in a geotechnically acceptable configuration (GeoTek Solutions, 2020).



MAC-18-03A Rehabilitation MP 2025_PLAN 3A_Rev C

LEGEND

- Project Approval Boundary*
- Coal - Current Titles

Rehabilitation Phase

- Ecosystem and Land Use Development

Mining Domain Type

- Infrastructure Area
- Overburden Emplacement Area
- Tailings Storage Facility
- Active Mining Area (Open cut void)
- Water Management Area

* Appendix 1 of Development Consent SSD 10418

Source: MACH (2025); NSW Spatial Services (2025)
Orthophoto: MACH (Dec 2024)

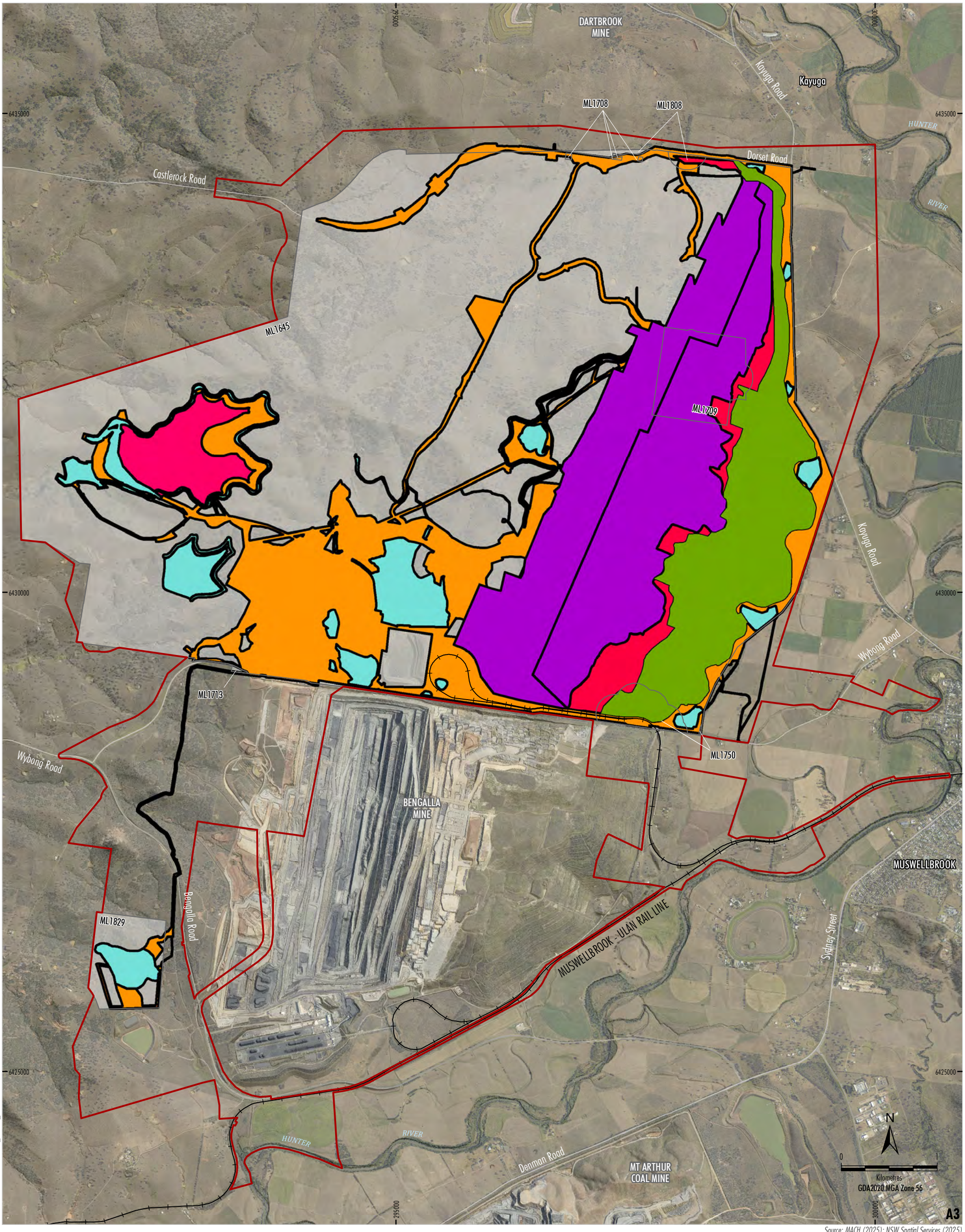
Date prepared: 25-06-2025

MACHEnergy

MOUNT PLEASANT COAL MINE
REHABILITATION MANAGEMENT PLAN

Life of Mine Rehabilitation Schedule
RMP Commencement (2025)

Plan 3A



MAC-18-03A Rehabilitation MP 2025_PLAN 3B _Rev A

LEGEND

- Project Approval Boundary*
- Coal - Current Titles

Rehabilitation Phase

- Ecosystem and Land Use Development

Mining Domain Type

- Infrastructure Area
- Overburden Emplacement Area
- Tailings Storage Facility
- Active Mining Area (Open cut void)
- Water Management Area

* Appendix 1 of Development Consent SSD 10418

Source: MACH (2025); NSW Spatial Services (2025)
Orthophoto: MACH (Dec 2024)

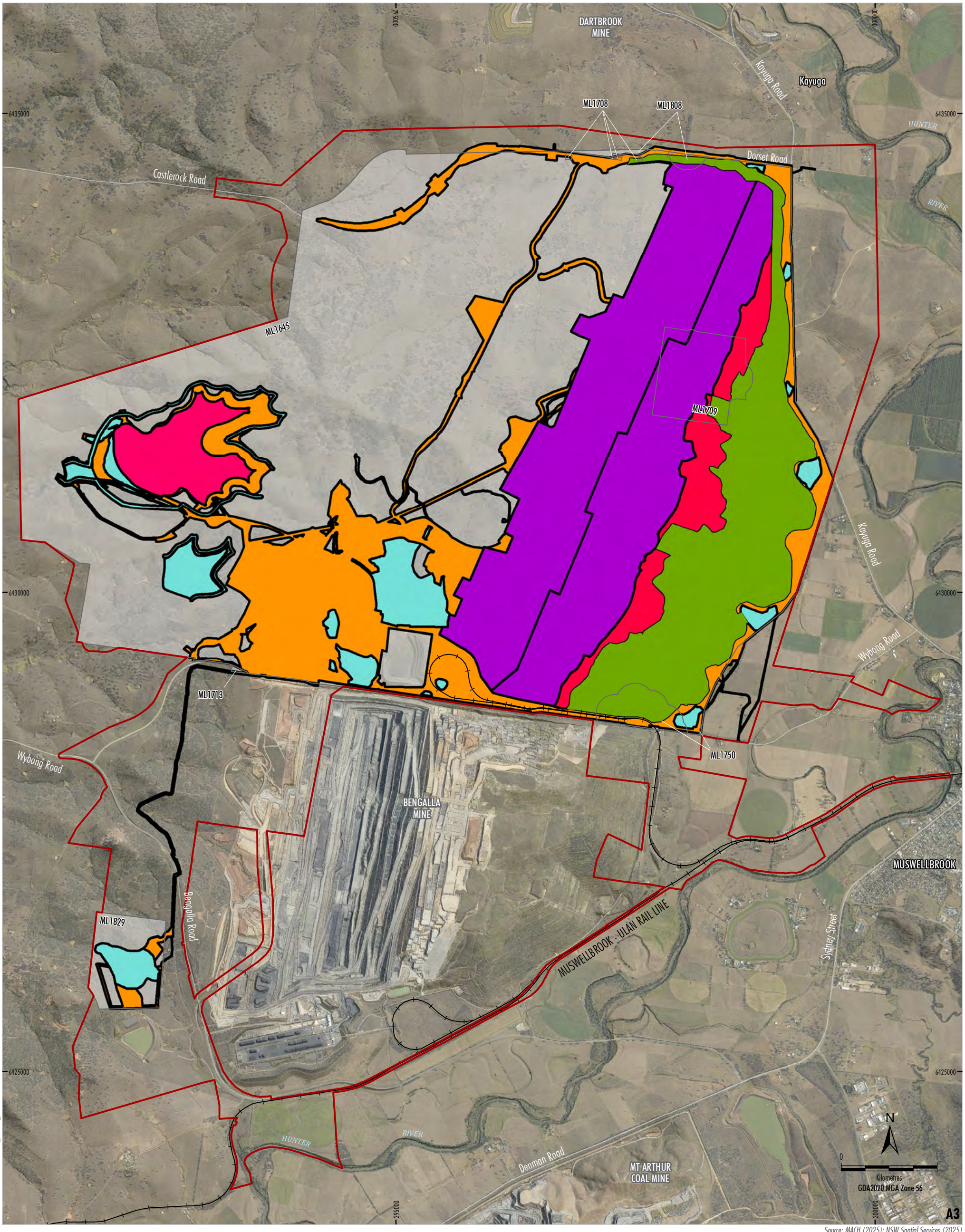
Date prepared: 25-06-2025

MACHEnergy

MOUNT PLEASANT COAL MINE
REHABILITATION MANAGEMENT PLAN

Life of Mine Rehabilitation Schedule (2031)

Plan 3B



MAC-18-03A Rehabilitation MP 2025_PLAN 3C_RevA

LEGEND

- Project Approval Boundary*
- Coal - Current Titles

Rehabilitation Phase

- Ecosystem and Land Use Development

Mining Domain Type

- Infrastructure Area
- Overburden Emplacement Area
- Tailings Storage Facility
- Active Mining Area (Open cut void)
- Water Management Area

* Appendix 1 of Development Consent SSD 10418

Source: MACH (2025); NSW Spatial Services (2025)
Orthophoto: MACH (Dec 2024)

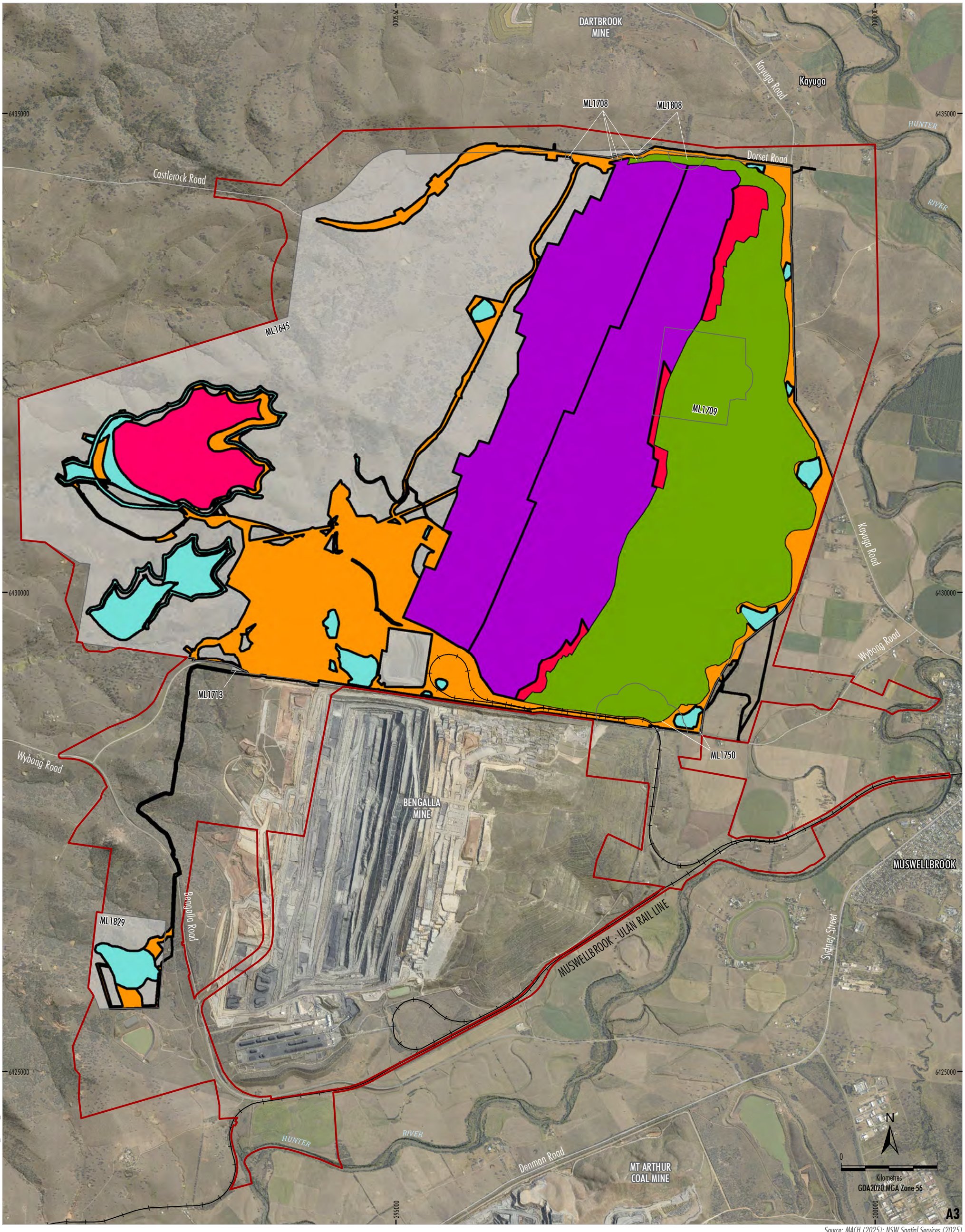
Date prepared: 25-06-2025

MACHEnergy

MOUNT PLEASANT COAL MINE
REHABILITATION MANAGEMENT PLAN

Life of Mine Rehabilitation Schedule (2034)

Plan 3C



MAC-18-03A Rehabilitation MP 2025_PLAN 3D_Rev A

LEGEND

- Project Approval Boundary*
- Coal - Current Titles

Rehabilitation Phase

- Ecosystem and Land Use Development

Mining Domain Type

- Infrastructure Area
- Overburden Emplacement Area
- Tailings Storage Facility
- Active Mining Area (Open cut void)
- Water Management Area

* Appendix 1 of Development Consent SSD 10418

Source: MACH (2025); NSW Spatial Services (2025)
Orthophoto: MACH (Dec 2024)

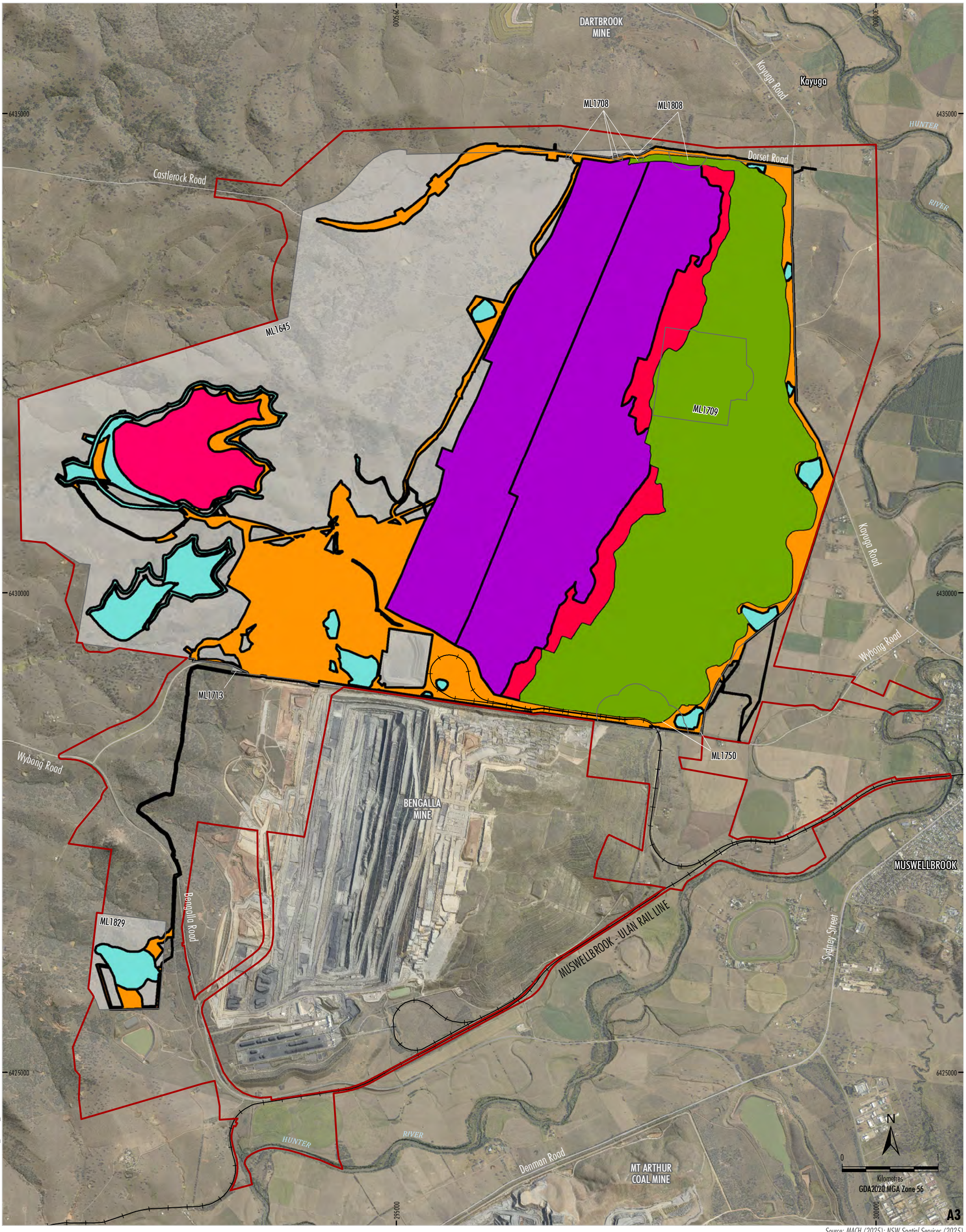
Date prepared: 25-06-2025

MACHEnergy

MOUNT PLEASANT COAL MINE
REHABILITATION MANAGEMENT PLAN

Life of Mine Rehabilitation Schedule (2041)

Plan 3D



MAC-18-03A Rehabilitation MP 2025_PLAN 3E_ Rev A

LEGEND

- Project Approval Boundary*
- Coal - Current Titles

Rehabilitation Phase

- Ecosystem and Land Use Development

Mining Domain Type

- Infrastructure Area
- Overburden Emplacement Area
- Tailings Storage Facility
- Active Mining Area (Open cut void)
- Water Management Area

* Appendix 1 of Development Consent SSD 10418

Source: MACH (2025); NSW Spatial Services (2025)
Orthophoto: MACH (Dec 2024)

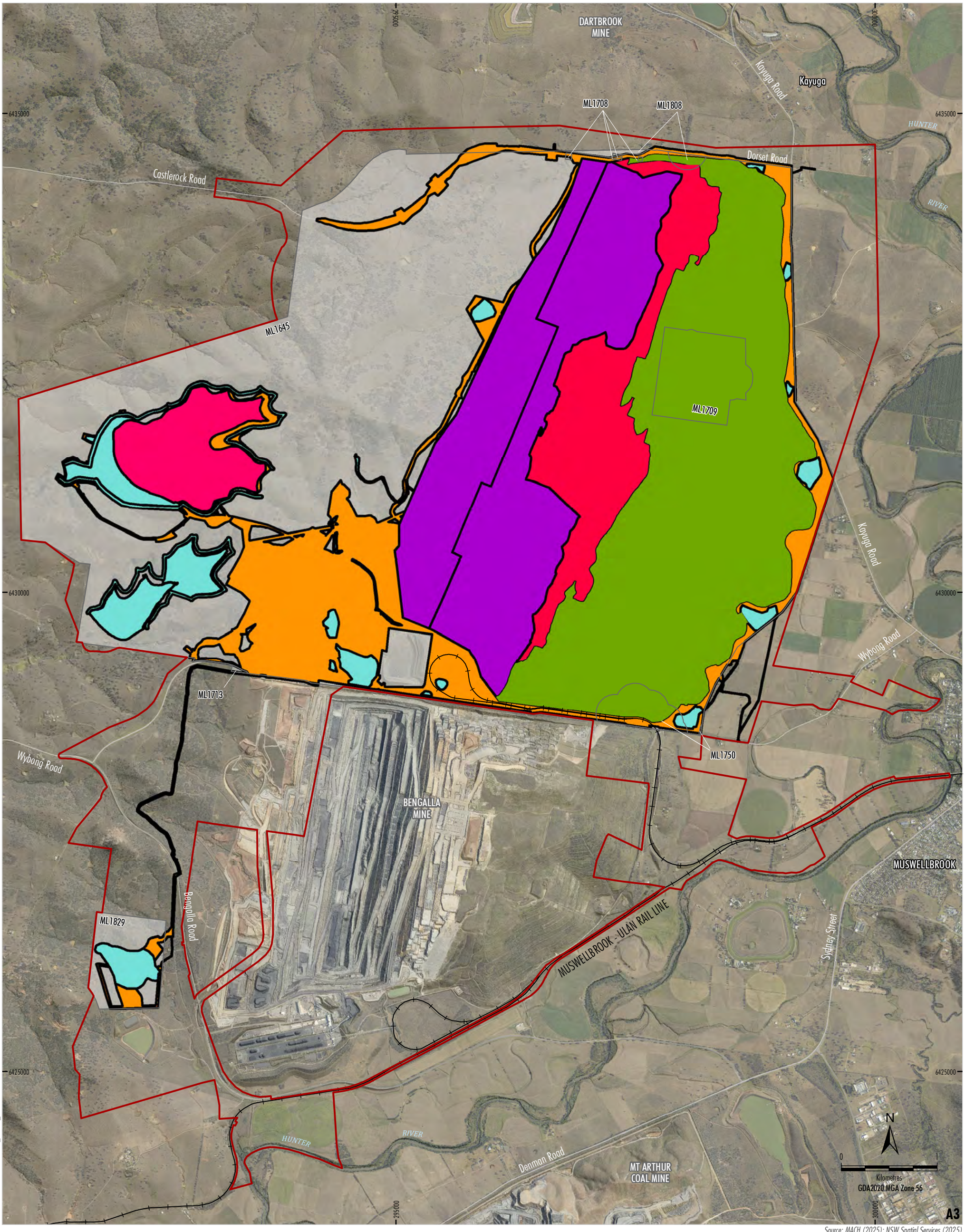
Date prepared: 25-06-2025

MACHEnergy

MOUNT PLEASANT COAL MINE
REHABILITATION MANAGEMENT PLAN

Life of Mine Rehabilitation Schedule (2044)

Plan 3E



LEGEND

Project Approval Boundary*

Coal - Current Titles

Rehabilitation Phase

Ecosystem and Land Use Development

Mining Domain Type

Infrastructure Area

Overburden Emplacement Area

Tailings Storage Facility

Active Mining Area (Open cut void)

Water Management Area

* Appendix 1 of Development Consent SSD 10418

Source: MACH (2025); NSW Spatial Services (2025)
Orthophoto: MACH (Dec 2024)

Date prepared: 25-06-2025

MACHEnergy

MOUNT PLEASANT COAL MINE
REHABILITATION MANAGEMENT PLAN

Life of Mine Rehabilitation Schedule (2047)

Plan 3F

MAC-18-03A Rehabilitation MP 2025_PLAN 3F_RevA

6.2 PHASES OF REHABILITATION AND GENERAL METHODOLOGIES

Rehabilitation works at the MPO commenced in 2018, and are undertaken in the following phases:

- Active Mining:
  - activities undertaken as part of active mining.
- Decommissioning:
  - removal of hard stand areas, buildings, contaminated materials, hazardous materials.
- Landform Establishment:
  - incorporates gradient, slope, aspect, drainage, substrate material characterisation and morphology.
- Growing Media Development:
  - incorporates physical, chemical and biological components of the growing media and ameliorants that are used to optimise the potential of the media in terms of the preferred vegetative cover.
- Ecosystem and Land Use Establishment:
  - incorporates revegetated lands and habitat augmentation; species selection, species presence and growth together with weed and pest animal control/management; and establishment of flora; and
  - areas at the Ecosystem and Land Use Establishment phase at the MPO reflects lands where habitat features have been placed, and the area has been topsoiled, deep ripped and revegetated with species relevant to the post-mining land use of the area (e.g. native woodland/grassland species or select pasture species). For MPO Overburden Emplacement areas this includes land that has been seeded with stabilising cover crop species and native grass, shrub and tree species.
- Ecosystem and Land Use Sustainability:
  - incorporates components of floristic structure, nutrient cycling recruitment and recovery, community structure and function, which are the key elements of a sustainable landscape.
- Rehabilitation Completion (Sign-off):
  - land use and landscape is deemed as suitable to be relinquished from the ML.

Consistent with the rehabilitation objectives within Table 10, Condition B87 of Schedule 2 of Development Consent SSD 10418 and Table 11, Condition 53 of Schedule 3 of Development Consent DA 92/97 (prior to its surrender), MACH Energy will undertake measures to retain as much material as practicable from the pre-mining landform and surrounds to use during rehabilitation of the MPO. Such measures will include:

- Implementing a Vegetation Clearance Protocol (VCP) which will identify and retain material for rehabilitation including habitat material (e.g. tree hollows, stag trees, coarse woody debris and rocks) and seeding vegetation for seed collection prior to clearing.
- Seed collection and propagation using the on-site Seed Harvesting Facility or external provider.
- Rehabilitation material characterisation in order to:
  - identify any physical or chemical deficiencies or limiting factors;
  - develop selective placement strategies or develop soil amelioration techniques;

- identify material for use in the root zone, which is capable of supporting sustainable vegetation establishment;
- identify materials that limit plant growth or which may contaminate surface or groundwater (e.g. salinity), and hence may require special handling, treatment or disposal; and
- identify any propensity for spontaneous combustion.

- Topsoil and subsoil stripping (guided by soil mapping) and management in designated stockpiles.

6.2.1 Active Mining Phase

a. Soils and Materials

Topsoil stripping activities will be undertaken in accordance with the Erosion and Sediment Plan (ESCP), to minimise erosion potential. The areas cleared in advance of mining will be delineated to minimise the potential for accidental additional vegetation clearance and potential impacts to fauna. Where possible, the areas will also be deep ripped to alleviate compaction and watered to minimise dust generation, prior to stripping. Following these activities, vehicle movement will be kept to a minimum on areas/soils proposed to be stripped.

Topsoil and subsoil will be stripped and salvaged to maximise its value for re-use in rehabilitation, this process will be guided by soil mapping and suitable soil stripping depths. Given the current "healthy" topsoil balance for use in life-of-mine (LOM) rehabilitation calculations, MACH Energy now has the ability, if deemed necessary, to implement more selective salvage of topsoil for stockpiling. This may be guided by previous soil mapping undertaken at the site, soil sampling and analysis, site knowledge, inspections in the field, and field observations.

Where practicable, soil will be stripped when moist (but not saturated) to reduce air quality impacts, and where possible, will be transported directly to areas available for rehabilitation.

Where direct placement of topsoil on rehabilitation areas is not possible, soil will be stockpiled away from active transport corridors and on level or gently sloping ground, where available, to minimise erosion and potential soil loss. Topsoil and subsoil (including alluvial soils) will be stockpiled separately where practical. Topsoil stockpiles not designated for unavoidable rehandling will be limited to a height of 3 metres (m) (except for two trial topsoil stockpiles which will be limited to a height of 5 m). Subsoil stockpiles (including alluvial soil stockpiles) will be limited to 5 m in height. Both short-term and long-term topsoil and subsoil stockpiles will be managed to minimise soil loss and maintain the viability of the soil. Long-term topsoil and subsoil stockpiles (i.e. stockpiles that will remain for longer than 6 months) will be managed to maintain soil viability, seed reserves and microbial soil associations. Measures will include:

- constructing stockpiles with a "rough" surface condition to reduce erosion hazard, improve drainage and promote revegetation;
- deep-ripping to encourage infiltration, seed set and aerobic conditions;
- seeding with a species mix including sterile pasture species and native grass, shrub and tree species associated with the *Biodiversity Conservation Act 2016* (BC Act) and EPBC Act listed White Box Endangered Ecological Community (EEC);
- weed management with appropriate herbicide as required; and
- installation of silt fencing or windrows around the perimeter of the stockpile to minimise soil loss from erosion prior to vegetation stabilisation as required.

Soil stockpiles will be sign-posted to identify the stockpile and to minimise accidental disturbance. The sign will identify the date of stockpiling and the source and nature of the soil (e.g. subsoil). Following construction, soil stockpiles will be surveyed and incorporated into the MPO mine plan and Topsoil Register, along with the stockpile volume.

Soil stockpiles will be sign-posted and captured using GIS and mapped/flagged during the GDP process to identify the stockpile and to minimise accidental disturbance.

At the time of soil replacement on rehabilitation areas, soil conditioning activities will be undertaken with the aim of increasing moisture and organic content and to buffer surface temperatures to improve germination. Activities will involve the application of dust suppressant to minimise dust generation and the application of soil ameliorants (as required) such as gypsum, or organic materials such as wood and hay mulch. Soil testing will be undertaken prior to soil replacement as required to inform amelioration requirements, including the required rate of application. Soil ameliorants will be incorporated by ripping, plough or rotating hoe.

In addition to the above, replaced soil sourced from stockpiles greater than 3 m in height, will be inoculated where practicable with Mycorrhizal fungi and rhizobia bacteria to ameliorate any anaerobic conditions that may have developed during storage. Topsoil stockpiles will also be mixed during spreading to redistribute nutrients which may have leached to the base of the stockpiles (Nussbaumer, *et. al.*, 2012).

Symbiotic microbes can have a dramatic influence on plant establishment, growth and survival. For example, Mycorrhizal fungi are instrumental in soil aggregation, which leads to better soil structure with all its benefits of increased water infiltration and holding capacity, seedling emergence, root penetration and gas exchange. There are two main types of mycorrhizae; ectomycorrhizae and endomycorrhizae (also known as arbuscular mycorrhizae) (Nussbaumer, *et. al.*, 2012).

MACH Energy will also continue the study and associated trial involving soil stockpile microbial sampling to understand the current diversity within stockpiled topsoil and soil respread on rehabilitation areas (prior to respreading) to understand possible microbial losses and inoculation requirements. The nutrient cycling soil microbes which *"naturally build nutrient pools, especially for nitrogen and phosphorus, in both the standing vegetation and the soil"* (Nussbaumer, *et. al.*, 2012), will be introduced, as required, into the rehabilitation areas to assist with maintaining long-term sustainability of the topsoil resource at the MPO.

Soil will either be dumped at the top of the slope and spread down the slope or dumped at the base of the slope and spread up-slope. The soil will then be spread at a minimum depth of 100 millimetres (mm) across the contour of the slope. Replaced soil, and any applied ameliorants, will then be deep-ripped to a depth of approximately 500 mm to alleviate any soil compaction during landform construction and create a rough surface tilth for vegetation establishment.

Soil re-spreading will not be undertaken during excessively wet days, to avoid compaction of the landform surface from machinery movement, or on excessively windy days, to minimise dust generation and soil loss.

Topsoil is collected and stored on-site with an aim to stockpile sufficient topsoil to rehabilitate the entire final landform. MACH Energy currently estimates that approximately 1,677,598 m^3 of topsoil is required for final landform rehabilitation and therefore, MACH Energy is aiming to directly apply or stockpile this amount prior to mine closure. Sufficient soil resources are available for final landform rehabilitation, with current approximate volumes at end of December 2024 term being 1,126,408 m^3.

MACH Energy maintains a Topsoil Register at the MPO to track stockpile volumes, locations, stockpile type and treatments applied to the stockpiles (e.g. whether a stockpile has been seeded). This Register is updated regularly to reflect stockpile use and management actions undertaken. As discussed above, sufficient soil resources are available for final landform rehabilitation.

'Inadequate or insufficient topsoil to create/enhance the desired ecological communities in mine rehabilitation areas' was assessed as a medium risk to successful rehabilitation at the MPO, with 'Inappropriate topsoiling techniques resulting in a failure of rehabilitation' assessed as posing a low risk to successful rehabilitation at the MPO.

b. Flora and Fauna

A VCP will be implemented at the MPO to minimise impacts on threatened species during native vegetation clearing at the MPO. The VCP is described in detail in the MPO's Biodiversity Management Plan.

The VCP includes the following components:

- Delineation of disturbance areas.
- Pre-clearing procedures, including:
  - a Ground Disturbance Permit process;
  - Pre-clearance Targeted Fauna Surveys; and
  - salvaging of habitat features for re-use in native vegetation rehabilitation areas and habitat enhancement.
- Clearing procedures, including:
  - Timing considerations;
  - General vegetation clearance and management strategies;
  - Detailed fauna management strategies; and
  - Clearance restrictions.

The components of the VCP listed above are discussed in detail in the MPO Biodiversity Management Plan.

Pre-clearing surveys will be undertaken (in conjunction with the Ground Disturbance Permit process) to identify potential habitat features (and active threatened fauna) prior to commencing clearing works in any given area and determining appropriate management (i.e. depending on the habitat feature or threatened species identified). The pre-clearance survey would also target the identification of weed infestations that may need treatment prior to, or during disturbance, and/or pest species that may require control prior to disturbance. The pre-clearance survey will be conducted by an appropriately trained and suitably qualified ecologist. Further details of the VCP are provided in the MPO Biodiversity Management Plan.

Management actions for identified potential habitat features or active threatened fauna will be determined on a case by case basis, but may include selective clearing of non-habitat features/vegetation to encourage self-relocation. Where necessary, an appropriately trained and suitably qualified ecologist/fauna specialist will be used to attempt removal of remaining fauna from the area should they not leave of their own accord.

MACH Energy also implements a Tiger Orchid (*Cymbidium canaliculatum*) translocation program for Tiger Orchids identified during VCP surveys. The translocation activities are undertaken by MACH Energy and a suitably qualified ecologist and involves removal of host trees (or parts of the tree) containing the Tiger Orchid for replacement in suitable habitat areas outside proposed disturbance areas. Further details of the Tiger Orchid translocation program are provided in the MPO Biodiversity Management Plan.

As part of the mine plan, vegetation clearing and topsoil stripping activities will be undertaken throughout the year, however, they may be undertaken on a campaign basis.

Proposed use of felled timber will follow current leading practice and may include salvaging habitat features such as hollows, harvesting of brush material that is laden with fruit/seed, mulching and incorporating understorey and saplings into stripped topsoil, collection of timber for fencing, the installation of stag trees and respreading coarse timber residue onto re-contoured land.

Seed collection and propagation is undertaken on the mining leases using the on-site Seed Harvesting Facility, and is currently focused on grasses. Seed collected and processed on site is used in areas of rehabilitation, supplemented by external seed providers.

Regular feral animal and weed control is undertaken over the entire MPO area and will continue into closure as described in Section 6.2.6.

c. Rock/Overburden Emplacement

MACH Energy will continue to prioritise construction of the eastern outer batters of the Eastern Out-of-Pit Overburden Emplacement to the final landform profile. The emplacement landform would be developed in 10 m lifts to enable more rapid establishment of the final surface levels. Using this approach, waste rock placement progresses more rapidly than the alternative of construction in 20 m emplacement lifts. Lifts greater than 10 m may however be used on occasion, if the 10 m lifts result in material economic constraints.

MACH Energy targets reshaping to final surface level and initial revegetation of all outer emplacement batter lifts of the Eastern Out-of-Pit Emplacement within 6 months of each subsequent dump panel lift being completed (subject to delays associated with climatic extremes).

The design concept, principles and construction methodology for the overburden emplacement is includes reshaping the emplacement to include macro and micro relief and geomorphic features to develop a more natural looking and functional landform. Plans 1 and 2 provide the final landform and includes contour and elevation detail.

Sufficient overburden materials are available for final landform rehabilitation.

d. Waste Management

The approved MPO Waste Management Plan (WasteMP) under Development Consent DA 92/97 describes the measures that will be implemented to avoid, minimise, reuse and recycle all waste streams generated during the construction and operation stages of the MPO.

Additionally, in accordance with Part B, Condition B81 of Development Consent SSD 10418, MACH Energy will:

- take all reasonable steps to minimise the waste (including coal rejects and tailings) generated by the development;
- classify all waste in accordance with the *Waste Classification Guidelines* (EPA, 2014);

- dispose of all waste at appropriately licensed waste facilities or facilities otherwise permitted to receive the waste including under an applicable resource recovery order or exemption;
- manage on-site sewage treatment and disposal in accordance with the requirements of the appropriate regulatory authority; and
- monitor and report on the effectiveness of the waste minimisation and management measures in the MPO Annual Review.

Wastes generated on-site will be segregated at source and stored and transported appropriately. The segregation of wastes ensures different waste streams are appropriately managed based on their level of risk to the environment, and in accordance with any legal requirements. Segregation at source reduces the contamination of waste streams, improves the ease of storage, handling, disposal and tracking, and reduces the potential disposal costs for some items. Labelled and numbered bins will be provided at the point where wastes are produced to improve segregation.

There will be no landfill developed on-site, however, some inert waste material (e.g. wood, steel and wire from demolition) may be disposed of in the Overburden Emplacement, in accordance with the MPO WasteMP. Larger quantities of waste will be stored in secure locations on-site until they can be removed. Adequate containment, such as bunding, will be provided to prevent leaching from wastes onto the ground which could affect surface water quality or cause soil contamination. Wastes will also be managed to ensure that they are safe from likely ignition sources, and that the risk of fire is minimised. The disposal of tyres in the backfilled open cuts would be undertaken in accordance with the MPO's WasteMP and EPL.

Regulated wastes as classified under Schedule 1 of the *Protection of the Environment Operations (Waste) Regulation 2005* will be managed in line with these regulations, ensuring compliance with tracking and recording requirements.

There are two sewage management facilities at the MPO. The ongoing operation of these facilities will continue to comply with the conditions of the Development Consent, the requirements of MSC and any applicable legislation.

e. Geology and Geochemistry

Overburden and mine coal reserves will be removed at the MPO progressing north and west, with the overburden and interburden initially being placed in the Overburden Emplacement to the east of the open cuts before being placed behind the advancing open cuts.

The Geochemistry Assessment prepared by RGS Environmental Pty Ltd (RGS Environmental) for the Project EIS (MACH Energy, 2021) provides a description of the geochemical characterisation of the overburden and interburden materials that are present at the MPO. The sampling program associated with Geochemistry Assessment (RGS Environmental, 2020) identified that some of the materials sampled produced leachate that is expected to be moderately sodic. These are characteristics that are known to produce adverse growing conditions for vegetation growth and an elevated risk of soil erosion and sedimentation, and need to be managed accordingly.

Selective handling of materials is implemented at the MPO, and characterisation of soils and overburden will be undertaken throughout the development of the mine. Topsoil and subsoil characterisation will be undertaken in order to:

- identify any physical or chemical deficiencies or limiting factors (particularly alkalinity, salinity, dispersibility and sodicity) which may affect vegetation establishment, landform stability and propensity for spontaneous combustion; and

- develop selective placement strategies (i.e. separate stockpiles for subsoils and topsoils) and/or develop suitable amelioration techniques.

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

- identify material for use in the root zone, which is capable of supporting sustainable vegetation establishment;
- identify materials that limit plant growth or which may contaminate surface or ground water (e.g. salinity), and hence may require special handling, treatment or disposal; and
- identify any propensity for spontaneous combustion.

The rehabilitation risk assessment assessed the risk associated with poor geochemistry of exposed overburden emplacement surfaces leading to a potential off-site contamination or revegetation failure risk. With the MPO's existing active management controls in place, as described above, including the management controls for material prone to spontaneous combustion and material prone to generating acid mine drainage risk was ranked as low.

Geochemical evaluation of the MPO fines material has historically been undertaken based on samples from individual seams and composite samples representative of the full mining sequence and is described in the MPO EIS (ERM Mitchell McCotter, 1997) and the Project EIS (MACH Energy, 2021). The results of the combined composite samples indicate that the overall tailings from the MPO's multi-seam mining operation are likely to be non-acid forming (NAF) (ATC Williams, 2018). The Geochemistry Assessment (RGS Environmental, 2020) also concluded that the waste rock material generated from the Project would generally be expected to be NAF.

Further column leach tests indicated elevated salinity levels in leachate which would decrease with time (ATC Williams, 2007; 2018). MACH Energy is currently undertaking additional geochemical characterisation work of the fines material with the University of Newcastle as part of an existing research project. In addition, the Stage 1 Rehabilitation and Closure Strategy was completed in 2021 (SLR, 2021) which outlines critical controls and considerations for the proposed final landform and cover design of the Stage 1 FEA and confirms that the fines are considered NAF and not considered prone to spontaneous combustion. Controls for final landform of the Stage 1 FEA include capping of both a low permeability clay layer and growth medium layer above the fines.

f. Material Prone to Spontaneous Combustion

A Spontaneous Combustion Management Plan has been developed for the MPO. Spontaneous combustion at the MPO will be managed in accordance with the following objectives:

- ensure that spontaneous combustion outbreaks are minimised;
- endeavour to identify potential areas that may be prone to spontaneous combustion before an outbreak occurs;
- provide for all carbonaceous material to be placed in such a manner that reduces the possible occurrence of spontaneous combustion (carbonaceous material will be placed on lower levels of the overburden emplacements, at a minimum of 5 m from the face of the emplacement)), and at a depth of more than 5 m from final landform;
- where longer term spontaneous combustion problems occur, instigate the Spontaneous Combustion Management Plan to deal with these; and
- creation of final rehabilitation that is free from spontaneous combustion.

Minor spontaneous combustion has been encountered at the neighbouring Bengalla Mine and Mount Arthur Mine. Seams that were found to be more susceptible, when exposed in a normal mining sequence, were the Vaux, Bayswater and Wynn Seams.

Mining at the MPO would encounter these same seams. To date, three occurrences of spontaneous combustion have occurred at the MPO, within a ROM coal storage area and within an in-pit dump area. The Spontaneous Combustion Management Plan includes details of factors that influence self-heating and spontaneous combustion and identifying signs to look for during inspections. The Spontaneous Combustion Management Plan also includes procedures for excavation and management of identified hot material. MACH Energy also conducts reactive ground testing at the MPO to assist with identifying reactive materials.

The occurrences of spontaneous combustion to date have occurred in operational coal storage areas. Notwithstanding, the risk of a spontaneous combustion incident that affects MPO rehabilitation has been assessed as low considering MPO's standard procedure for carbonaceous material placement at a minimum of 5 m from the face of the emplacement and below final landform, which is consistent with industry best practice (Australian Coal Association Research Program [ACARP], 2008).

g. Material Prone to Generating Acid Mine Drainage

Geochemical characteristics of the overburden material were tested by the Department of Mineral Resources Development Laboratory (Mountford and Wall, 1995). The only acid forming leachate occurred in samples obtained from the Wynn Seam. Material balance calculations undertaken for the 1997 EIS indicated that dilution and neutralisation will negate any acid forming potential.

The acid base accounting test work undertaken for the Geochemistry Assessment (RGS Environmental, 2020) for the Project indicates that a small portion of waste rock materials, namely the Archerfield sandstone interburden materials, would be potentially acid forming (PAF).

Therefore, due to the predicted small proportion of potentially acid forming material, it is expected that operational blending during ROM coal dumping will produce a non-acid forming material within the Overburden Emplacement and back-filled open cuts. The management strategy for the MPO will provide that no zones of poorly blended, potentially acid forming material are exposed in the final surface of the Overburden Emplacement and back-filled open cuts. This will be achieved by excluding the material identified as potentially being acid forming (i.e. non-economic coal and identified coal seam roof and floor rock from the Wynn Seam) from the final face of the Overburden Emplacement with a minimum cover of 10 m of inert material overlying the potentially acid forming material.

Locations of potentially acid forming materials have been identified on-site. The mine plan includes sequencing of mining and emplacing of potentially acid forming material to ensure the material is separated from non-acid forming material. Potentially acid forming material will be emplaced on the Overburden Emplacement away from gullies and drainage lines, and away from the outer slopes. Where possible, potentially acid forming material will be emplaced in-pit and covered with a minimum of 10 m of NAF material. A monitoring program is also in place to regularly confirm PAF materials are managed and covered correctly.

The risk of incorrect management of acid forming material resulting in rehabilitation failure and potential off-site water quality issues was assessed as low in the January 2020 rehabilitation risk assessment, with implementation of the MPO's existing management controls, as described above.

The MPO's Water Management Plan (WMP) includes a comprehensive monitoring program that will enable the detection of poor-quality water, and the MPO's Surface and Ground Water Response Plan includes the investigation protocol that will be undertaken in the event of exceedance of WMP trigger levels.

h. Ore Beneficiation Waste Management (Reject and Fines Disposal)

The overarching objective for rehabilitation of the FEA is to establish a safe, stable and non-polluting landform with a sustainable surface cover that minimises erosion (to prevent exposure of the underlying fines material) and sustains grassland vegetation in the long-term.

Current rehabilitation concepts for the FEA as described in the MPO EIS (ERM Mitchell McCotter, 1997) and Project EIS (MACH Energy, 2021) include capping fines with a layer of inert overburden material and then a layer of topsoil. MACH Energy maintains capping and topsoil material proximal to the FEA that would be sufficient to rehabilitate the area of fines to be emplaced within the FEA. MACH Energy maintains a soil register to track soil stockpile volumes and soil usage on rehabilitation areas.

MACH Energy will continue to develop the final landform rehabilitation concepts which will be guided by relevant industry guidelines, including the Australian National Committee on Large Dams (ANCOLD) *Guidelines on Tailings Dams* (2019). To support this process, MACH Energy will continue to undertake periodic analysis of emplaced fines (e.g. in-situ geotechnical properties) and will consult with the NSW Resources Regulator on the findings of these analyses. Such a review is currently being conducted as part of ongoing consultation with the NSW Resources Regulator with respect to Stage 1 of the Fines Emplacement Area, which includes evaluation of potential fines capping options and requirements.

In accordance with Condition 52(c), Schedule 3 of the MPO's Development Consent DA 92/97, a Fines Emplacement Plan has been prepared and is provided in Appendix 1 of the MPO's Waste Management Plan. The Fines Emplacement Plan includes details of the FEA design and fine rejects disposal strategies and operating procedures. MACH Energy will maintain a Fines Emplacement Plan for the Fines Emplacement Area design approved under Development Consent SSD 10418.

MACH Energy operates the FEA using sub-aerial deposition which involves an extended period of air drying that maximises in-situ tailings densities and in turn maximises the storage efficiency of the facility as well as providing a more competent fines surface for future rehabilitation purposes. Other advantages of sub-aerial deposition include earlier facilitation of final rehabilitation due to a more competent fines surface and rapid recovery of water for reuse in the plant process. MACH Energy has completed construction of a permanent flocculant plant to dose secondary flocculant at the discharge point into the FEA which will assist deposited fines to settle more quickly and release water to decant at a faster rate than conventional settling would allow.

Based on the current closure concepts, post-mining drainage off the Fines Emplacement Area will be established following the progressive placement of capping material, topsoiling and rehabilitation. The final surface of the Fines Emplacement Area prior to capping will reflect the deposition strategy employed over the life of the Project. As the fine rejects deposit at a relatively low angle (MACH Energy, 2021), the facility fines surface and capping material will be gently sloping away from the primary locations of fine rejects deposition, effectively filling the majority of the valley in which the facility is located. By altering the location of fine rejects deposition within the facility over the life of the Project, MACH Energy could alter the location of the decant pond on the fines surface, and minimise materials handling to establish its preferred post-mining drainage features.

The post-mining drainage design for the Fines Emplacement Area will be developed to maintain the facility in a manner that is safe, stable and non-polluting. Consistent with the Project Surface Water Assessment (Hydro Engineering and Consulting, 2020), drainage from the Fines Emplacement Area surface will be directed back into the Sandy Creek catchment post-mining, to re-instate catchment excised during operation of the facility.

The MACH Energy current conceptual post-mining drainage design for the Fines Emplacement Area includes:

- Placement of some additional inert overburden material at the toe of the embankment to facilitate an overall concave outer embankment slope varying from approximately 1:3 to 1:6 and designed to minimise concentration of incident runoff on the embankment.
- Placement of inert overburden material on the surface of the emplacement to facilitate rehabilitation capable of supporting low intensity agricultural use, with micro-relief installed as required to direct runoff to drainage channels.
- The final surface of the Fines Emplacement Area will be free-draining, with water only ponding during significant storm events to limit peak flows off the facility.
- Establishment of low gradient drainage features, bunds or other structures on the surface of the facility to direct incident rainfall off the facility at low velocity.
- Construction of an outlet channel for runoff collected on the surface of the facility through natural ground (e.g. a short cutting through in-situ rock) into the adjoining natural catchment, including the construction of any stilling or flow retention structures that may be required to minimise the potential for erosion, but still avoid development of a perched phreatic surface within the emplaced fines.

Based on the above, Golder Associates Pty Ltd has developed an initial conceptual post-mining design for the Project Fines Emplacement Area for MACH Energy, that is illustrated on Plate 10. This initial design concept will be periodically revisited over the life of the Project in consultation with the NSW Resources Regulator as more data is collected on fines physical properties, and any updates would be documented in subsequent revisions of this RMP and the MPO Rehabilitation Strategy. This will include provision for settlement of the final surface based on consolidation observed during fines emplacement construction.

i. Erosion and Sediment Control

An ESCP has been developed in accordance with Part B, Condition B52(f)(ii) of Development Consent SSD 10418 and Condition 28(b), Schedule 3 of Development Consent DA 92/97. The ESCP is included in Appendix A of the MPO WMP. The ESCP describes the management of potential erosion impacts as well as implementation of a monitoring program to provide early detection of potential issues and to monitor the effectiveness of controls. A detailed construction ESCP has also been prepared to meet internal MACH Energy planning requirements.

In order to reduce the potential for degradation within the MPO area and adjoining lands, there are two zones of focus that will be adequately managed during the construction and mining operations phase:

- areas disturbed by construction and mining activities; and
- undisturbed areas.

The following measures will be adhered to in all areas of the site where disturbance from construction and/or mining activities occurs:

- relevant internal approvals and permits will be obtained before commencement of surface disturbance (e.g. Ground Disturbance Permits);
- the extent of disturbance (including trafficable areas) will be minimised and delineated using appropriate pegging, barriers or signage and digitally captured and displayed within the site survey and GIS databases. This data will be made available either digitally or in map format to inform and guide mine planning, vegetation clearing, land preparation and mine rehabilitation activities;

- appropriate erosion and sediment controls will be approved and established prior to land disturbance and will remain in place until exposed areas are stabilised;
- clean water runoff from undisturbed catchments will be diverted around the disturbance areas via diversion drains and banks to discharge into natural watercourses, where practical;
- runoff from disturbed areas will be diverted into sediment dams;
- drains, diversion banks and channels will be stabilised and scour protection will be provided as necessary;
- temporary erosion and sediment control measures will be used on-site and may include silt fences, hay bales, jute mesh, check dams, cross banks, contour banks, armouring and straw mulching; and
- topsoil stockpiled for reuse will be managed.

External and internal drainage considerations will be incorporated into the landform design plan to slow and direct water flow and minimise erosion. Diversion drains will be constructed as per the design plans.

In the final landform, permanent diversion drains will be constructed adjacent to the south-eastern, south-western and north-western edges of the final void catchment to convey runoff from upstream areas away from the final void and divert runoff to existing surface water drainages.

Regular inspection of disturbance areas is undertaken at the MPO using both drone surveys and on the ground visual inspections. These inspections provide for early detection of any areas of erosion, and for appropriate treatment measures to be implemented.

Although the risk of inadequate erosion control on rehabilitated landforms at the MPO was assessed as posing a medium risk to successful rehabilitation of the MPO, this risk is mitigated to a tolerable level with implementation of the existing management practices and controls in place.

j. Ongoing Management of Biological Resources for Use in Rehabilitation

Management of biological resources (e.g. topsoil stockpiles and salvaged habitat features) are described in Section 6.2.1a and 6.2.1b.

k. Mine Subsidence

No subsidence impacts will occur as a result of the operations planned at the MPO, as mining operations are open cut. Minor historical underground workings exist on the northern and southern parts of ML 1645, and parts of ML 1750. These workings do not pose a risk to MPO rehabilitation.

l. Management of Potential Cultural and Heritage Issues

Aboriginal archaeology and cultural heritage at the MPO is managed in accordance with Aboriginal Heritage Impact Permit (AHIP) #C0002053 and AHIP #C0002092 and AHIP #C0004783 (while active) and the MPO's Aboriginal Cultural Heritage Management Plan (ACHMP). The ACHMP addresses the requirements of Development Consent DA 92/97 (prior to its surrender) and Development Consent SSD 10418 and outlines management measures for the protection and management of cultural heritage sites across MPO.

Consultation with the Aboriginal community in relation to the management of Aboriginal archaeology and cultural heritage at the MPO is undertaken through the ACHMP, conditions within Development Consent SSD 10418 and Development Consent DA 92/97 (prior to its surrender), the *NSW National Parks and Wildlife Regulation, 2009* and the OEH policy *Aboriginal cultural heritage consultation requirements for proponents 2010* (Department of Environment, Climate Change and Water, 2010).

In 2014, Veritas Archaeology & History Services (VAHS) was engaged by to record historic heritage sites on the MPO MLs and, where warranted, specific archaeological management measures for specific sites were developed. Additionally, a Historic Heritage Assessment for the Project was undertaken by Extent Heritage (2020), and specific archaeological management measures for the relevant sites of interest were developed. The MPO Historic Heritage Management Plan details the management and mitigation measures applicable to the relevant historic heritage sites identified within the Project area. Where appropriate, these works will be conducted with the participation of interested community members, such as representatives from local historical societies.

m. Exploration Activities

Completed construction areas will continue to be rehabilitated and would include harrowing to relieve soil compaction and then seeding with temporary cover crop species and native grass species to minimise exposed surfaces, and the potential for dust generation, soil erosion and weed incursion.

All exploration drill holes will be sealed and capped in accordance with the requirements of AUTH 459 and MPO ML Authorities. Decommissioning of each drill pad area would involve the complete removal of all equipment and any temporary fencing.

Rehabilitation measures would aim to return the drill pad area to its prior condition. As vegetation disturbance at drill pad areas would be limited, the area would either be allowed to regenerate or would be seeded with species characteristic of the area. Weed control would be conducted as necessary. An inspection of drill pad areas to review regeneration or rehabilitation performance would be undertaken as required.

6.2.2 Decommissioning

Infrastructure not required for future use post-mining would be decommissioned and removed (as agreed with relevant regulatory authorities). This would involve:

- Demolishing and removing infrastructure from the site, including buildings and fixed plant, ROM and product stockpiles, bitumen carparks, waste oil/lubricant storage areas, rail load-out facility and rail loop. Demolition work would be carried out in accordance with *AS 2601-2001: The Demolition of Structures* or its latest version.
- Relevant plant and equipment would be dismantled, decommissioned and removed from the site.
- Internal haul roads, access tracks and hardstands would be removed when no longer required.
- Water management structures that are not to be retained in the final landform decommissioned (i.e. dam walls removed, drained and decontaminated). Sediments accumulated in mine water and sediment dams would be removed from the dam floor and emplaced in the final void. Mine water dams would be emptied and discharge water disposed of in final void.
- Pipelines, pumps and related Fines Emplacement Area infrastructure would be removed.
- A Land Contamination Assessment would be undertaken and any contaminated soils removed and area remediated in accordance with *NSW Contaminated Land Management Act 1997*.

A detailed Mine Closure Plan for the MPO will be completed at least 6 months prior to the closure of the MPO, which will provide further detail on decommissioning at MPO.

a. Site Security

Fencing and warning signs will be installed around the final void following decommissioning. Further detail will be included in the Mine Closure Plan.

b. Infrastructure to be Removed or Demolished

Under Part B, Condition B94 of Development Consent SSD 10418 and Condition 37, Schedule 3 of Development Consent DA 92/97, MACH Energy is required to remove all infrastructure associated with the development within ML 1645 south of Wybong Road (other than infrastructure which can remain in situ, with the agreement of Bengalla Mine) and transfer ownership to Bengalla Mine. MACH Energy is required to undertake interim rehabilitation on this area, prior to transfer of ownership, as required by Condition 55A, of Schedule 3 of the Development Consent DA 92/97. Following the transfer of ownership, it will be the responsibility of Bengalla Mine to operate and rehabilitate the area.

As soon as reasonably practicable following removal of the existing rail loop and associated infrastructure within the footprint of the Bengalla Mine, initial rehabilitation will be undertaken so the area does not pose an ongoing material source of dust emissions.

Initial rehabilitation will include levelling/reforming the infrastructure area, followed by application of a dust suppressant, if required, and sowing of sterile cover crop vegetation and/or native grasses. The MPO rail spur erosion and sediment control water management structures (e.g. sediment fences) within the footprint of Bengalla Mine will be left in place, subject to the agreement of Bengalla Mine.

As required by Part B, Condition B94 of Development Consent SSD 10418 and Condition 37, Schedule 3 of Development Consent DA 92/97, the above decommissioning and interim rehabilitation works was completed by 31 October 2022.

Decommissioning of the remainder of the infrastructure at MPO will be undertaken at mine closure. Further detail will be included in the Mine Closure Plan. Infrastructure to be removed includes:

- mine infrastructure areas including administration buildings;
- rail and train loading facilities;
- CHPP and associated infrastructure;
- water management structures not required post-mining; and
- services including powerlines.

MACH Energy will decommission and remove all Project infrastructure unless a suitable post-mining use is identified for the infrastructure in consultation with the NSW Resources Regulator and MSC.

c. Buildings, Structures and Fixed Plant to be Retained

Infrastructure will only be retained post-mining in agreement with the relevant regulatory authority and landowner. The Mine Closure Plan will include detail on the process that will be implemented for any retained infrastructure including risk management. Infrastructure to be retained post-mining includes:

- Water management structures including sediment dams and clean water diversion drains; and
- Mine Water Dam if requested for use in agricultural activities post-mining.

d. Management of Carbonaceous/Contaminated Material

Land contamination is managed through the MPO Site Contamination Prevention and Control Procedure and Non-Mineral Waste Management Procedures.

Prior to cessation of mining activities, a Land Contamination Assessment will be undertaken to determine whether potential contamination issues exist on-site and if remediation is required. Issues expected to be addressed by this assessment will include, but not be limited to, decontamination of areas such as those impacted by carbonaceous material (e.g. coal spillage, coal storage), by hydrocarbon spillage (e.g. workshops, fuel storage areas) or by sedimentation (e.g. dams that have directly received pit water). Any identified contaminated land will be disposed of at either the bioremediation facility located adjacent the open cut pit, or taken off-site for bioremediation at an appropriate facility.

e. Hazardous Materials Management

Hazardous substances will be managed through the MPO Environmental Management System procedures for Site Contamination Prevention and Control. Additionally, the MPO will register all chemicals used on-site in a central database. The central database will contain all information in the Safety Data Sheets (SDS) and an inventory of chemicals held on-site. The information will be accessible at any computer terminal within the MPO, and will provide guidance on storage, use and disposal.

Hazardous and explosive materials will be transported and stored on-site in accordance with the NSW *Work Health and Safety Act 2011* and supporting *Work Health and Safety Regulation 2017,* the *Work Health and Safety (Mines and Petroleum Sites) Act 2013* and the supporting *Work Health and Safety (Mines and Petroleum Sites) Regulation 2014,* as well as the NSW *Explosives Act 2003* and supporting *Explosives Regulation 2013*.

The procedures and controls will minimise the potential for land and water contamination from the handling, storage and disposal of hazardous substances. These controls will include storage within properly sealed containers and controlled areas, and bunding areas used for medium to long-term storage requirements. These storage and waste receival areas will be isolated from clean water catchments to minimise the risk of land or water pollution should an unplanned spill occur.

The response to any accidental spills or ground contamination will be assessed on a case-by-case basis, and remediated using biodegradable spill absorbent, and in accordance with any requirements of the SDS for the material. Emergency response procedures will also be enacted as required in accordance with the relevant environmental procedures. Hydrocarbon or chemical spills will also be reported in the mine site incident reporting and management system with corrective and preventative measures taken as appropriate, in accordance with the MPO's Pollution Incident Response Management Plan (PIRMP).

The PIRMP has been developed by MACH Energy to satisfy the requirements under Condition O5 of EPL 20850. The PIRMP outlines the process of managing pollution incidents associated with development works, open cut mining, operation of the CHPP, rail spur/loop and FEA and the supply of water to the MPO operations. As outlined in the PIRMP, the NSW *Protection of the Environment Operations Act 1997* requires pollution incidents causing or threatening material environmental harm to the environment to be reported immediately to appropriate authorities. The PIRMP describes management processes related to communication of pollution incidents to staff and appropriate authorities, minimisation, and control of the risk of a pollution incident and implementation of the PIRMP to staff,

Hydrocarbon spills will be managed using bioremediation of the contaminated soils within a bioremediation facility located adjacent the open cut pit, or taken off-site for bioremediation at an appropriate facility. Following a spill, the contaminated soil is transported to the facility (generally via loader) and the details of the incident are recorded in the MPO Bioremediation Tracking Spreadsheet.

Routine testing is undertaken on contaminated soils stored within the facility, until the soils reach a level where they are deemed safe for storage. The soils are then disposed of in-pit (with placement to target areas as low in the pit as possible).

Notwithstanding the above, the treatment of hydrocarbon spills is assessed on a case-by-case basis and is dependent upon the nature and scale of the spill. Should bioremediation not be an appropriate treatment for a spill, other options may include land farming (in accordance with the EPA's *Best Practice Note: Landfarming* [EPA, 2014]) or transporting the contaminated soils off-site for treatment at a treatment facility.

f. Underground Infrastructure

There is currently no underground infrastructure associated with MPO. Minor historical underground workings exist on the northern and southern parts of ML 1645, and parts of ML 1750, with no known associated underground infrastructure.

6.2.3 Landform Establishment

a. Water Management Infrastructure

Decommissioning of water management infrastructure at MPO will be detailed in the Mine Closure Plan and include:

- Confirmation of any water management infrastructure to be retained post-mining.
- Drainage and desilting of structures.
- Reshaping, topsoiling and seeding of structures.

Infrastructure to be retained post-mining includes:

- Water management structures including sediment dams and clean water diversion drains.
- Mine Water Dam if requested for use in agricultural activities post-mining.

The Mine Closure Plan will include detail on the process that will be implemented for any retained infrastructure including risk management.

b. Final Landform and Construction: General Requirements

MACH Energy is aware of the level of local interest with respect to the shape and form of MPO final mine landforms. MACH Energy has therefore developed the following design principles for the MPO final landform as detailed in Section 2.2 and 6.1:

- The final void has been designed as a long-term groundwater sink to maximise groundwater flows from the Eastern Out-of-Pit Emplacement to the final void.
- The final void (and associated drainage network) will be shaped to reflect a less engineered profile that is more consistent with the surrounding natural environment.

General Design Concepts – Outer Batters of Eastern Out-of-Pit Emplacement

The design improvement work conducted by MACH Energy to date for the outer batters of the Eastern Out-of-Pit Emplacement has maintained an average outer emplacement slope of approximately 10°, to be generally consistent with the approved final landform of the MPO.

In order to develop a more natural looking landform, MACH Energy has incorporated significant areas of the outer emplacement batters at slopes of less than 10° (lower slopes), and more limited areas of slopes up to approximately 14° (upper slopes), to provide visually important slope variation, while also maintaining waste rock emplacement capacity.

In practice, significantly steeper slopes than 14° in post-mining landforms can be sufficiently stable in the long term (as in the natural Hunter Valley environment), provided that they are utilised in positions in the final landform that have minimal upslope catchment (e.g. upper slopes) and are part of an integrated geomorphologically robust landform design that reflects the composition of the waste rock material.

The Project integrated waste rock emplacement has been developed using geomorphic design to provide a range of slopes consistent with natural landscape features in the region. The resulting final landform largely limits slopes to less than 33% (18°) (MACH Energy, 2021).

MACH Energy will continue to refine the design of the final landform, and where relevant, will justify areas to be constructed at steep grades (including slopes greater than 14°) on the basis of maintaining waste emplacement capacity and how this is acceptable due to its hydrological/drainage position and/or geomorphically robust design in the final landform. The final landform design would continue to be tested and iteratively designed as additional data is collected on rehabilitation and landform monitoring over the life of the Project.

General Design Concepts – External Drainage

Water runoff from the post-mining landform will either be retained on-site or will runoff/discharge to the surrounding environment. The quality of water retained on-site will be managed to be suitable for its proposed post-mining land use (e.g. low or high intensity grazing, native ecosystem). Water quality of runoff to the surrounding environment will be managed to be similar to waterways in the immediate catchment area. Measures proposed to manage water retained on-site and discharged off-site will include:

- The final landform will incorporate design features to minimise water runoff velocity and erosion potential such as micro and macro relief, a combination of convex and concave outer batters, and gentler slope gradients.
- Revegetation will be undertaken on all mine landforms in accordance with its proposed final land use.
- Erosion and sediment control structures will remain in place (where required) (e.g. rock armour, drains) or until the catchment is rehabilitated and discharge water quality is similar to comparable undisturbed landforms (e.g. silt fencing, sediment dams).
- Mine water dams and sediment dams will be desilted if containing carbonaceous material prior to being reshaped and rehabilitated (except for permanent water management structures and storages agreed to be retained in the final landform).
- Permanent water management structures will be designed and constructed, in accordance with best practice guidelines, including Landcom (2004) *Managing Urban Stormwater: Soils and Construction Volume 1, 4th Edition* (or latest version) and Department of Environment and Climate Change (2008) *Managing Urban Stormwater: Soils and Construction Volume 2* (or latest version).

Detailed management measures to ensure runoff is suitable for receiving waters and fit for aquatic ecology and riparian vegetation will be developed as part of mine closure planning and addressed in future revisions of this RMP.

General Design Concepts – Internal Drainage

To minimise the area of steep slopes and the land sterilised by the final void, MACH Energy has designed the final landform to provide for gently sloping areas to the west of the Eastern Out-of-Pit Emplacement. These areas can potentially be utilised for productive agricultural industries.

This includes a central area where incident rainfall will report to the final void, in part because there is a natural ridgeline to the immediate west of the open cut that remains as a topographic constraint to potential off-site site drainage of the central area if mining were to cease in 2026. It is noted that this ridgeline would be mined through in the originally approved 21 year mine life.

The design of the final void will be refined as required to ensure that the final void will not spill to the environment and will provide a groundwater sink. Final void modelling will be re-evaluated when revised groundwater inflow estimates are available from the MPO contemporary groundwater model (in preparation by HydroSimulations).

MACH Energy has re-designed the final void (Plans 1 and 2) to:

- backfill approximately 1.5 km of the northern part of the final void;
- reduce the depth of the final void in the North and Central Pit areas and decrease the slope of the internal batters;
- apply geomorphic design concepts to parts of the Project landform that drain to the final void; and
- push down the western highwall to an overall angle of approximately 18°.

As a result of the above, the final void is considered safe, geotechnically stable and minimises the catchment reporting to the void whilst still maintaining geomorphic design concepts (i.e. providing sufficient slope length to improve post-mining stability and reduce long-term erosion risk) (MACH Energy, 2021). Additionally, the stable mining slopes associated with the final void highwalls would be flattened to a slope with an overall angle of about 18° or less. The factors of safety (FoS) for the rock buttress is approximately 1.5 and therefore the slopes that it supports are conserved to be in a geotechnically acceptable configuration (GeoTek Solutions, 2020).

Once mining operations cease, water in the final void would no longer be collected and pumped out, and as a result, the void would gradually begin to fill with water. Water in other on-site operational storages may also be transferred to the final void to facilitate decommissioning and rehabilitation (MACH Energy, 2021). The final void presented in the Project EIS (MACH Energy, 2021) will gradually fill with water until it reaches an equilibrium, below the crest (i.e. the void will not overflow). Given the void would act as a groundwater sink, final void salinity levels would increase slowly as a result of evapo-concentration (Hydro Engineering and Consulting, 2020). Over the life of the Project, MACH Energy will continue to consider potential alternative and feasible beneficial uses of the final void, including:

- Opportunities for renewable energy projects (e.g. floating solar facility and/or pumped hydro), including consideration of advancements in renewable energy technology that may occur over the life of the Project.
- The potential application of evaporative controls to maintain water quality suitable for productive use and/or to provide a significant off-river storage of supplementary water flows in the Hunter River.
- Waste disposal, taking advantage of the final void sink to avoid the migration of any related contaminants off-site.

Accordingly, MACH Energy would undertake detailed final void water quality modelling in advance of mine closure and/or as part of the separate environmental assessment and approval process required to authorise an intended final land use. This may include geochemical modelling based on site-specific conditions (e.g. pH, redox and temperature) and focus on how the final void water quality would be managed to achieve the intended post-mining use (as determined at that time).

General Design Concepts – Out-of-Pit Emplacement – Outer Batters Construction Methodology

To facilitate the more rapid establishment of the final landform profiles, MACH Energy will generally construct the outer batters of the eastern face of the overburden emplacement in 10 m lifts that also facilitate the construction of more variable compound final landform slopes.

To maximise the topographic shielding of the evening and night-time mining operations, daytime only construction and final shaping of the outer parts of the Eastern Out-of-Pit Emplacement will be prioritised. This approach has the advantage of providing a visual and noise attenuation barrier between the open cut operations and the town of Muswellbrook, as well as facilitating the rapid establishment of initial rehabilitation on the lower portions of the emplacement.

c. Final Landform Construction: Reject Emplacement Areas and Tailings Dams

As fines emplacement in the FEA only commenced in late 2019, detailed rehabilitation concepts for the final landform remain in preparation. MACH Energy has completed the FEA Stage 1 Rehabilitation and Closure Strategy (SLR, 2021), and will update this plan following each staged lift of the FEA. MACH Energy will continue to develop the final landform rehabilitation concepts which will be informed by the results of future tailings characterisation test work, geotechnical sampling, soil sampling and mapping, water quality and geochemistry results, dam compaction testing, groundwater and piezometer data and other research project results (Section 8.2) and will be guided by relevant industry guidelines (e.g. Guidelines for the Decommissioning of Tailings Facilities (NSW Resources Regulator, July 2020 and Australian National Committee on Large Dams *Guidelines on Tailings Dams (July 2019)*.

d. Final Landform Construction: Final Voids, Highwalls and Low Walls

In developing a more natural looking landform, MACH Energy has incorporated significant areas of the outer emplacement batters at slopes of less than 10° (lower slopes), and more limited areas of slopes up to approximately 14° (upper slopes), to provide visually important slope variation, while also maintaining waste rock emplacement capacity. Slopes greater than 14° will be constructed in accordance with a geomorphically robust design.

The final void, low walls and ramps cannot be rehabilitated progressively over the mine life as they are required up to the end of production for accessing coal and related infrastructure services. All areas of the site, with the exception of the final voids and their surrounding catchments, will be free draining. This will allow effective catchment contribution and yield to the Hunter River, following the cessation of mining.

The final void landform will be rehabilitated with vegetation species and diversity that are appropriate for the complex landform. The highwall will also be rehabilitated using the best reasonable and feasible rehabilitation technologies available and re-vegetated with species that are appropriate for its steepness and aspect. Design alternatives for the final void will be continually evaluated and will be prepared as part of the closure planning process at the MPO. Regardless of the final design alternative selected, the location of the final void will be outside the 100-year recurrence interval flood prone area of the Hunter River. Appropriate measures will be used to limit access to steep areas around the final void to restrict cattle, pedestrian and vehicle access. These measures may include large rock placement, landform shaping, or fencing, as agreed with relevant government authorities prior to closure.

The rehabilitation risk assessment assessed the risk associated with construction of MPO final landforms that are inconsistent with the geomorphic design principles resulting in landform instability and rehabilitation failure and assessed the risk of instability of the final void. With the MPO's existing active management controls in place (i.e. ITP check processes of landform design and as-constructed verification checks, which are signed-off by relevant MPO managers), these risks were ranked as having a low and medium risk, respectively.

e. Construction of Creek/River Diversion Works

There are no constructed creek/river diversions at MPO.

6.2.4 Growth Media Development

A Rehabilitation Procedure has been developed to provide an overarching guide to rehabilitation activities at the MPO and to ensure rehabilitation methods/practices are replicated during each rehabilitation campaign. In general, areas are prepared with growth media suitable for establishing vegetation in accordance with the rehabilitation methodology:

- Establishment of a natural landform.
- Spreading topsoil onto rehabilitation areas, at a minimum depth of approximately 100 mm, that is mixed with gypsum at a standard application rate of 10 tonnes/ha. Replaced soil sourced from soil stockpiles greater than 3 m in height will be inoculated where practicable with Mycorrhizal fungi and rhizobia bacteria to assist with alleviating potential problems with anaerobic conditions that may have developed within the soil during stockpiling.
- Deep ripping the rehabilitation area along the contour to a minimum depth of 500 mm to encourage infiltration. Where practicable, ripping will be undertaken immediately prior to seeding to assist root/vegetation establishment.
- Seeding the rehabilitation area with a native seed mix including native grass, shrub and tree species and temporary cover crop species.
- To limit ant predation of seed, all seed is chemically treated prior to dispersal.
- Installation of habitat features including habitat/stag trees, log piles and rock piles across the rehabilitation area. Where practicable, a minimum of two habitat/stag trees, two log piles and two rock piles will be installed per hectare.
- Planting of tubestock including ground, middle and upper stratum species of the relevant target PCTs when suitable climatic conditions prevail (preferably in the cooler months of spring or autumn within 1 to 2 days after 25 mm of rainfall, where possible).
- Installation of signage denoting rehabilitation area to restrict access and minimise potential for disturbance to the area if considered necessary.
- Rehabilitation management including weed and pest controls.

Planting of rehabilitation areas will be undertaken by qualified ecologist, and in accordance with the revegetation rationale, with plant placement varying depending on species, rehabilitation area and aspect, timing and research and/or trial results. As described in the MPO Biodiversity Management Plan, soil conditioning activities will be undertaken on rehabilitation areas with the aim of increasing moisture and organic content and to buffer surface temperatures to improve germination. Activities may involve aeration, the application of dust suppressant to minimise dust generation and the application of soil ameliorants (as required) such as gypsum, or organic materials such as wood and mulch. Soil testing will be undertaken prior to soil replacement to inform amelioration requirements, including the required rate of ameliorant application.

6.2.5 Ecosystem and Land Use Establishment

In accordance with the rehabilitation objectives in Table 10 of Part B, Condition B87 of the Development Consent SSD 10418 and Table 11 of Condition 53, Schedule 3 of the Development Consent DA 92/97 (prior to its surrender), the proposed native ecosystem areas would aim to restore self-sustaining native woodland ecosystems characteristic of vegetation communities found in the local area. In addition, MACH Energy is required to include development of:

- riparian habitat, within any diverted and/or re-established creek lines and retained water features;
- potential habitat for threatened flora and fauna species including the installation habitat material (e.g. tree hollows, stag trees, coarse woody debris and rocks); and
- wildlife corridors, as far as is reasonable and feasible.

The following subsections provide a description of how MACH Energy will meet these objectives.

The rehabilitation of disturbed areas will be based on the use of local provenance seed, where practical and feasible. Target vegetation communities are outlined below, including typical seed mixes provided in Table 6-1 and 6-2. It is anticipated that the species lists will be further augmented and refined over the life of the MPO based on the results of on-site rehabilitation monitoring performance, on-site rehabilitation investigations and trials and consultation with key stakeholders.

MPO utilise ITP processes to ensure seed mixes are applied in correct areas. Rehabilitation will focus on flora species endemic to the local area, while acknowledging that seed supply may be a limiting factor. In this case, other appropriate native species that have performed well in the region will also be considered. Subject to seed and seedling supply availability and suitability, flora species to be used in rehabilitation will aim to include those typical of the NSW BC Act and EPBC Act listed *White Box Yellow Box Blakely's Red Gum Woodland* EEC.

Commonwealth Approval EPBC 2011/5795 requires development of a Threatened Ecological Community Mine Site Rehabilitation Plan to guide the re-establishment of Box-Gum Woodland CEEC across the Project area, including rehabilitated mine landforms. The Threatened Ecological Community Mine Site Rehabilitation Plan was approved by the Commonwealth Department of Agriculture, Water and the Environment on 22 October 2020. This plan will be reviewed and updated to incorporate the Project in 2025.

Seasonal variations will also be considered, including planning to seed and plant immediately after rain and not during days of excessive heat. In accordance with the MPO Biodiversity Management Plan, tubestock planting will generally be undertaken in spring and autumn, when weather conditions are optimised for vegetation establishment, however opportunistic rehabilitation and assisted native regeneration will be undertaken in summer and winter months if areas become available and prevailing weather conditions are favourable. Depending upon the ground conditions, alternate planting methods will be considered (e.g. long stem tube stock for locations proximal to large watercourses).

Exotic grass species and other cover crops may also be used to provide early groundcover while native woodland species develop. Highly competitive exotic grasses (e.g. Rhodes Grass) and non-local Australian species (e.g. *Acacia saligna*) will not be used anywhere on-site. Use of exotic grass species would be undertaken in consultation with a suitably qualified ecologist/specialist.

Additionally, the MPO Biodiversity Management Plan details the seed collection process and seed management practices implemented to inform the optimal timing for the collection and propagation of seeds for areas planned for disturbance. Seeds are stored in the Seed Harvesting Facility, or alternatively in a long-term seed storage facility, located off-site. Record sheets and GIS databases have been developed and will continue to be maintained to track the collection, storage and utilisation of the MPO seed resource.

Table 6-1
Plant Community Types and Species Proposed for Native Ecosystem Rehabilitation

Species	Common Name
PCT 3395[5] Grey Box/White Box Grassy Open Woodland	
Eucalyptus moluccana	Grey Box
E. albens	White Box
E. melliodora	Yellow Box
Angophora floribunda	Rough-bark Apple
Brachychiton populneus	Kurrajong
Notelaea microcarpa	Native Olive
Psydrax odorata	Shiny-leaved Canthium
Acacia falcata	Falcata Wattle
Acacia decora	Western Golden Wattle
Acacia paradoxa	Kangaroo Thorn
Acacia decurrens	Green Wattle
Dodonaea viscosa	Hop Bush
Daviesia ulicifolia	Gorse-bitter Pea
Sida hackettiana	Spiked Sida
Calotis lappulacea	Burr Daisy
Einadia hastata	Nodding Saltbush
Enchylaena tomentosa	Ruby Saltbush
Atriplex semibaccata	Creeping Saltbush
Einadia trigonos	Fishweed
Native grass and cover crop mix (see below)	
PCT 3431[6] Narrow leaved Ironbark / Native Olive Shrubby Open Forest	
Eucalyptus crebra	Narrow-leaved Ironbark
Notelaea microcarpa	Native Olive
Myoporum montanum	Boobialla
Olearia elliptica	Sticky Daisy Bush
Breynia oblongifolia	Coffee Bush
Acacia paradoxa	Kangaroo Wattle
Acacia falcata	Falcate Wattle
Acacia decora	Western Golden Wattle
Dodonaea viscosa	Hop Bush
Sida hackettiana	Spiked Sida
Lomandra longifolia	Matt Rush
Solanum cinereum	Nawarra Burr
Calotis lappulacea	Burr Daisy
Einadia hastata	Nodding Saltbush
Enchylaena tomentosa	Ruby Saltbush
Atriplex semibaccata	Creeping Saltbush
Native grass and cover crop mix (see below)	
PCT 3315[7] Narrow leaved Ironbark/ Grey Box/ Spotted Gum Shrub / Grass Woodland	
Eucalyptus moluccana	Grey Box
E. crebra	Narrow-leaved Ironbark
Corymbia maculata	Spotted Gum

[5] Previously referred to as PCT 483.

[6] Previously referred to as PCT 1605.

[7] Previously referred to as PCT 1604.

Table 6-1 (Continued)
Plant Community Types and Species Proposed for Native Ecosystem Rehabilitation

Species	Common Name
Eucalyptus tereticornis	Forest Red Gum
Eucalyptus fibrosa	Broad-leaved Ironbark
Acacia parvipinnula	Silver-stem Wattle
Acacia amblygona	Fan Wattle
Bursaria spinosa	Blackthorn
Olearia elliptica	Sticky Daisy Bush
Dodonaea viscosa	Hop Bush
Acacia decora	Western Golden Wattle
Acacia paradoxa	Kangaroo Thorn
Daviesia ulicifolia	Gorse Bitter Pea
Acacia falcata	Falcate Wattle
Indigofera australis	Native Indigo
Kunzea ambigua	Tick Bush
Breynia oblongifolia	Coffee Bush
Allocasuarina luehmannii	Bull Oak
Einadia hastata	Nodding Saltbush
Enchylaena tomentosa	Ruby Saltbush
Atriplex semibaccata	Creeping Saltbush
Sida hackettiana	Spiked Sida
Dysphania carinata	Green Crumbweed
Native grass and cover crop mix (see below)	
Native Grass and Cover Crop Mix*	
Aristida mix (includes *A. ramosa, A. vagans*)	Purple Wiregrass, Threeawn Speargrass
Austrodanthonia mix (includes *A. setacea, A. fulva, A. caespitosa*)	Smallflower Wallaby Grass, Wallaby Grass, Ringed Wallaby Grass
Austrostipa scabra	Speargrass
Austrostipa verticillata	Slender Bamboo Grass
Bothriochloa macra and B. decipiens	Red Grass
Dichelachne micrantha	Shorthair Plumegrass
Chloris truncata	Windmill Grass
Cymbopogon refractus	Barbed Wire Grass
Dichanthium sericeum	Queensland Bluegrass
Microlaena stipoides	Weeping grass
Panicum effusum	Hairy Panic
Eragrostis sp.	Lovegrass
Elymus scaber	Common Wheatgrass
Digitaria sp.	Umbrella Grass
Sporobolus creber	Western Rat-tail Grass
Themeda triandra	Kangaroo Grass
Cynodon dactylon #	Couch Grass
Echinochloa esculenta #	Japanese Millet
Avena sativa #	Oats

* Includes but is not limited to the above species and includes species endemic to the area.
\# Cover crop species.

Table 6-2
Plant Community Types and Species Proposed for Native Ecosystem Rehabilitation – Trial PCT

Species	Common Name	Species	Common Name
TRIAL PCT 1543 Rusty Fig - Native Quince - Native Olive Dry Rainforest of the Central Hunter Valley			
Alectryon subcinereus	Native Quince	*Geijera parvifolia*	Wilga
Ficus rubignosa f rubignosa	Rusty Fig	*Geijera salicifolia*	Scrub Wilga
Melia azedarach	White Cedar	*Olearia elliptica*	Sticky Daisy Bush
Allocasuarina torulosa	Forest Oak	*Teucrium juncea*	Bead Bush
Angophora floribunda	Rough-barked Apple	*Einadia trigonos*	Fishweed
Brachychiton populneus	Kurrajong	*Lomandra longifolia*	Matt Rush
Casuarina cunninghamiana	River Oak	*Carex appressa*	Tall Sedge
Acacia falcata	Falcate Wattle	*Enchylaena tomentosa*	Ruby Saltbush
Acacia decora	Western Golden Wattle	*Sida hackettiana*	Spiked Sida
Acacia paradoxa	Kangaroo Thorn	*Dysphania carinata*	Green Crumbweed
Acacia implexa	Hickory	*Gahnia aspera*	Saw Sedge
Dodonaea viscosa	Hop Bush	*Atriplex semibaccata*	Berry Saltbush
Melicope micrococca	White Euodia	Native grass and cover crop mix	
Myrsine howittiana	Brush Muttonwood		
Myrsine variabilis	Muttonwood		
Streblus brunonianus	Whalebone Tree		
Clerodendrum tomentosum	Hairy Clerodendrum		
Notelaea microcarpa	Native Olive		
Breynia oblongifolia	Coffee Bush		
Bursaria spinosa	Blackthorn		
Ficus coronata	Sandpaper Fig		

Native Woodland Ecosystems and Habitat for Threatened Flora and Fauna

Updated vegetation mapping of the MPO was undertaken by Dr Colin Driscoll (Hunter Eco) (Figure 5) for the Project EIS (MACH Energy, 2021). Extensive flora and fauna surveys have been conducted in the vicinity of the Project, most recently in 2018, 2019 and 2020 by Hunter Eco (2020) and Future Ecology (2020).

In accordance with Part B, Condition B63(f) of Development Consent SSD 10418, MACH Energy will establish 66.6 hectares (ha) of PCT 1605 and 7 ha of PCT 1602 as part of the rehabilitation program at the MPO.

A recent major revision to the classification of native plant assemblages of eastern NSW has established a new framework and typology inclusion in the NSW PCT schema (DPE, 2022). From this reclassification of easter NSW PCTs, a number of PCTs in relation to the Project EIS (MACH, 2021) and associated Biodiversity Development Assessment Report (Hunter Eco, 2020) have been reclassified, as outlined in Table 6-3.

Table 6-3
Relevant MPO Eastern NSW PCT Reclassification

Previous PCT (Hunter Eco, 2020)	Previous Description (Hunter Eco, 2020)	Reclassified PCT (DPE, 2022)	Reclassified Description (Hunter Eco, 2024)
483	• Grey x White Box Grassy Woodland + DNG • Grey x White Box – Spotted Gum Grassy Woodland + DNG	3395	• White Box Grassy Woodland + DNG • White Box – Spotted Gum Grassy Woodland + DNG
618	• Forest Red Gum Grassy Open Forest + DNG	3446	• Forest Red Gum Grassy Forest
1691	• Narrow-leaved Ironbark – Grey Box Grassy Woodland + DNG	3314	• Narrow-leaved Ironbark – Grey Box Grassy Woodland + DNG
1602	• Spotted Gum – Narrow-leaved Ironbark Woodland + DNG	3315	• Spotted Gum – Narrow-leaved Ironbark Woodland + DNG
1605	• Narrow-leaved Ironbark Shrubby Forest + DNG + Plantation	3431	• Narrow-leaved Ironbark Shrubby Forest + DNG + Plantation + Topsoil Stockpile
1606	• White Box – Narrow-leaved Ironbark – Blakely's Red Gum + DNG	3396	• White Box – Narrow-leaved Ironbark – Blakely's Red Gum + DNG
1655	• DNG	3485	• DNG

Note:
DNG = Derived Native Grassland.

Analysis of this vegetation mapping indicates that the most widespread communities being disturbed by the MPO are the following:

- PCT 3395[8] – White Box – Spotted Gum Grassy Woodland and DNG.
- PCT 3315[9] – Spotted Gum – Narrow-leaved Ironbark Woodland.
- PCT 3431[10] – Narrow-leaved Ironbark Shrubby Forest Woodland and DNG.

[8] Previously referred to as PCT 483.

[9] Previously referred to as PCT 1604.

[10] Previously referred to as PCT 3431.

These communities would be targeted for rehabilitation as ecosystems characteristic of vegetation communities found in the local area and also to provide potential habitat for threatened flora and fauna. In addition to these key PCTs, PCT 1543 *Rusty Fig - Native Quince - Native Olive dry rainforest of the Central Hunter Valley* is being trialled in aspect planting surrounding drainage areas of rehabilitated landforms.

Provisional species lists for the targeted PCT communities as well as a targeted native grass species list have been developed by MACH Energy and are provided in Tables 6-1 and 6-2. These species lists and seed mixes may be subject to amendment due to availability from MPO's Seed Harvesting Facility and/or from external provider.

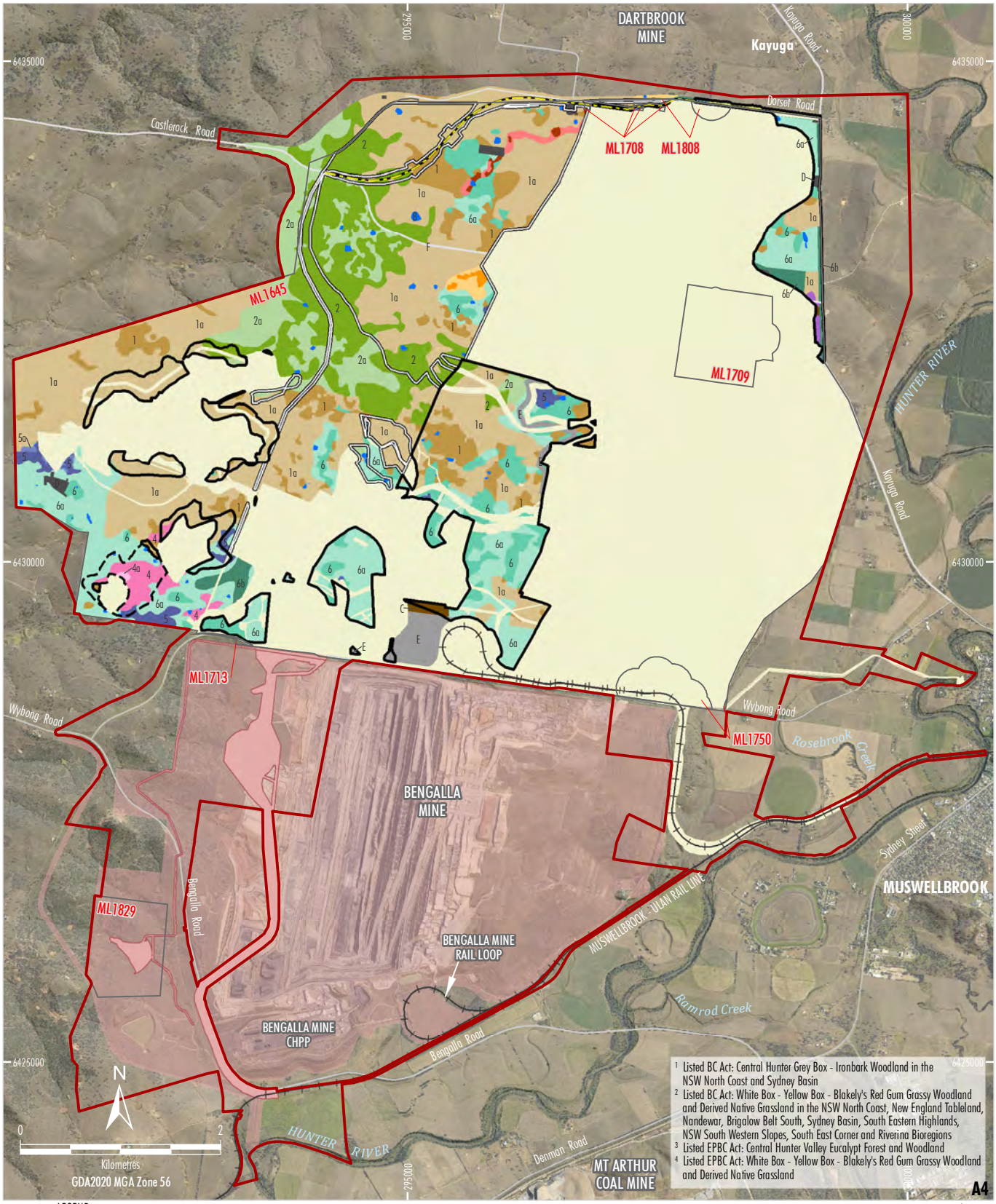
Vegetation community boundaries surrounding MPO is shown on Figure 5.

A revegetation rationale has been developed to guide where each PCT will be re-established on MPO final landforms (e.g. Ironbark communities would be more suited to upper slope areas and Grey Box - White Box communities would be more suited to lower slopes and flatter areas, with Dry Rainforest communities specifically within the south-facing drainage lines). The annual rehabilitation plans include details of target PCTs and PCT planting plans/maps. It is anticipated that the PCTs targeted for rehabilitation and the revegetation rationale would be further augmented and refined over the life of the MPO based on the results of on-site investigations and rehabilitation trials, and consultation with key stakeholders.

Consistent with the MPO's Rehabilitation Strategy and MSC's recommendations, highly competitive exotic grasses (e.g. Rhodes Grass [*Chloris gayana*]) and non-local Australian species (e.g. Golden Wreath Wattle [*Acacia saligna*]) will not be used anywhere on-site.

Habitat features including habitat/stag trees, rock piles and log piles, will be installed to provide fauna habitat across MPO rehabilitation areas. Where practicable, a minimum of two habitat/stag trees, two log piles and two rock piles will be installed per hectare across Native Ecosystem areas (excluding inappropriate areas e.g. drainage features and water managements structures). Where this is not possible, further augmentation of habitat will consider the use of supplementary features such as nest and bat boxes.

The habitat requirements of the fauna species will be considered when selecting and placing features across the landscape. Habitat/stag trees will be selected based upon the presence of hollows, loose bark, height and branches for nesting. Rock for rock piles where possible will be of sandstone of similar material. Log piles will be used to recreate 'fallen timber' within the landscape, and will be placed parallel to the contour so minimise erosion potential downslope.



MAC-18-03A Rehabilitation MP 2025 _ Figure 5 _ Rev B

LEGEND

- Project Approval Boundary*
- Coal - Current Titles
- Project Continuation of Existing/Approved Surface Development (DA92/97)
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)
- Existing/Approved Mount Pleasant Operation Infrastructure within Bengalla Mine Approved Disturbance Boundary (SSD-5170)
- Development Footprint 1 (Stage 1) - General Extension Areas
- Development Footprint 1 (Stage 2) - Mine Water Dam 3
- Northern Link Road Refined Option 2 Centreline
- Relinquishment Area

VEGETATION COMMUNITIES**

Grassy Woodlands

- 1 Grey Box x White Box Grassy Woodland (PCT483) [2, 4]
- 1a Derived Native Grassland (PCT483) [2, 4]
- 2 Grey Box x White Box - Spotted Gum Grassy Woodland (PCT483) [2, 4]
- 2a Derived Native Grassland (PCT483) [2, 4]
- 3 Forest Red Gum Grassy Open Forest (PCT618) [2, 4]
- 3a Derived Native Grassland (PCT618) [2, 4]
- 4 Narrow-leaved Ironbark - Grey Box Grassy Woodland (PCT1691) [1, 3]
- 4a Derived Native Grassland (PCT1691)

Dry Sclerophyll Forests (Shrub/grass sub-formation)

- 5 Spotted Gum - Narrow-leaved Ironbark Woodland (PCT1602) [3]
- 5a Derived Native Grassland (PCT1602)
- 6 Narrow-leaved Ironbark - Native Olive Shrubby Open Forest (PCT1605) [3]
- 6a Derived Native Grassland (PCT1605)
- 6b Plantation (PCT1605)
- 7 White Box - Narrow-leaved Ironbark - Blakely's Red Gum (PCT1606) [2, 4]
- 7a Derived Native Grassland (PCT1606) [2, 4]

Dry Sclerophyll Forests (Shrubby sub-formation)

- 8a Derived Native Grassland (PCT1655)

Other

- A Cropping/Grazing
- B Dam
- C Disturbed
- D Dwellings
- E Infrastructure
- F Local Roads

* Appendix 1 of Development Consent SSD 10418

** Plant Community Type (PCT) consistent with previous classifications. Refer to Table 6-3 for reclassified PCTs.

Source: MACH (2025); Hunter Eco (2021); NSW Spatial Services (2025); Department of Planning and Environment (2016) Orthophoto: MACH (Dec 2024)

Date prepared: 25-06-2025

MACHEnergy

MOUNT PLEASANT COAL MINE REHABILITATION MANAGEMENT PLAN

Vegetation Communities

Figure 5

Riparian Habitat

The main drainage feature within the vicinity of the MPO is the Hunter River, which flows in a southerly direction approximately 1 km to the east of the MPO area. The pre-mining environment of the MPO consists of a number of ephemeral drainage lines that drain into the Hunter River, however no perennial streams/creeks exist on-site. The final landform design presented in the Project EIS (MACH Energy, 2021) and approved under Development Consent SSD 10418 will contain ephemeral drainage lines. These drainage lines will be targeted for the creation of riparian habitat. The final landform drainage lines will be designed to accommodate natural erosive processes and will incorporate geomorphic characteristics such as nature of bed material (e.g. particle size), presence of rock outcrops, bed features (such as cascades, pool and riffle zones) as well as bed and bank vegetation. The detailed design will involve modelling and other similar catchment/drainage and landform design software to determine specific locations and design features of drainage line/riparian habitat areas.

Revegetation of the final void will use species that are appropriate for its steepness and aspect, however this is not envisaged to create a riparian ecosystem, rather this vegetation will be used for stabilisation and aesthetic purposes.

In accordance with Development Consent DA 92/97 (prior to its surrender), the Mine Water Dam at the southern boundary of ML 1645 will potentially be retained for high intensity agriculture, and may potentially provide conditions for establishment of riparian habitat. If the water storage (excluding final void) is retained, vegetation species occurring in riparian areas of the surrounds will be used for revegetation. Species that would be targeted for revegetation of this area may include:

- Upper stratum - *Eucalyptus camaldulensis*, *Casuarina cunninghamiana* subsp*. cunninghamiana*, *Angophora floribunda.*
- Middle stratum - *Melicytus dentatus*, *Callistemon salignus*.
- Lower stratum - *Austrostipa verticillata*, *Austrodanthonia* spp., *Cynodon dactylon*, *Microlaena stipoides* var. *stipoides*, *Bothriochloa macra*, *Eleocharis sphacelata*, *Lomandra longifolia*, *Carex appressa.*

However, in accordance with Development Consent SSD 10418, water management structures that are not to be retained in the final landform will be decommissioned (i.e. dam walls removed, drained and backfilled). Mine water dams will be emptied and discharge water will be disposed of in the final void. Dams that are to remain post closure will be desilted. Sediments accumulated in mine water and sediment dams will be removed from the dam floor and emplaced in the final void.

During the operational phase of the MPO, riparian vegetation (including sedge and rush species) would also be established around sediment dams to provide areas of riparian habitat.

Wildlife Corridor

Consistent with MSC's recommendations for the Bengalla Mine final landform, the eastern face of the MPO final landform would be revegetated with native tree species as shown in Plans 1 and 2. This would allow the landform to assimilate with the open woodland communities within the surrounding environment.

The revegetated eastern face would provide a contiguous wildlife corridor with the revegetated eastern face of the Bengalla Mine for native woodland bird species. Given the close proximity of the revegetated woodland areas, bird species could utilise both areas for habitat establishment and foraging. In addition, the vegetation on the eastern face of the MPO Eastern Out-of-Pit Overburden Emplacement would develop a contiguous wildlife corridor with the Bengalla Mine rehabilitation and surrounding remnant woodland, and also be visually consistent with the revegetation of the eastern face of the Bengalla Mine landform.

MACH Energy has undertaken preliminary consultation with the Bengalla Mining Company regarding integration of rehabilitation across the MPO and the Bengalla Mine. MACH Energy proposes to continue collaboration with the Bengalla Mining Company by (for example) undertaking joint rehabilitation workshops to discuss rehabilitation strategies, revegetation species and implementation measures. MACH Energy is committed to information sharing to facilitate integration of rehabilitation across the MPO and the Bengalla Mine.

MACH Energy has also established a "connectivity corridor" on buffer lands to the east of the site and adjacent to the Hunter River. The objective of the "connectivity corridor" is to connect the Hunter River Riparian one to the mine rehabilitation for fauna ingress and egress, with tube stock planting having been undertaken in 2021.

Low Intensity Agriculture

Consultation with MSC indicated a preference for intensive agricultural/industrial post-mining land uses that provide employment for the local community. Consequently, rehabilitation of the MPO will consider both low and high intensity agricultural land uses.

Low intensity agriculture would consist of reinstating grazing country and high intensity agriculture may include feedlots, poultries or agricultural produce processing facilities, however until such a time a proposal is developed for such uses, these areas would be rehabilitated to low intensity agriculture. Descriptions of currently proposed low and high intensity agriculture post-mining land uses is provided below. These land uses may be refined through further consultation with MSC and other stakeholders (including the MPO's CCC) during the MPO mine life.

The areas proposed for low intensity agriculture are shown on Plans 1 and 2 and would be prepared to accommodate sustainable agricultural activities such as sustainable/managed livestock grazing. The objective will be to establish areas to be classified as Land Capability Class 3 or 4, or where this is not reasonable or feasible to achieve Class 5 or Class 6 lands, which are suitable for grazing, but not cropping, forestry or other high intensity uses. The definitions of Land Capability Class 3,4, 5 and 6 lands (as defined by the OEH [2012] *The land and soil capability assessment scheme: second approximation - a general rural land evaluation system for New South Wales*) are provided in Table 6-4. It should be noted that although the definitions of Land Capability Class 5 and 6 lands include land uses such as forestry and nature conservation (in addition to grazing), MACH Energy does not propose to establish forestry on the rehabilitation areas proposed for low intensity or high intensity agriculture.

Table 6-4
Land Capability Classes Proposed for Low Intensity Agriculture Areas

Class	Definitions
3	**High capability land:** Land has moderate limitations and is capable of sustaining high-impact land uses, such as cropping with cultivation, using more intensive, readily available and widely accepted management practices. However, careful management of limitations is required for cropping and intensive grazing to avoid land and environmental degradation.
4	**Moderate capability land**: Land has moderate to high limitations for high-impact land uses. Will restrict land management options for regular high-impact land uses such as cropping, high-intensity grazing and horticulture. These limitations can only be managed by specialised management practices with a high level of knowledge, expertise, inputs, investment and technology,
5	**Moderate–low capability land**: Land has high limitations for high-impact land uses. Will largely restrict land use to grazing, some horticulture (orchards), forestry and nature conservation. The limitations need to be carefully managed to prevent long-term degradation,
6	**Low capability land**: Land has very high limitations for high-impact land uses. Land use restricted to low-impact land uses such as grazing, forestry and nature conservation. Careful management of limitations is required to prevent severe land and environmental degradation,

Source: OEH (2012).

Low intensity agricultural rehabilitation areas would be cultivated and then broadcast sown with pasture species. The species mix would be developed in consultation with an agronomist, and depend on the growth media available and environmental conditions at the time of rehabilitation. Species selection would also take into consideration its ability to encroach on rehabilitation areas proposed for native ecosystem re-establishment.

Improved pasture species commonly present in the surrounding grazing country that would be considered for rehabilitation of low intensity agricultural areas include:

- Subterranean clover (*Trifolium subterranean*).
- White Clover (*Trifolium repens*).
- Lucerne (*Medicago sativa*).
- Green Panic (*Panicum coloratum*).
- Kikuyu Grass (*Pennisetum clandestinum*).
- Perennial Rye (*Lolium perenne*).
- Phalaris (*Phalaris aquatica*).
- Oat (*Avena sativa*).

Native grass species will also be considered in pasture species such as *Cynodon dactylon* (Couch), *Austrodanthonia* spp. (Wallaby grasses) and *Austrostipa* spp. (Spear grasses) which have been shown to develop well in post mining landscapes of the Hunter Valley (Huxtable, Koen and Waterhouse, 2005). Areas on the final landform likely to be lower in soil moisture (e.g. steeper terrain) will be targeted for establishment of native grasses due to their ability to withstand such conditions in comparison to introduced pasture species.

Consistent with the MPO's Rehabilitation Strategy and MSC's recommendations, highly competitive exotic grasses (e.g. Rhodes Grass [*Chloris gayana*]) and non-local Australian species (e.g. Golden Wreath Wattle [*Acacia saligna*]) will not be used anywhere on-site.

High Intensity Agriculture

High intensity agriculture areas have been proposed as a result consultation undertaken during the Project EIS (MACH Energy, 2021) with MSC who has indicated its preference for post mining land uses that may provide local employment. Activities that may be classed as high intensity include feedlots, poultries or agricultural processing facilities. Until such a time a proposal is developed for such intensive uses, planning for all non-woodland areas would target low intensity agriculture. Areas currently proposed for high intensity agriculture have been identified on Plans 1 and 2 and have been nominally located at this stage due to their topography and proximity to a potential water storage dam for water supply.

High intensity agriculture areas will be refined in consultation with MSC and relevant stakeholders (including the MPO's CCC) throughout the life of the MPO and will depend on such factors as commercial interest. Any development of high intensity agriculture will be subject to development approval with the relevant consent authority.

6.2.6 Ecosystem and Land Use Development

Rehabilitated areas at MPO are actively management to ensure rehabilitation achieves approved rehabilitation objectives, completion criteria and this RMP. Management activities include measures such as:

- Weed and pest management.
- Bushfire management.
- Rehabilitation monitoring including water quality monitoring.
- Maintenance activities including erosion management, replanting/reseeding, repair of fencing and access tracks, etc.

Weeds and Pests

The key weed and pest species on the MPO landscape include: African Boxthorn (*Lycium Ferocissimum*); St John's Wort (*Hypericum perforatum*); Galenia (*Galenia pubescens)*; Bathurst Burr (*Xanthium spinosum*); Spear Thistle (*Cirsium vulgare*); feral dogs; foxes; feral pigs; and mice. Ongoing management activities are undertaken to control the presence of these species.

Weed management at the MPO will be undertaken in accordance with advice from the Upper Hunter Weeds Authority, and in accordance with the *Biosecurity Act 2015*. The MPO also has a weed management procedure which will be implemented across the MPO area. The procedure includes a description of the Weeds of National Significance, priority and environmental weed species which pose a threat to the site. Monitoring of weed presence, extent and other factors which may contribute to growth/decline of populations will occur regularly.

As described in the MPO Biodiversity Management Plan, weed management measures that may be undertaken at the MPO include (but are not limited to):

- Regular inspections of MACH Energy-owned lands to identify areas requiring the implementation of weed management measures.
- Regular inspections and maintenance of topsoil stockpiles noting that there can be a high density of weed propagule in topsoil.
- Management of cattle movement to mitigate the risks associated with the control of weeds in manure, around stockyards, and key access corridors.
- Consultation with neighbouring landowners and the relevant government stakeholders, such as the Upper Hunter Weeds Authority, regarding regional weed management strategies.
- Implementation of appropriate weed management measures, which may include mechanical removal, application of approved herbicides and biological control.
- Control of priority weeds, or plants identified as key threatening processes on MACH Energy-owned land in accordance with the relevant DPI control category and the regional Weed Management Plan.
- Identification of weed infestations adjacent to or within the proposed disturbance area during pre-clearance surveys.
- Follow-up inspections to assess the effectiveness of the weed management measures implemented and the requirement for any additional management measures.
- Use of erosion and sediment control measures in accordance with the Water Management Plan to control nutrient/weed migration.

- Ensuring machinery hygiene protocols are implemented for all machinery working in/around the MPO area to control the spread of weeds.
- Where chemical spraying is utilised, consideration of appropriate measures to ensure the safety and effectiveness of spraying will be undertaken (i.e. approval of an appropriate contractor and chemicals, timing of application during active growth, as well as consideration of surrounding land uses and prevailing weather conditions to reduce spread). Chemical spraying will not occur within or adjacent to waterbodies, watercourses or stormwater systems. In these areas, the chemical will be applied manually.

The outcomes of these weed and pest management activities will be reported in the Annual Review.

The risk of failure of MPO rehabilitation due to weed and/or pest infestation has been assessed as moderate and is mitigated by implementation of the MPO's existing management practices and controls, as described above.

Bushfire Management

The main objectives of bushfire management within the MPO Development Consent SSD 10418 and Development Consent DA 92/97 boundary and on MACH Energy owned land are to minimise the risk of bushfires and to rapidly control any outbreaks that might occur. A Bushfire Management Plan has been developed and is implemented at the MPO (and for all MACH Energy-owned lands). The Plan includes control measures to protect people, property, assets, places of heritage value, threatened flora and fauna and to minimise the potential spreading of bushfires in and around the MPO.

The control measures implemented to prevent and manage bushfires focus on minimising the amount of fuel available at the MPO and its surrounding land. As described in the MPO Biodiversity Management Plan, these measures include (but are not limited to):

- slashing of vegetation along roads and internal tracks which are used as fire trails and assist in dividing the site into control zones;
- controlled burns to be undertaken under the advice of the NSW Rural Fire Service, at intervals across the site to create a mosaic fire pattern and allow fauna refuge in unburnt vegetation;
- the use of livestock to reduce pasture-based fuel loads on land suitable for grazing; and
- a network of water supply points to assist the NSW Rural Fire Service (RFS) with logistical support.

In the event of a bushfire at the MPO, the MPO's Bushfire Management Plan and emergency response procedures will be enacted. Trigger events relevant to a fire/bushfire on-site affecting rehabilitation areas are addressed in the Trigger Action Response Plan (TARP).

6.3 REHABILITATION OF AREAS AFFECTED BY SUBSIDENCE

No subsidence impacts will occur as a result of the operations planned at the MPO, as mining operations are open cut. Minor historical underground workings exist on the northern and southern parts of ML 1645, and parts of ML 1750. These workings do not pose a risk to MPO rehabilitation.

7 REHABILITATION QUALITY ASSURANCE PROCESS

A Rehabilitation Quality Assurance Process will be implemented which details rehabilitation, key actions and/or processes nominated for each phase throughout the life of the operations to ensure that:

- Rehabilitation is implemented in accordance with the nominated methodologies.
- Identified risks to rehabilitation are adequately addressed before proceeding to the next phase of rehabilitation.

The Rehabilitation Quality Assurance Process will be integrated into day to day operations at the MPO and implemented throughout the life of the operation, including into closure. The Rehabilitation Quality Assurance Process is outlined in Table 7-1. Rehabilitation validation monitoring is undertaken as described in Section 8.

Table 7-1
Rehabilitation Quality Assurance Process

Rehabilitation Phase	Quality Assurance Process	Responsibilities for Implementation	Documentation / Recording Process	Review Process and Timeframes
Active Mining	ITPs for each stage of rehabilitation Mine planning, both 5 year plan and LOM plan Weed and pest management programs Erosion and sediment control programs and inspections Monthly inspections Survey control	Technical Services Manager Environment & Community Manager	ITPs Monthly inspections Annual Rehabilitation Report and Forward Program Topsoil inventory Quarterly weed management reports	Annually and/or following an incident
Decommissioning	Inspections and demolition reporting processes Contaminated land assessments	Technical Services Manager Environment & Community Manager	Monthly waste reports Decommissioning reports As-constructed final landform plan	Annually and/or following an incident
Landform Establishment	ITPs for each stage of rehabilitation Mine planning, both 5 year plan and LOM plan Erosion and sediment control programs and inspections Monthly inspections Survey control	Technical Services Manager Environment & Community Manager	ITPs Annual rehabilitation monitoring Monthly inspections	Annually and/or following an incident

Table 7-1 (Continued)
Rehabilitation Quality Assurance Process

Rehabilitation Phase	Quality Assurance Process	Responsibilities for Implementation	Documentation / Recording Process	Review Process and Timeframes
Growth Media Development	ITPs for each stage of rehabilitation Topsoil inventory and management plan processes Weed and pest management programs Erosion and sediment control programs and inspections Monthly inspections Survey control	Environment & Community Manager	ITPs Annual rehabilitation monitoring Monthly inspections Topsoil inventory Quarterly weed management reports	Annually and/or following an incident
Ecosystem and Land Use Establishment	ITPs for each stage of rehabilitation Topsoil inventory and management plan processes Weed and pest management programs Erosion and sediment control programs and inspections Monthly inspections	Environment & Community Manager	ITPs Annual rehabilitation monitoring Monthly inspections Quarterly weed management reports	Annually and/or following an incident
Ecosystem and Land Use Development	ITPs for each stage of rehabilitation Topsoil inventory and management plan processes Weed and pest management programs Erosion and sediment control programs and inspections Monthly inspections	Environment & Community Manager	ITPs Annual rehabilitation monitoring Monthly inspections Quarterly weed management reports	Annually and/or following an incident

Note:
ITP = Inspection Test Plan.
LOM = Life of Mine.

ITP checks are quality assurance checks which are undertaken to ensure the rehabilitation specifications have been met. MACH Energy implements ITPs for Landform Design, Landform Construction Profiling, Topsoil Placement, Drainage Construction and Ripping and Seeding. Each ITP is required to be signed off by relevant MACH Energy personnel.

8 REHABILITATION MONITORING PROGRAM

MACH Energy has collaborated with Umwelt Environmental Consultants to develop a Rehabilitation Monitoring Manual (RMM) for the MPO. The RMM has been prepared to guide rehabilitation monitoring at the MPO so that the monitoring program can be consistently replicated year to year and produces statistically robust and consistent data.

The RMM describes MPO rehabilitation objectives, performance indicators and completion criteria for the progressive rehabilitation phases, and the rehabilitation monitoring methodologies and monitoring parameters. An Ecosystem Function Analysis (EFA) data collection form is included in the RMM to ensure accurate data collection.

The RMM will also include a TARP for actions required to be undertaken should rehabilitation monitoring results indicate that the rehabilitation area is not trending towards meeting the performance indicators and completion criteria.

A rehabilitation monitoring program has been implemented at MPO based on the performance indicators and completion criteria. The monitoring program described in this RMP is the responsibility of the Environment & Community Manager. Details of rehabilitation performance will be reported in the MPO Annual Review and updated in this report.

Where necessary, rehabilitation procedures will be amended based on the monitoring results, to continually improve rehabilitation standards.

8.1 ANALOGUE SITE BASELINE MONITORING

Analogue monitoring sites have been and will continue to be established in areas of the relevant PCTs to be targeted for rehabilitation. The target PCTs relevant to Native Ecosystem rehabilitation areas include:

- PCT 3395[11]– White Box – Spotted Gum Grassy Woodland and DNG;
- PCT 3315[12] – Spotted Gum – Narrow-leaved Ironbark Woodland; and
- PCT 3431[13] – Narrow-leaved Ironbark Shrubby Forest Woodland and DNG.

Four analogue monitoring sites were established in 2019 in sloped and eastern areas of PCT 3395 within the MPO Development Consent boundary. Analogue monitoring sites in PCTs 3315 and 3431 were established in 2020/21, with additional analogue sites for these PCTs to be identified and established in 2022/23. An additional analogue monitoring site in PCT 1543 *Rusty Fig - Native Quince - Native Olive dry rainforest of the Central Hunter Valley* was established in 2023.

Two analogue monitoring sites were initially established in 2019 in PCT 1606 (White Box – Narrow leaved Ironbark – Blakely's Red Gum shrubby open forest of the central and upper Hunter). However, upon further assessment and scrutiny of this PCT 1606 patch, this vegetation is more associated with ephemeral watercourses, which is not considered to be a suitable vegetation community for establishment surrounding overburden emplacement drainage areas. Therefore, these two analogue monitoring sites are considered inappropriate for use as analogue sites for Native Ecosystem rehabilitation areas, and will not be included in the rehabilitation monitoring program at this stage.

[11] Previously referred to as PCT 483.

[12] Previously referred to as PCT 1604.

[13] Previously referred to as PCT 1605.

These analogue sites may be included in the rehabilitation monitoring program once MPO rehabilitation include revegetation activities for gullies/drainage areas on lower slopes.

8.2 REHABILITATION ESTABLISHMENT MONITORING

Three permanent rehabilitation monitoring transects have been established across the Eastern Out-of-Pit Overburden Emplacement rehabilitation areas, with additional monitoring transects to be established once rehabilitation activities have been completed. A rehabilitation monitoring schedule is also included in the RMM, which will continually be updated to include the rehabilitation and analogue monitoring sites as they are added to the rehabilitation monitoring program.

The rehabilitation monitoring program includes:

- EFA monitoring;
- visual Inspection Monitoring;
- ecosystem and rehabilitation monitoring assessment using drone technology;
- low intensity agriculture monitoring programme; and
- stream health monitoring.

8.2.1 Ecosystem Function Analysis

The objective of this component of the monitoring program is to evaluate the progress of rehabilitation towards fulfilling long-term land use objectives and completion criteria. Monitoring of rehabilitation areas will be undertaken annually[14] to:

- compare monitoring results against rehabilitation objectives, performance indicators and completion criteria;
- identify possible trends and areas for improvement;
- link to records of rehabilitation to determine causes and explain results;
- assess effectiveness of environmental controls implemented;
- where necessary, identify modifications required for the monitoring program, rehabilitation practices or areas requiring research;
- compare flora species present against original seed mix and/or reference sites;
- assess vegetation health;
- assess vegetation structure (density of upper, mid and lower storey); and
- where applicable, assess native fauna species diversity and the effectiveness of habitat creation for target fauna species.

Where necessary, rehabilitation procedures will be amended based on rehabilitation monitoring results to continually improve rehabilitation standards, or as more data becomes available regarding reference sites or the targeted vegetation community, completion criteria can be updated to ensure rehabilitation is improving on the right trajectory.

The methodology used to undertake this monitoring is EFA. EFA consists of the LFA methodology and vegetation/ecological monitoring and assessment components.

[14] Post-closure, monitoring may be undertaken at an alternative frequency if a suitably qualified and experienced person considers that annual monitoring is not warranted due to the advanced/mature condition of the rehabilitation.

LFA assesses the landscape's ability to retain water and nutrients within the system. In terms of LFA, a soil landscape that is on a self-sustaining trajectory toward (in context of vegetative cover and soil stability) will have (Tongway and Hindley, 2004):

- A high Landscape Organisation Indicator (i.e. a low number of bare soil patches, referred to as inter-patches, between obstruction components, referred to as patches, in the soil landscape).
- High Soil Surface Assessment indices, indicating that the site had favourable nutrient, infiltration and stability characteristics.

Vegetation monitoring components are the other component of the EFA monitoring tool. This component is limited to the woodland areas, as woody vegetation is typically not represented within pasture areas.

An assessment of woody species density, species richness and canopy cover all contribute to the findings of the LFA in terms of available nutrients, soil stability and water infiltration. In terms of vegetation dynamics, a soil landscape that is on a self-sustaining trajectory in the context of vegetative cover will generally have:

- high percentage ground cover vegetation and/or leaf litter components with a corresponding low percentage of bare soil areas;
- high percentage canopy cover;
- high density of woody species; and
- high species richness (particularly pertinent to habitat complexity components).

Soil testing at both rehabilitation monitoring sites and analogue sites will also be conducted for the following parameters:

- pH, Electrical Conductivity, and sulphate (SO_4);
- Cation Exchange Capacity and Exchangeable Sodium Percentage;
- Emerson Dispersion Test; and
- Organic Carbon.

Soil sampling will be undertaken at both the rehabilitation monitoring sites and analogue monitoring sites annually to allow the detection of positive and negative changes in soil properties.

Diagnostic soil testing will also be undertaken at rehabilitation areas that exhibit persistent poor performance in groundcover, erosion and vegetative growth/vigour. Where soil test results are inconclusive in relation to the cause of poor rehabilitation performance, soil samples would be tested using an extractable elemental analysis method (e.g. Inductively Coupled Plasma Mass Spectrometry or Inductively Coupled Plasma Optical Emission Spectrometry) for detection of metals or other contaminants.

Utilising the EFA (including LFA and ecological monitoring components) method and soil testing, scientifically robust data is provided on the rehabilitation sites which, when compared to the data collected from analogue sites, will enable MACH Energy to accurately track if the rehabilitation site is on a self-sustaining trajectory. The interpretation of this data will enable the identification of those rehabilitation sites exhibiting lower EFA rankings and instigation of corrective actions to improve performance.

8.2.2 Visual Inspection Monitoring

Visual Inspection Monitoring of existing and recently completed rehabilitation areas will be undertaken monthly. A Visual Inspection Monitoring involves recording of:

- erosion presence, including type (e.g. rill, gully, tunnel), dimension and active state of the erosion;
- weed presence, including species, infestation area (square metres), and cover (%) or count;
- groundcover description; and
- comments and photo numbers to provide additional information on the status of the area, and if the area requires any remediation measures.

The Visual Inspection Monitoring process allows comparison between different rehabilitation sites and over time. It also allows the identification of areas requiring remediation.

8.2.3 Low Intensity Agricultural Land Monitoring

Monitoring of areas proposed for low intensity agricultural end land uses (i.e. grazing) would include a range of parameters including soil, water supply and pasture parameters and may include livestock parameters (when adequately advanced). Table 8-1 provides the proposed parameters to be measured for the Low Intensity Agricultural Land monitoring programme.

Table 8-1
Low Intensity Agricultural Land Monitoring Programme

Agricultural Land Aspect	Parameter
Soil	pH, Phosphorus, Nitrogen, Sulphur, Potassium, Calcium, Electrical Conductivity (EC)/Salinity, Sodicity, Cation Exchange Capacity, Organic Carbon, and some trace elements (e.g. Copper) on advice from Agronomist.
Water Supply	pH, EC/Salinity, and potentially toxic elements on advice from Agronomist (e.g. Iron, Magnesium and Nitrates).
Pasture	Dry matter yield, pasture quality (e.g. Protein, Digestibility, Metabolisable Energy), ground cover, species composition and LFA indices.
Livestock (when adequately advanced)*	Weight, health (i.e. blood testing).

* Adequately advanced is when an Agronomist is satisfied that all other monitoring parameters indicate the landform is stable, pasture development is comparable to analogue sites, and the soil, water and pasture is safe for livestock.

8.2.4 Stream Health Monitoring

Stream health monitoring is undertaken under the MPO WMP bi-annually in spring and autumn each year at monitoring sites on the Hunter River, Sandy Creek, Dart Brook and Muscle Creek. Stream health monitoring includes aquatic invertebrate sampling, fish observations, site water quality, stream condition and presence of aquatic and riparian edge plants.

8.3 MEASURING PERFORMANCE AGAINST REHABILITATION OBJECTIVES AND REHABILITATION COMPLETION CRITERIA

A rehabilitation monitoring program has been implemented at MPO under the RMM to assess rehabilitation, identify developing trends and to confirm rehabilitation is on track to achieve final land use objectives. The objectives of the program are to track the progress of rehabilitation works and assess any changes in completed rehabilitation in relation to performance indicators and completion criteria. Where identified trends are not on a trajectory to achieve final land use objectives, management activities are undertaken post-monitoring (e.g. identified areas of high weed load or erosion).

The current monitoring program (as of July 2022) includes a total of 22 rehabilitation sites and 12 analogue sites that are monitored each year. The monitoring sites are located across the four major PCTs, with key aspects of the monitoring sites relating to:

- rehabilitation across all project years (2019 – 2022);
- long term analogue sites across all PCTs and aspects aligned to rehabilitation areas;
- current focus on Phase 4 – Ecosystem and Land Use Establishment;
- soil sampling; LFA/EFA; and floristic (native and non-native) and biometric surveys are all undertaken;
- fauna habitat values and any species present; and
- completion of report cards for each monitoring site.

In addition to the formal annual monitoring program, the ITP process occurs across all rehabilitation areas as described in Section 7.

9 REHABILITATION RESEARCH, MODELLING AND TRIALS

The rehabilitation program at the MPO aims to incorporate management practices that have resulted from industry research into the establishment of woodland and grassland communities across mined landscapes, and in particular in the Hunter Valley region. The outcomes of the rehabilitation trials will be used to refine the rehabilitation program at the MPO.

9.1 CURRENT REHABILITATION RESEARCH, MODELLING AND TRIALS

MACH Energy is collaborating with the University of Newcastle on several rehabilitation related research projects including:

- a research project that aims to integrate treated fines material with topsoil material to create a usable soil resource for crop production or native vegetation establishment (this project is being conducted by ACARP);
- a research project that analyses MPO topsoil and subsoil characteristics for input into the SIBERIA software program that supports geomorphic landform design modelling;
- a topsoil stockpile trial to assess soil condition and microbial characteristics of emplaced soil;
- a research project utilising LiDAR to measure dust levels; and
- ongoing trial cultural heritage cool burns when conditions are suitable.

ACARP Tailings to Topsoil Research Project

MACH Energy has entered into a collaboration agreement with the University of Newcastle on the ACARP Project “Tailings to topsoil” (#C29042) which commenced in January 2020 is ongoing. The project involved collaboration between MACH Energy (and other NSW coal mining operations), University of Newcastle, MSC, JORD International, and NSW DPI of Soils Unit.

The project methodology involves four major processes:

1. characterisation and pre-treatment of tailings;
2. delivery of tailings slurry to the trial site via a high-efficiency solids separation mobile tailings handling plant;
3. de-watering of tailings via a mobile dewatering plant; and
4. integrating the upgraded tailings with the existing soil profile at the trial site to improve soil resources for crop production or native vegetation establishment.

The project aims to optimise existing tailings processes and technologies and provide a commercially viable system for tailings utilisation. MACH Energy has committed cash contributions and in-kind support in addition to engaging a PhD student as part of the project. MACH Energy will also dedicate a trial site for the project proximal to the MPO FEA.

It is anticipated that results from the research project will inform FEA cover system material depth requirements, and vegetation species that may be suited to and successfully establish across the facility. The results of the project will be reported in the Annual Review once complete.

Rehabilitated Landform Erosion Monitoring

MACH Energy has entered into an agreement with University of Newcastle to establish a field data collection program to support landform design and rehabilitation practices at the MPO.

Rehabilitation monitoring sites have been identified in representative rehabilitation and analogue locations. Each monitoring site will consist of a flume to measure surface water runoff and soil erosion rate and a weather station that records rainfall (pluviograph), air temperature, incoming and outgoing radiation as well as soil moisture. This allows both surface and subsurface hydrology to be quantified. Deeper soil moisture and temperature probes may be added depending on the depth of the soil material.

Data from each monitoring site will be used to quantify and understand:

- Plot hydrology, water quality and sediment transport both for individual rainfall events as well as performance.
- Vegetation response.
- Calibrate and validate the SIBERIA landscape evolution model.
- Potential completion criteria for long-term erosional stability.

Data from the rehabilitation monitoring sites will be reviewed on an annual basis and used to inform future rehabilitation monitoring and adaptive management of the geomorphic landform design. Information would also be made available to the community via presentations to the CCC, conference presentations and/or periodic research papers jointly published by MACH Energy and the University of Newcastle.

Topsoil Stockpile Investigation

MACH Energy has engaged the University of Newcastle to design and conduct a topsoil stockpile investigation and trial. The investigation and trial aim to assess the effectiveness of the stockpile management and soil replacement practices undertaken at the MPO.

Previous microbial testing and agronomic soil testing undertaken at MPO topsoil stockpile trials indicate sampled stockpiles to be generally low in nutrients, however total soil nutrient parameters are within standard agricultural reference ranges and generally indicate poor soil structure within control stockpiles compared to undisturbed reference sites. Topsoil stockpile trials will continue during the Forward Program term to inform soil stockpile management practices at the MPO.

Replaced soil sourced from stockpiles greater than 3 m in height is inoculated where practicable with Mycorrhizal fungi and rhizobia bacteria to assist with amelioration of anaerobic conditions which may have developed during storage.

Accordingly, the objectives of the ongoing investigation(s) are to:

- understand existing microbial diversity and soil condition characteristics of the 5 m topsoil stockpiles and within control sites including the existing rehabilitation area with soil sourced from 3 m high stockpiles;
- understand possible microbial losses that may occur during storage; and
- inform inoculation requirements for when soil is to be replaced on rehabilitation areas.

Soil sampling and microbial sampling and testing will be conducted, where possible, pre-inoculation, post-inoculation, every 12 months post-inoculation and at placement on rehabilitation areas.

Soil samples will be taken at 10 centimetre depths at each soil stockpile and rehabilitation area, with soil sample testing including:

- pH and Electrical Conductivity (1:5 water);
- available Calcium, Magnesium, Potassium, Ammonium, Nitrate, Phosphate, Sulfur;
- exchangeable Sodium, Potassium, Calcium, Magnesium, Hydrogen, Aluminium, Cation Exchange Capacity, Bray I and II Phosphorus, Colwell Phosphorus;
- available Macronutrients Zinc, Manganese, Iron, Copper, Boron, Silicon;
- total Carbon (TC), Total Nitrogen (TN), TC/TN ratio, Organic Matter;
- basic Colour, Basic Texture;
- total Sodium, Potassium, Calcium, Magnesium, Sulfur, Phosphorus, Silicon, Cobalt, Molybdenum, Selenium, Zinc, Manganese, Iron, Copper, Boron and Aluminium.

The investigation methodology will also include:

- observation points where photographs are taken quarterly;
- microbial biomass analysis;
- quarterly collection and weighing of above ground biomass;
- germination counts post-soil emplacement; and
- recording of erosion and any other observations noted.

Results from the trial will be used to inform soil stockpile management practices at the MPO and will allow site-specific inputs to be incorporated into the SIBERIA software program that supports geomorphic landform design modelling (including erosion modelling) at the MPO. Results from the trial will be progressively reported in the MPO's Annual Review.

Agronomic soil testing and microbial testing and analysis has continued in the trial. Initial results from these control samples indicate that soils are generally low in nutrients, however total soil nutrient parameters are within standard agricultural reference ranges, and soil structure is generally poor. Results from the trial are not yet conclusive.

The outcomes of the rehabilitation trials will be used to refine the rehabilitation program for the Project.

Investigations (including soil test work) will also be undertaken to assess the characteristics of replaced soil and assess its suitability for rehabilitation of Class 3 and Class 4, or where this is not reasonable or feasible to achieve Class 5 or Class 6 Land Capability agricultural lands, in consultation with a Certified Professional Soil Scientist.

MACH Energy will continue to conduct geochemical characterisation of soils and overburden materials as mining progresses to inform selective handling of materials.

Cultural Heritage Cool Burn

MPO undertook a cultural cool burn in August 2020 in an analogue site area outside of the mining footprint. This was ineffective due to an excessive amount of moisture present in the understorey. Opportunistically, a cultural cool burn may be undertaken in Spring each year, subject to weather and fire hazard conditions.

9.2 FUTURE REHABILITATION RESEARCH, MODELLING AND TRIALS

Over the MPO life of mine, MACH Energy proposes to build on industry research results and conduct various research studies and trials to inform the most suitable practices that will enable the re-establishment of woodland and grassland areas on final mine landforms and disturbed areas of the MPO. Details of the research may include:

- Potential variables impacting on rehabilitation programs and causes of localised rehabilitation failure.
- Assessing rehabilitation strategies that have successfully reinstated woodland communities (or rehabilitation with species typical of various communities) on other mine sites, including:
  - establishing appropriate soil substrate: direct application of topsoil; stockpiled native topsoil; raw overburden and interburden material plus addition of biosolids/organic growth medium; addition of other organic material; rehabilitation trials on fines material;
  - establishment of the grassy understorey: grass species suitable for mine rehabilitation; low and high photosynthetic pathway species; establishing native herbs and forbs;
  - establishing the shrubby understorey;
  - establishing the overstorey;
  - seed distribution methods: hand-broadcasting; brush-matting; hydro-mulching; spreading seed-bearing hay; direct seeding; air seeding; and
  - progressive rehabilitation strategy: pre-stripping requirements; sequence of rehabilitation strategies.
- Rehabilitation irrigation trials, subject to weather conditions and water availability for the trial.
- Tiger Orchid (*Cymbidium canaliculatum*) propagation trial. MACH Energy currently conducts a Tiger Orchid translocation program, in collaboration with an ecologist, for the translocation of Tiger Orchids identified during MPO VCP works. The trial will involve excising parts of existing Tiger Orchids for propagation in a nursery. If successful, MACH Energy proposes to replace the propagated Tiger Orchids within MPO rehabilitation areas.

10 INTERVENTION AND ADAPTIVE MANAGEMENT

The following TARP in Table 10-1 identifies the proposed contingency strategies in the event of unexpected variations or impacts to rehabilitation outcomes. The TARP reflects the key risks to successful rehabilitation at the MPO identified by the risk assessments conducted to date, as described in Section 3, and will be identified through the rehabilitation monitoring program, as described in Section 8. The TARP in Table 10-1 and risk assessment in Section 3 will be reviewed regularly to continuously improve rehabilitation practices, as outlined in Form and Way – *Rehabilitation Management Plan for Large Mines* (February 2024).

In addition to the statutory environmental management plans, additional procedures and instructions associated with operational controls have been prepared and implemented, including:

- Environmental Compliance Register;
- Supervisors and Open Cut Examiner Induction;
- Ground Disturbance Permit Procedure;
- Ground Disturbance Permit Form;
- Ground Disturbance Toolbox Talk;
- Spontaneous Combustion Management Plan;
- Topsoil Management Procedure (including ITP procedures);
- Topsoil Register;
- Bushfire Management Plan;
- Rehabilitation Procedure (including ITPs);
- RMM;
- VCP;
- Site Contamination and Prevention Control;
- Weed Control Procedure; and
- Erosion and Sediment Control Standard.

Table 10-1
Rehabilitation Trigger Action Response Plan

Aspect/ Category	Element of Aspect/Category	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Landform design	Geomorphic landform model	Trigger	Geomorphic landform model includes macro and micro relief and drainage features as per design (i.e. SIBERIA software) specifications.	ITP check process (undertaken by mine planning personnel) of geomorphic landform model indicates the model is not in accordance with design.	
		Response	No response required. Continue ITP check processes.	Correct specifications to ensure geomorphic landform model is in accordance with design.	
	Construction of geomorphic landform	Trigger	Landform constructed as per geomorphic landform model design.	ITP check process identifies that constructed final landform marginally deviates from the design.	ITP check process identifies that constructed final landform significantly deviates from the design, and the landform is unlikely to function as designed.
		Response	No response required.	Identified area outside of design is reworked to ensure alignment with design prior to ITP being signed off.	Identified area outside of design is reworked to ensure alignment with design prior to ITP being signed off. Re-train operator/contractor in design requirements, if determined to be necessary.
	Slope gradient	Trigger	Constructed slopes above 10° (i.e. of high walls low walls, safety berms, top batter of final void, and locally steepened areas of overburden emplacement for drainage) constructed in accordance with design gradient.	ITP check process identifies that the gradient of a constructed slope is marginally outside of the gradient design.	ITP check process identifies that the gradient of a constructed slope is significantly outside of the gradient design.
		Response	No response required. Continue ITP processes and monitoring program.	Identified area outside of design is reworked to ensure alignment with design prior to ITP being signed off.	Identified area outside of design is reworked to ensure alignment with design prior to ITP being signed off. Re-train operator/contractor in design requirements, if determined to be necessary.

Table 10-1 (Continued)
Rehabilitation Trigger Action Response Plan

Aspect/ Category	Element of Aspect/Category	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Landform stability	Slump/Slip/ Movement	Trigger	Rehabilitation areas show no signs of slumping/slip/ movement.	Monitoring indicates some minor slumping/slip or movement of rehabilitation area.	Monitoring indicates some significant slumping/slip or movement of rehabilitation area.
		Response	No response required. Continue monitoring program.	Monitor and assess stability of area. Undertake reprofiling and revegetate area if required.	Undertake a review of landform design. Confirm if any changes to landform design specifications required. Remediate area including reprofiling and revegetation.
	Erosion	Trigger	No gully or tunnel erosion. No active rilling > 300mm deep.	Minor gully or tunnel erosion present and/or active rilling > 300 mm but < 600 mm deep.	Significant gully or tunnel erosion present and/or active rilling > 600 mm deep.
		Response	No response required. Continue monitoring program.	Assess options to remediate erosion, including consideration of slope and material type, and determine appropriate action. Implement action if determined necessary.	Implement MPO Erosion and Sediment Control Plan. Undertake a review of landform drainage design, landform slope and material type. Review to include recommendations for remediation. Remediate area as per review recommendation.
	Drainage feature/structure function	Trigger	Drainage feature/structure functioning as designed.	Drainage feature/structure exhibits some minor issues but functioning as designed and does not threaten to cause rehabilitation failure.	Drainage feature/structure not functioning as designed and is threatening or causing rehabilitation failure.
		Response	No response required. Continue monitoring program.	A suitably trained and experienced person within mine planning department to inspect drainage feature/structure and assess appropriate action, if required. Implement action determined, if necessary.	A suitably trained and experienced person within mine planning department to inspect drainage feature/structure and assess appropriate action for remediation. Implement action determined for remediation of the feature/structure.

Table 10-1 (Continued)
Rehabilitation Trigger Action Response Plan

Aspect/ Category	Element of Aspect/Category	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Soil	Soil stockpiles – weed presence	Trigger	Long-term soil stockpile (to be maintained for longer than 6 months) does not have weeds or weeds do not pose a threat to the viability of the soil.	Long-term soil stockpile observed during visual inspection or monitoring to have a weed infestation (up to 50% of stockpile area) that has potential to threaten viability of the soil if not controlled.	Long-term soil stockpile observed during visual inspection or monitoring to have a significant weed infestation (>50% of stockpile area) that is threatening the viability of the soil.
		Response	No response required. Continue monitoring program.	Implement appropriate weed control methods as soon as suitable conditions permit. Review soil stockpile weed control methods and frequency. Review appropriateness or suitability of herbicides used. Review soil source. Determine if changes to weed control program required.	Implement appropriate weed control methods as soon as suitable conditions permit. Review soil stockpile weed control methods and frequency. Review appropriateness or suitability of herbicides used. Review soil source. Increase frequency of weed control program and subsequent monitoring until weeds controlled.
	Soil stockpiles – lack of vegetation establishment and erosion incidence	Trigger	Long-term soil stockpile (to be maintained for longer than 6 months) has adequate vegetation cover and no or minimal erosion that does not pose a threat to stockpile stability.	Long-term soil stockpile observed during visual inspection or monitoring to have <50% vegetation cover and areas of erosion that has potential to threaten stockpile stability.	Long-term soil stockpile observed during visual inspection or monitoring to have <50% vegetation cover and areas of significant erosion that is threatening stockpile stability.
		Response	No response required. Continue monitoring program.	Investigate options to improve vegetation cover and minimise erosion potential, including additional seeding, re-ripping the stockpile, requirement for soil testing and additional ameliorant (e.g. gypsum) application. Implement actions recommended from investigation, as soon as suitable conditions permit.	Investigate options for immediate return of vegetation cover and to remediate erosion (e.g. additional seeding, re-ripping the stockpile, requirement for additional gypsum application). Conduct soil testing to inform actions required. Implement actions recommended from investigation, as soon as suitable conditions permit.

Table 10-1 (Continued)
Rehabilitation Trigger Action Response Plan

Aspect/ Category	Element of Aspect/Category	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Soil (Continued)	Soil quality as plant growth medium	Trigger	Soil test results and vegetation growth performance results during annual rehabilitation monitoring program indicate that soil quality (chemistry/physical/biological properties) is not limiting plant growth.	Soil test results and vegetation growth performance results during annual rehabilitation monitoring program indicate that soil quality (chemistry/physical/biological properties) may be limiting plant establishment and growth over a rehabilitation stage area.	Soil tests results and vegetation growth performance results during annual rehabilitation monitoring program indicate that soil quality (chemistry/physical/biological properties) is likely to be significantly affecting plant establishment and growth (i.e. plant mortality > 75% of rehabilitation stage area).
		Response	No response required. Continue monitoring program.	Investigate additional soil amelioration options in consultation with suitably qualified person, and implement action recommended.	Review rehabilitation records for the area, including the source of soil used for rehabilitation area, and soil stockpiling management activities. Consult a suitably qualified person to determine recommended action to remediate and re-plant area if necessary. Implement actions recommended.
	Soil availability	Trigger	Soil Register indicates sufficient soil resources for proposed rehabilitation over the Forward Program term and for life of mine.	Soil Register indicates a minor deficiency of soil resources for life of mine, but sufficient resources available for rehabilitation activities over Forward Program term.	Soil Register indicates a deficiency of soil resources significant enough to delay rehabilitation activities for Forward Program term.
		Response	No response required. Continue monitoring program.	Investigate options available in order to meet life of mine soil resource requirements, including undertaking review of soil stripping depths and amelioration of subsoil stocks.	Investigate options available in order to progress rehabilitation over Forward Program term, including options for amelioration of subsoil stocks. Undertake a review of soil stripping depths and re-application depths. Implement actions required to continue progressive rehabilitation.

Table 10-1 (Continued)
Rehabilitation Trigger Action Response Plan

Aspect/ Category	Element of Aspect/Category	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Spontaneous combustion	Evidence of spontaneous combustion	Trigger	No evidence of spontaneous combustion in rehabilitation areas.	Isolated incident of spontaneous combustion in rehabilitation area.	Repeated or widespread incidences of spontaneous combustion in rehabilitation areas.
		Response	No response required. Continue monitoring program.	Initiate MPO Spontaneous Combustion Management Plan. Investigate reason for incident including a review of site records for the area including whether placement occurred at required depth (i.e. 5 m from emplacement surface). Review to determine requirement for rehabilitation remediation. Implement remediation if necessary.	Implement MPO Spontaneous Combustion Management Plan excavation procedures, re-cap and rehabilitate area. Investigate reason for incident including a review of site records for the area including whether placement occurred at required depth (i.e. 5 m from emplacement surface). Determine if an increase to capping depth for carbonaceous material is required.
Acid forming material	Evidence of acid forming material	Trigger	No evidence of acid forming material in rehabilitation areas.	Rehabilitation monitoring (soil test) results and/or surface water monitoring results indicate acid forming material is close to the outer surface of overburden emplacement, resulting in a small/isolated area of revegetation failure.	Rehabilitation monitoring (soil test) results and/or surface water monitoring results indicate acid forming material is close to the outer surface of overburden emplacement, resulting in a widespread area (>50% of rehabilitation stage area) of revegetation failure.
		Response	No response required. Continue monitoring program.	Investigate extent of acid forming material, and review operational blending procedures and potential reason for incident. Determine requirement for change to blending procedures and a course of action for remediation. Implement outcomes from investigation.	Review operational blending procedures, and acid forming material emplacement procedures and implement more frequent geochemical testing of overburden material. Determine a course of action for remediation, including excavation requirements. Implement outcomes from investigation.

Table 10-1 (Continued)
Rehabilitation Trigger Action Response Plan

Aspect/ Category	Element of Aspect/Category	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Agricultural Grazing	Pasture establishment	Trigger	Monitoring indicates perennial pasture establishment is on a trajectory towards analogue grazing sites as determined by a suitably qualified person.	Monitoring indicates perennial pasture establishment for a small area is on a stagnant trajectory compared with analogue grazing sites as determined by a suitably qualified person.	Monitoring indicates perennial pasture establishment for a significant area (>50% of rehabilitation stage area) is on a declining trajectory compared with analogue grazing sites as determined by a suitably qualified person.
		Response	No response required. Continue monitoring program.	Review grazing practices, weed presence and remediation requirements. Determine and implement appropriate course of action, e.g. reduce head of cattle to reduce grazing pressure, requirement for re-seeding, increased weed control effort.	Review grazing practices, revegetation seeding ratios, weed presence and remediation requirements. Determine and implement appropriate course of action. Remove cattle, and re-seed as soon as practicable (subject to suitable conditions) to minimise potential for weed incursion and erosion.
	Poor seed quality and handling resulting in poor propagation and growth	Trigger	Monitoring results and/or initial rehabilitation inspection observations indicate successful plant establishment.	Monitoring results and/or initial rehabilitation inspection observations indicate successful plant establishment and some patches of where plant mortality has occurred.	Monitoring results and/or initial rehabilitation inspection observations indicate poor plant establishment and wide-spread (>50% of rehabilitation area) plant mortality has occurred.

Table 10-1 (Continued)
Rehabilitation Trigger Action Response Plan

Aspect/ Category	Element of Aspect/Category	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Agricultural Grazing	Poor seed quality and handling resulting in poor propagation and growth (Continued)	Response	No response required. Continue monitoring program.	Investigate options available to source required seed/seedling stocks of key species to meet rehabilitation requirements e.g. instruct existing nursery supplier to source or grow more stock, or engage alternate nursery supplier. Consider requirement for additional tubestock planting or seeding to replace revegetation loss or implement other management actions to remediate the area.	Undertake a review of long-term revegetation species supply plan, including an assessment of likely seed supply volume from MPO seed collection campaigns, and capability of existing nursery supplier to supply volumes required. Investigate other alternate nursery suppliers available. Review timing for rehabilitation activities over RMP and Forward Program term. Seed harvesting on prior to land clearing phase. Implement MACH Energy-Owned Nursery to harvest and propagate seed/seedlings for site specific requirements for site specific requirements. Seed germination testing of harvested seed at MPO Nursery
	Land Capability Class	Trigger	Monitoring indicates Agricultural areas are at or on a trajectory towards relevant Land Capability Classes 3, 4, 5 or 6, as determined by a suitably qualified person.	Monitoring indicates a small area of Agricultural land is on a stagnant trajectory towards meeting its relevant Land Capability Class.	Monitoring indicates a significant area (>50% of rehabilitation stage area) of Agricultural grazing is on a declining trajectory towards meeting its relevant Land Capability Class.
		Response	No response required. Continue monitoring program.	Review grazing practices, weed presence and remediation requirements. Determine and implement appropriate course of action, e.g. reduce head of cattle to reduce grazing pressure, requirement for re-seeding, or other management/intervention measures.	Review grazing practices, revegetation seeding ratios, weed presence and remediation requirements. Determine and implement appropriate course of action. Remove cattle, and re-seed as soon as practicable (subject to suitable conditions) to minimise potential for weed incursion and erosion.

Table 10-1 (Continued)
Rehabilitation Trigger Action Response Plan

Aspect/ Category	Element of Aspect/Category	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Native Ecosystem	Revegetation species availability	Trigger	Seed/seedling supply for key native species available for rehabilitation activities over Forward Program term, including sufficient contingency supply.	A number of key native revegetation species (e.g. species typical of White Box EEC) are not available for proposed rehabilitation activities over Forward Program term from MPO Seed Harvesting Facility or from nursery supplier, however the majority of rehabilitation activities can be undertaken.	Due to unavailability of key native revegetation species (either from MPO Seed Harvesting Facility or from nursery supplier), other native species are required to be planted with key species planted once available.
		Response	No response required.	Investigate options available to source required seed/seedling stocks of key species to meet rehabilitation requirements e.g. instruct existing nursery supplier to source or grow more stock, or engage alternate nursery supplier.	Undertake a review of long-term revegetation species supply plan, including an assessment of likely seed supply volume from MPO seed collection campaigns, and capability of existing nursery supplier to supply volumes required. Investigate other alternate nursery suppliers available. Review timing for rehabilitation activities over Forward Program term.
	Species composition	Trigger	Monitoring results indicate Native Ecosystem rehabilitation area is on a timely trajectory for achieving the species composition completion criteria.	Monitoring results indicate Native Ecosystem rehabilitation area is on a stagnant trajectory towards achieving the species composition completion criteria.	Monitoring results indicate Native Ecosystem rehabilitation area is on an ongoing declining trajectory away from achieving the species composition completion criteria.

Table 10-1 (Continued)
Rehabilitation Trigger Action Response Plan

Aspect/ Category	Element of Aspect/Category	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Native Ecosystem (Continued)	Species composition (Continued)	Response	No response required. Continue monitoring program.	Review native species lists for the relevant target PCT and species ratios. Review ability of revegetation area to improve trajectory without intervention. Consider requirement for additional tubestock planting or patch seeding to achieve required target species richness.	Engage suitably qualified person to review native species list for the relevant target PCT, species ratios and monitoring results and inspect rehabilitation area. Review to recommend remediation options to achieve required target species richness. Implement recommended actions.
	Vegetation structure and density	Trigger	Monitoring results indicate Native Ecosystem rehabilitation area is on a timely trajectory for achieving the vegetation structure and density completion criteria.	Monitoring results indicate Native Ecosystem rehabilitation area is on a stagnant trajectory towards achieving the vegetation structure and density completion criteria.	Monitoring results indicate Native Ecosystem rehabilitation area is on an ongoing declining trajectory away from achieving the vegetation structure and density completion criteria.
		Response	No response required. Continue monitoring program.	Review density of key species in relevant analogue sites of the target PCT and review species ratios. Review ability of revegetation area to improve trajectory without intervention. Consider requirement for additional tubestock planting or seeding to achieve over-storey cover, midstorey cover and native groundcover percentages.	Engage suitably qualified person to review density of key species of the target PCT, species ratios and monitoring results and inspect rehabilitation area. Review to recommend remediation options to achieve to achieve over-storey cover, midstorey cover and native groundcover percentages. Implement recommended actions.
	Non-native plant cover	Trigger	Monitoring results indicate non-native plant cover percentage within Native Ecosystem rehabilitation areas is <60% as required by the completion criteria.	Monitoring results indicate non-native plant cover percentage within Native Ecosystem rehabilitation areas is on an increasing trajectory and is close to, but <60% cover.	Monitoring results indicate non-native plant cover percentage within Native Ecosystem rehabilitation areas is on an increasing trajectory and is >60% cover.

Table 10-1 (Continued)
Rehabilitation Trigger Action Response Plan

Aspect/ Category	Element of Aspect/Category	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Native Ecosystem (Continued)	Non-native plant cover (Continued)	Response	No response required. Continue monitoring program.	Review planting and seeding ratios. Review weed management program. Review capability of revegetation area to improve trajectory without intervention. Consider requirement for additional tubestock planting or seeding or other management actions to reduce non-native plant cover percentage.	Engage suitably qualified person to review cover and density of key species the target PCT, and planting and seeding ratios, and monitoring results to date and to inspect rehabilitation area. Review to recommend appropriate management actions and/or remediation options to achieve to reduce non-native plant cover percentage to <60%. Implement recommended actions from review.
Agricultural - Grazing and Native Ecosystem	Drought	Trigger	Despite dry conditions, rehabilitation performance monitoring results are comparable with analogue sites.	Monitoring results indicate that ongoing drought conditions are likely affecting revegetation performance, but results continue to be trending towards completion criteria, yet on a slower trajectory.	Monitoring results indicates widespread revegetation failure as a result of drought conditions.
		Response	No response required. Continue monitoring program.	Review capability of revegetation area to improve trajectory without intervention. Consider requirement for additional tubestock planting or seeding or other management actions including whether watering is required. Assess potential water source/supply options and trials.	Engage suitably qualified person to inspect drought affected rehabilitation area and recommend appropriate management actions including whether re-planting/ re-seeding feasible option considering drought conditions.
	Loss of revegetation due to frost/storm/ flood/pest invasion event	Trigger	No damage to Agricultural - Grazing and Native Ecosystem rehabilitation areas due to a frost/storm/flood/pest invasion event.	Damage to a small area of Agricultural - Grazing and/or Native Ecosystem rehabilitation due to a frost/storm/flood/pest invasion event.	A significant area (>50% of rehabilitation stage area) of damage to Agricultural - Grazing or Native Ecosystem rehabilitation due to a frost/storm/flood/pest invasion event.

Table 10-1 (Continued)
Rehabilitation Trigger Action Response Plan

Aspect/ Category	Element of Aspect/Category	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Agricultural - Grazing and Native Ecosystem (Continued)	Loss of revegetation due to frost/storm/ flood/pest invasion event (Continued)	Response	No response required. Continue monitoring program.	Review capability of revegetation to improve trajectory without intervention. Consider requirement for additional tubestock planting or seeding to replace revegetation loss or implement other management actions to remediate the area.	As soon as suitable conditions permit, replace revegetation loss by re-planting or re-seeding. Review adequacy of pest management practices. Review adequacy of flood mitigation/drainage structures. Implement any recommendations from reviews undertaken.
	Weed presence	Trigger	Weed presence is within range found at analogue sites and does not pose a risk to rehabilitation establishment or progression.	Weeds present a risk to rehabilitation establishment or progression.	Weeds are posing a significant threat to establishment of rehabilitation or rehabilitation progression.
		Response	No response required. Continue monitoring program.	Review weed management practices including timing that weed management is undertaken. Implement weed control measures to reduce threat, including follow-up weed control if required. Determine requirement for other management actions, including requirement for remediation (e.g. re-seeding/re-planting) of rehabilitation area.	Review weed management practices including timing that weed management is undertaken. Review rehabilitation records to identify source of topsoil. Inspect topsoil source area (i.e. soil stockpile or area soil stripped from) to determine weed presence. Implement weed control measures at rehabilitation area and at topsoil source, if identified as likely source of weed issue, as soon as suitable conditions permit. Remediate (re-plant, re-seed) as soon as suitable conditions permit. Investigate adequacy of revegetation planting and seeding ratios, and weed control practices on soil stockpiles or proposed soil stripping areas and any other management measures to assist native plant establishment in consultation with suitably qualified person.

Table 10-1 (Continued)
Rehabilitation Trigger Action Response Plan

Aspect/ Category	Element of Aspect/Category	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Fauna habitat	Habitat feature presence	Trigger	Various fauna habitat features including stags, logs, rock piles have been incorporated in rehabilitation areas that are representative of habitat capable of supporting relevant threatened fauna species, or is equivalent to relevant analogue site. Fauna observed utilising habitat features.	Various fauna habitat features including stags, logs, rock piles have been incorporated in rehabilitation areas that are representative of habitat capable of supporting relevant threatened fauna species, or is equivalent to relevant analogue site. Fauna not yet observed to be utilising habitat features.	ITP check process indicates that inadequate fauna habitat features including stags, logs, rock piles have been incorporated in rehabilitation areas (at the set rates) and are not representative of habitat capable of supporting relevant threatened fauna species, or are not equivalent to relevant analogue site. Fauna not yet observed to be utilising habitat features.
		Response	No response required. Continue monitoring program.	Confirm habitat features have been installed as per set rate. Investigate whether sufficient habitat resources are available and with time whether fauna are likely to use the habitat features. Consider requirement for additional or more varied habitat features.	Install habitat features at set rates. Conduct ITP check process to verify installation as per set rate. Investigate whether sufficient habitat resources are available and with time whether fauna are likely to use the habitat features. Consider requirement for additional or more varied habitat features.
Neighbouring landowner practices and wildlife corridors	Incompatible neighbouring landowner practices and wildlife corridor establishment	Trigger	Neighbouring landowner (including the Bengalla Mine and adjoining private landholders) practices are aligned with MPO practices and wildlife corridors have been or are likely to be successfully established.	Some key land management practices (e.g. weed control. pest control or inappropriate fencing) by neighbouring landowners (including the Bengalla Mine and adjoining private landholders) are impacting short-term rehabilitation performance at the MPO and may affect the establishment of wildlife corridors in the long term.	Land management practices (e.g. weed control pest control or inappropriate fencing) by neighbouring landowners (including the Bengalla Mine and adjoining private landholders) are incompatible with MPO land management practices and are impacting rehabilitation performance at the MPO and do not facilitate wildlife movement.

Table 10-1 (Continued)
Rehabilitation Trigger Action Response Plan

Aspect/ Category	Element of Aspect/Category	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Neighbouring landowner practices and wildlife corridors (Continued)	Incompatible neighbouring landowner practices and wildlife corridor establishment (Continued)	Response	No response required. Continue monitoring program.	Communicate MPO rehabilitation and land use objectives, including wildlife corridor goals, with neighbouring landowners, and with the MPO CCC. Communicate details of MPO land management practices including timing and practices and propose implementation collaboration.	Implement required control measures to contain threats to MPO rehabilitation (e.g. weed control, pest control, re-seeding/re-planting). Communicate MPO rehabilitation and land use objectives, including wildlife corridor goals, with neighbouring landowners (including key mine management team at Bengalla Mine if necessary), and with the MPO CCC and relevant regulatory authorities if necessary. Communicate details of MPO land management practices including timing and practices and propose implementation collaboration.
Bushfire	Fuel loads	Trigger	Fuel loads in rehabilitation areas are assessed and managed as required by MPO Bushfire Management Plan.	Fuel loads in rehabilitation areas are at a level that have the potential to risk rehabilitation.	A fire on site damages rehabilitation.
		Response	No response required. Continue monitoring program.	Implement Bushfire Management Plan procedures such as maintenance of fire breaks, auditing of fire fighting equipment, and looking into trials for mosaic or cool burning to reduce fuel loads. Inspect water sources and assess adequate availability of water.	Re-plant/re-seed affected area with those species that do not naturally regenerate over a 2 year period post-fire (Pickup *et.al.*, 2012).

Table 10-1 (Continued)
Rehabilitation Trigger Action Response Plan

Aspect/ Category	Element of Aspect/Category	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Surface water	Surface water quality	Trigger	Surface water quality monitoring results are outside of relevant trigger level ranges defined in the MPO Surface Water Management and Monitoring Plan (SWMMP).	As per the procedures detailed in the SWMMP, an investigation is triggered when: • a water quality indicator at a downstream receiving water monitoring location is above (or outside the range) of trigger investigation level for three consecutive sampling events; • the same has not occurred at the relevant upstream reference site(s); and • a water quality indicator at a downstream water monitoring location is above (or below in event of a trigger of the lower pH limit) the corresponding upstream monitoring location (where such a monitoring location exists) sampled on the same day.	
		Response	No response required. Continue monitoring program.	Conduct procedures in accordance with the SWMMP, and implement response measures identified by investigation, if required.	
	Water retained on-site post-mining	Trigger	Water quality monitoring during post-mining phase indicates that water retained on-site is fit for relevant post-mining land use (i.e. Agriculture - Grazing or Native Ecosystem).	Water quality monitoring during post-mining phase indicates that water retained on-site is not yet fit for relevant post-mining land use (i.e. agriculture or native ecosystem), yet does not pose a risk to achieving completion criteria.	Water quality monitoring during post-mining phase indicates that water retained on-site is not fit for relevant post-mining land use (i.e. agriculture or native ecosystem), and requires remediation to achieve completion criteria.
		Response	No response required. Continue monitoring program.	Review trends of water quality monitoring results and review requirement for active management measures or remediation. Implement any recommendations from review.	Engage suitably qualified person to investigate possible reasons for poor water quality issues, and to provide recommendations for remediation. Implement remediation recommendation as soon as possible.

Table 10-1 (Continued)
Rehabilitation Trigger Action Response Plan

Aspect/ Category	Element of Aspect/Category	Trigger/ Response	Condition Green	Condition Amber	Condition Red
	Water discharged from the site post-mining	Trigger	Water quality monitoring during post-mining phase indicates water discharged from site is comparable to surrounding analogue sites and suitable for receiving waters, aquatic ecology and riparian vegetation.	Water quality monitoring during post-mining phase indicates that water discharged from site is not yet comparable to surrounding analogue sites and suitable for receiving waters, aquatic ecology and riparian vegetation, but does not pose a risk to achieving completion criteria.	Water quality monitoring during post-mining phase indicates that water discharged from site continues to show a declining trend in comparison to surrounding analogue sites and is not suitable for receiving waters, aquatic ecology and riparian vegetation and on-site intervention is required to achieve completion criteria.
		Response	No response required. Continue monitoring program.	Review trends of water quality monitoring results and review requirement for active management measures or remediation. Implement any recommendations.	Engage suitably qualified person to investigate possible reasons for poor water quality issues, and to provide recommendations for remediation. Implement remediation recommendation as soon as possible.
Groundwater	Groundwater level and quality	Trigger	Groundwater level and groundwater quality monitoring results are below relevant trigger levels defined in the MPO Groundwater Management Plan (GWMP).	As per the procedures in the GWMP, an investigation is triggered when: • A groundwater level measurement at a relevant alluvial monitoring bore falls below the trigger value specified in the GWMP. • A monitoring bore records an electrical conductivity or pH value above (or outside the range of) the trigger values specified in the GWMP at three successive monitoring rounds. • A complaint by a local landholder regarding water supply from a groundwater bore is received or an investigation undertaken in accordance with the Groundwater Level Response Protocol indicates a drawdown of greater than 2 m at a privately owned bore. • Detection of deterioration of general vegetation health or decline in species richness in GDEs in the vicinity of the MPO or an investigation in accordance with the Groundwater Level Response Protocol indicates a potential impact on a GDE (or potential GDE).	
		Response	No response required. Continue monitoring program.	Conduct Groundwater Investigations in accordance with the procedures described in the GWMP and implement response measure identified by investigation, if required.	

Table 10-1 (Continued)
Rehabilitation Trigger Action Response Plan

Aspect/ Category	Element of Aspect/Category	Trigger/ Response	Condition Green	Condition Amber	Condition Red
FEA	Geotechnical stability	Trigger	Geotechnical monitoring results indicate FEA embankments are stable.	Geotechnical monitoring results indicates a small area of FEA embankment is compromised (e.g. slumped) or small/minor expression of water/seepage at toe of embankment observed.	Geotechnical monitoring results indicates a significant area of FEA embankment is compromised (e.g. slumped) or significant expression of water/seepage at toe of embankment observed.
		Response	No response required. Continue monitoring program.	MPO geotechnical and relevant mine design personnel to investigate possible causes and determine appropriate course of action. Implement determined action.	Suitably qualified person/consultant to be engaged to conduct geotechnical assessment of FEA with input from relevant MPO geotechnical and mine design personnel, and provide recommendations for options for remediation. Remediate as soon as possible.
	Rehabilitation capping	Trigger	FEA rehabilitation capping is functioning as designed and is supporting target revegetation.	Monitoring of FEA revegetation indicates revegetation performance of a small area is stagnating.	Monitoring of FEA revegetation indicates a significant area of revegetation has failed or revegetation performance is on an ongoing declining trend.
		Response	No response required. Continue monitoring program.	Relevant MPO Environment and mine design personnel to investigate possible causes and determine appropriate course of action, if required. Implement determined action, if necessary.	Suitably qualified person/consultant to be engaged to conduct assessment of FEA rehabilitation performance/capping design and FEA drainage design with input from relevant MPO Environment and mine design personnel. Assessment to propose recommendations for remediation. Remediate as soon as possible.

Table 10-1 (Continued)
Rehabilitation Trigger Action Response Plan

Aspect/ Category	Element of Aspect/Category	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Final void	Final void water balance	Trigger	Final void monitoring results confirm final void water balance modelling predictions.	Final void monitoring results indicate some minor inconsistencies with final void water balance modelling predictions, e.g. groundwater inflows or surface water runoff inflows marginally above predictions, and are continuing to trend marginally above predictions.	Final void monitoring results indicate significant inconsistencies with final void water balance modelling predictions, e.g. groundwater inflows or surface water runoff inflows significantly above predictions, and are continuing to trend above predictions, and may result in overtopping of final void.
		Response	No response required. Continue monitoring program.	Suitably qualified person to undertake a review of final void water monitoring results and final void water balance, and determine possible reasons for results, and if any ameliorative/management actions are required.	Suitably qualified person/s and key MPO mine design personnel to undertake a review of final void design and MPO final landforms (including final void catchment) and determine options for amending final void design and/or design of other final landforms to prevent final void overtopping. Implement recommended course of action as soon as possible.
	Geotechnical stability post-mining	Trigger	Geotechnical monitoring results indicate ongoing stable trend and Geotechnical Assessment of final void post-mining verifies long-term stability of final void high walls and low walls.	Geotechnical monitoring results of final void post-mining indicates a marginal change to a Factor of Safety rating for a final void high wall or low wall, however the change does not pose a threat to the long-term stability of the final void.	Geotechnical monitoring results of final void post-mining indicates a significant change to a Factor of Safety rating for a final void high wall or low wall, and could pose a threat to the long-term stability of the final void.
		Response	No response required. Continue monitoring program.	Suitably qualified person/s and key MPO geotechnical and mine design personnel to review trend of monitoring results and determine whether any management actions required.	Engage suitably qualified person/consultant to conduct Geotechnical Assessment, including options for amending final void design. Implement recommended course of action as soon as possible.

11 REVIEW, REVISION AND IMPLEMENTATION

The triggers for reviewing and revising this RMP as required by Development Consent SSD 10418, Development Consent DA 92/97 and the relevant ML conditions are detailed in Table 11-1.

This RMP may be reviewed and, if necessary, revised due to:

- a change in the activities or operations associated with the MPO;
- deficiencies of mining and/or rehabilitation activities being identified;
- results from the monitoring and review program;
- recommendations resulting from the monitoring and review program;
- changing project approval requirements;
- significant improvements in knowledge or technology becoming available;
- a change in legislation; and risk assessment identifying the requirement to alter the RMP.

MACH Energy notes that the MPO Rehabilitation Objectives Statement has recently been approved by the NSW Resources Regulator and the Final Landform and Rehabilitation Plan has been updated to align with the approved MPO Rehabilitation Objectives Statement (currently pending approval by the NSW Resources Regulator) (Section 4). Accordingly, this RMP includes the approved version of the MPO Rehabilitation Objectives Statement, as required by clause 11, Schedule 8A of the *Mining Regulation 2016*. Once the Final Landform and Rehabilitation Plan has been approved by the NSW Resources Regulator, MACH Energy will review this RMP and update accordingly.

Table 11-1
Review, Revision and Implementation

Condition	Review Trigger Requirement
Development Consent SSD 10418, Part D, Condition D7	• Within three months following the submission of an incident report. • Within three months following the submission of an Annual Review. • Within three months following the submission of an Independent Environmental Audit. • Within three months of the approval of any modification of the conditions of Development Consent SSD 10418. • Within three months of notification of a change in development phase.
Development Consent DA 92/97 (prior to its surrender) Schedule 5, Condition 4	• Within three months following the submission of an Annual Review. • Within three months following the submission of an incident report. • Within three months following the submission of an Independent Environmental Audit. • Following any modification to the conditions of Development Consent DA 92/97.
Mining Amendment Regulation 2016 clause 11, Schedule 8A	In accordance with Clause 11 of Schedule 8A to the *Mining Regulation 2016*, the lease holder must amend the prepared rehabilitation management plan 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.

11.1 ENVIRONMENTAL REPORTING

An Annual Review is produced for the MPO to fulfil the reporting requirements of Development Consent SSD 10418 and Development Consent DA 92/97 (prior to its surrender) and is provided to regulatory agencies and stakeholders. This report compiles monitoring results and discusses trends, system changes and responses to any potential issues identified during monitoring.

In accordance with Part D, Condition D17 of Development Consent SSD 10418 and Schedule 5, Condition 11 of Development Consent DA 92/97 (prior to its surrender), the MPO's Annual Review is provided on MACH Energy's website (www.machenergyaustralia.com.au).

Annual rehabilitation reporting will be described in the Annual Rehabilitation Report and Forward Program.

11.2 IMPLEMENTATION

Table 11-2 defines personnel who are responsible for the implementation and review of this RMP.

Table 11-2
Rehabilitation Management Plan Responsibilities

Title	Responsibility
General Manager Operations	• Implement the mining operations and procedures referenced in this RMP. • Undertake training in relevant Management Plans and procedures as required. • Provide resources required and support to implement these procedures. • Allow for forward planning to prepare and bulk shape areas.
Environment & Community Manager	• Prepare the relevant Management Plans. • Implement, monitor and review the programs and procedures linked to this RMP. • Consult with regulatory authorities as required. • Undertake monitoring as required. • Undertake maintenance as required. • Provide measures for continual improvement to this RMP and procedures. • Ensure all personnel undertaking works in relation to this RMP are trained and competent. • Report the progress of any rehabilitation in the Annual Review and ML Rehabilitation Report.
Senior Environmental Advisor	• Provide support to Environment & Community Manager responsibilities.
Environmental Advisor	• Provide support to Senior Environmental Advisor and Environment & Community Manager responsibilities.

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APPENDIX A

LAND OWNERSHIP

Table A-1
Land Ownership Surrounding MPO

Lot	Section	DP	Tenure	Land Ownership
1	1	2770	Freehold	Privately Owned Land
1	2	2770	Freehold	Privately Owned Land
1	3	2770	Freehold	Mount Pleasant Controlled
1	4	2770	Freehold	Mount Pleasant Controlled
1	5	2770	Freehold	Mount Pleasant Controlled
1	6	2770	Freehold	Mount Pleasant Controlled
1	8	2770	Freehold	Mount Pleasant Controlled
2	1	2770	Freehold	Mount Pleasant Controlled
2	3	2770	Freehold	Mount Pleasant Controlled
2	4	2770	Freehold	Privately Owned Land
2	5	2770	Freehold	Mount Pleasant Controlled
2	6	2770	Freehold	Mount Pleasant Controlled
2	8	2770	Freehold	Mount Pleasant Controlled
3	1	2770	Freehold	Privately Owned Land
3	3	2770	Freehold	Mount Pleasant Controlled
3	5	2770	Freehold	Mount Pleasant Controlled
3	8	2770	Freehold	Mount Pleasant Controlled
4	1	2770	Freehold	Privately Owned Land
4	2	2770	Freehold	Privately Owned Land
4	3	2770	Freehold	Mount Pleasant Controlled
4	4	2770	Freehold	Mount Pleasant Controlled
4	5	2770	Freehold	Mount Pleasant Controlled
4	6	2770	Freehold	Mount Pleasant Controlled
4	8	2770	Freehold	Mount Pleasant Controlled
5	1	2770	Freehold	Mount Pleasant Controlled
5	3	2770	Freehold	Mount Pleasant Controlled
5	4	2770	Freehold	Mount Pleasant Controlled
5	6	2770	Freehold	Mount Pleasant Controlled
5	8	2770	Freehold	Mount Pleasant Controlled
6	1	2770	Freehold	Mount Pleasant Controlled
6	3	2770	Freehold	Mount Pleasant Controlled
6	8	2770	Freehold	Mount Pleasant Controlled
14	8	2770	Freehold	Mount Pleasant Controlled
17		2770	Freehold	Mount Pleasant Controlled
7001		93329	Crown	The State of New South Wales
1		104563	Freehold	Mount Pleasant Controlled
2		104563	Freehold	Mount Pleasant Controlled
1		112742	Freehold	Mount Pleasant Controlled
2		112742	Freehold	Mount Pleasant Controlled
3		112742	Freehold	Mount Pleasant Controlled
5		112742	Freehold	Mount Pleasant Controlled

Table A-1 (Continued)
Land Ownership Surrounding MPO

Lot	Section	DP	Tenure	Land Ownership
7		112742	Freehold	Privately Owned Land
11		112742	Freehold	Privately Owned Land
12		112742	Freehold	Mount Pleasant Controlled
13		112742	Freehold	Mount Pleasant Controlled
14		112742	Freehold	Mount Pleasant Controlled
15		112742	Freehold	Mount Pleasant Controlled
16		112742	Freehold	Mount Pleasant Controlled
17		112742	Freehold	Mount Pleasant Controlled
18		112742	Freehold	Mount Pleasant Controlled
19		112742	Freehold	Mount Pleasant Controlled
20		112742	Freehold	Mount Pleasant Controlled
1		114090	Freehold	Mount Pleasant Controlled
2		114090	Freehold	Mount Pleasant Controlled
30		137297	Freehold	Mount Pleasant Controlled
A		174071	Freehold	Mount Pleasant Controlled
B		174071	Freehold	Mount Pleasant Controlled
1		189134	State Rail Authority (Crown)	The State of New South Wales
1	1	192121	Freehold	Mount Pleasant Controlled
1	2	192121	Freehold	Mount Pleasant Controlled
2	2	192121	Freehold	Mount Pleasant Controlled
3	2	192121	Freehold	Mount Pleasant Controlled
4	2	192121	Freehold	Mount Pleasant Controlled
5		192121	Freehold	Mount Pleasant Controlled
6	2	192121	Freehold	Mount Pleasant Controlled
7	2	192121	Freehold	Mount Pleasant Controlled
1		194043	Freehold	Mount Pleasant Controlled
2		194043	Freehold	Mount Pleasant Controlled
3		194043	Freehold	Mount Pleasant Controlled
1		213293	Freehold	Mount Pleasant Controlled
3		236668	Freehold	Bengalla Controlled
7		236668	Freehold	Bengalla Controlled
10		236668	Freehold	Bengalla Controlled
1		254339	Freehold	Mount Pleasant Controlled
8		255048	Freehold	Mount Pleasant Controlled
9		255048	Freehold	Mount Pleasant Controlled
10		255048	Freehold	Mount Pleasant Controlled
11		255048	Freehold	Mount Pleasant Controlled
12		255048	Freehold	Mount Pleasant Controlled
13		255048	Freehold	Mount Pleasant Controlled
14		255048	Freehold	Mount Pleasant Controlled

Table A-1 (Continued)
Land Ownership Surrounding MPO

Lot	Section	DP	Tenure	Land Ownership
15		255048	Freehold	Mount Pleasant Controlled
16		255048	Freehold	Mount Pleasant Controlled
1		312392	Freehold	Mount Pleasant Controlled
1		318999	Freehold	Mount Pleasant Controlled
1		401237	Freehold	Mount Pleasant Controlled
A		432713	Freehold	Mount Pleasant Controlled
B		432713	Freehold	Mount Pleasant Controlled
1		544039	Freehold	Mount Pleasant Controlled
21		554140	Freehold	Mount Pleasant Controlled
22		554140	Freehold	Mount Pleasant Controlled
641		554159	Freehold	Bengalla Controlled
132		558246	Freehold	Mount Pleasant Controlled
2		561117	Freehold	Bengalla Controlled
261		561919	Freehold	Mount Pleasant Controlled
268		567444	Freehold	Mount Pleasant Controlled
269		567444	Freehold	Privately Owned Land
91		620639	Freehold	Bengalla Controlled
71		626353	Freehold	Bengalla Controlled
72		626353	Freehold	Bengalla Controlled
1453		628493	Freehold	Privately Owned Land
1		629491	Freehold	Mount Pleasant Controlled
2		629491	Freehold	Mount Pleasant Controlled
3		629491	Freehold	Mount Pleasant Controlled
1		634490	Freehold	Mount Pleasant Controlled
2		634490	Freehold	Mount Pleasant Controlled
164		635272	Freehold	Mount Pleasant Controlled
1		655691	Freehold	Privately Owned Land
12		659924	Freehold	Privately Owned Land
94		665393	Freehold	Privately Owned Land
123		700578	Freehold	Bengalla Controlled
124		700578	Freehold	Bengalla Controlled
1		706645	Freehold	Mount Pleasant Controlled
2		706645	Freehold	Mount Pleasant Controlled
505		711996	Freehold	Bengalla Controlled
1		718834	Freehold	Bengalla Controlled
29		731706	Freehold	Mount Pleasant Controlled
1		742324	Freehold	Privately Owned Land
24		742543	Freehold	Mount Pleasant Controlled
1		744333	Freehold	Mount Pleasant Controlled
1		745369	Freehold	Mount Pleasant Controlled
27		745897	Freehold	Mount Pleasant Controlled

Table A-1 (Continued)
Land Ownership Surrounding MPO

Lot	Section	DP	Tenure	Land Ownership
20		747226	Freehold	Privately Owned Land
6		749716	Freehold	Mount Pleasant Controlled
7		749716	Freehold	Mount Pleasant Controlled
6		750926	Freehold	Mount Pleasant Controlled
9		750926	Freehold	Privately Owned Land
10		750926	Freehold	Privately Owned Land
13		750926	Freehold	Privately Owned Land
15		750926	Freehold	Mount Pleasant Controlled
16		750926	Freehold	Mount Pleasant Controlled
19		750926	Freehold	Mount Pleasant Controlled
21		750926	Freehold	Mount Pleasant Controlled
26		750926	Freehold	Mount Pleasant Controlled
28		750926	Freehold	Mount Pleasant Controlled
38		750926	Freehold	Mount Pleasant Controlled
39		750926	Freehold	Mount Pleasant Controlled
41		750926	Freehold	Mount Pleasant Controlled
42		750926	Freehold	Mount Pleasant Controlled
43		750926	Freehold	Mount Pleasant Controlled
44		750926	Freehold	Mount Pleasant Controlled
45		750926	Freehold	Mount Pleasant Controlled
71		750926	Freehold	Mount Pleasant Controlled
72		750926	Freehold	Mount Pleasant Controlled
73		750926	Freehold	Privately Owned Land
74		750926	Freehold	Privately Owned Land
86		750926	Freehold	Privately Owned Land
90		750926	Freehold	Mount Pleasant Controlled
91		750926	Freehold	Mount Pleasant Controlled
92		750926	Freehold	Mount Pleasant Controlled
93		750926	Freehold	Mount Pleasant Controlled
122		750926	Freehold	Mount Pleasant Controlled
123		750926	Freehold	Mount Pleasant Controlled
124		750926	Freehold	Mount Pleasant Controlled
126		750926	Freehold	Mount Pleasant Controlled
127		750926	Freehold	Mount Pleasant Controlled
130		750926	Freehold	Mount Pleasant Controlled
131		750926	Freehold	Mount Pleasant Controlled
132		750926	Freehold	Mount Pleasant Controlled
133		750926	Freehold	Mount Pleasant Controlled
135		750926	Freehold	Mount Pleasant Controlled
143		750926	Freehold	Mount Pleasant Controlled
146		750926	Freehold	Mount Pleasant Controlled

Table A-1 (Continued)
Land Ownership Surrounding MPO

Lot	Section	DP	Tenure	Land Ownership
149		750926	Freehold	Mount Pleasant Controlled
150		750926	Freehold	Mount Pleasant Controlled
151		750926	Freehold	Mount Pleasant Controlled
152		750926	Freehold	Privately Owned Land
153		750926	Freehold	Privately Owned Land
154		750926	Freehold	Privately Owned Land
177		750926	Freehold	Mount Pleasant Controlled
181		750926	Freehold	Mount Pleasant Controlled
184		750926	Freehold	Mount Pleasant Controlled
188		750926	Freehold	Mount Pleasant Controlled
189		750926	Freehold	Mount Pleasant Controlled
190		750926	Freehold	Mount Pleasant Controlled
193		750926	Freehold	Mount Pleasant Controlled
195		750926	Freehold	Mount Pleasant Controlled
196		750926	Freehold	Mount Pleasant Controlled
199		750926	Freehold	Mount Pleasant Controlled
200		750926	Freehold	Privately Owned Land
211		750926	Freehold	Mount Pleasant Controlled
212		750926	Freehold	Mount Pleasant Controlled
213		750926	Freehold	Mount Pleasant Controlled
214		750926	Freehold	Mount Pleasant Controlled
215		750926	Freehold	Mount Pleasant Controlled
216		750926	Freehold	Mount Pleasant Controlled
217		750926	Freehold	Mount Pleasant Controlled
218		750926	Freehold	Mount Pleasant Controlled
219		750926	Freehold	Mount Pleasant Controlled
220		750926	Freehold	Mount Pleasant Controlled
221		750926	Freehold	Mount Pleasant Controlled
224		750926	Freehold	Mount Pleasant Controlled
236		750926	Freehold	Mount Pleasant Controlled
237		750926	Freehold	Mount Pleasant Controlled
238		750926	Freehold	Mount Pleasant Controlled
239		750926	Freehold	Mount Pleasant Controlled
240		750926	Freehold	Mount Pleasant Controlled
241		750926	Freehold	Mount Pleasant Controlled
242		750926	Freehold	Mount Pleasant Controlled
251		750926	Freehold	Mount Pleasant Controlled
253		750926	Freehold	Mount Pleasant Controlled
254		750926	Freehold	Mount Pleasant Controlled
256		750926	Freehold	Mount Pleasant Controlled
258		750926	Freehold	Mount Pleasant Controlled

Table A-1 (Continued)
Land Ownership Surrounding MPO

Lot	Section	DP	Tenure	Land Ownership
259		750926	Freehold	Mount Pleasant Controlled
260		750926	Freehold	Mount Pleasant Controlled
261		750926	Freehold	Mount Pleasant Controlled
262		750926	Freehold	Mount Pleasant Controlled
263		750926	Freehold	Mount Pleasant Controlled
264		750926	Freehold	Mount Pleasant Controlled
265		750926	Freehold	Mount Pleasant Controlled
268		750926	Freehold	Mount Pleasant Controlled
269		750926	Freehold	Mount Pleasant Controlled
270		750926	Freehold	Mount Pleasant Controlled
271		750926	Freehold	Mount Pleasant Controlled
272		750926	Freehold	Mount Pleasant Controlled
273		750926	Freehold	Mount Pleasant Controlled
274		750926	Freehold	Mount Pleasant Controlled
275		750926	Freehold	Mount Pleasant Controlled
276		750926	Freehold	Mount Pleasant Controlled
278		750926	Freehold	Mount Pleasant Controlled
279		750926	Freehold	Mount Pleasant Controlled
280		750926	Freehold	Mount Pleasant Controlled
282		750926	Freehold	Mount Pleasant Controlled
3	28	758554	Freehold	Mount Pleasant Controlled
3	29	758554	Freehold	Privately Owned Land
4	28	758554	Freehold	Mount Pleasant Controlled
4	29	758554	Freehold	Mount Pleasant Controlled
5	2	758554	Freehold	Mount Pleasant Controlled
6	28	758554	Freehold	Mount Pleasant Controlled
8		770911	Freehold	Mount Pleasant Controlled
22		776758	Freehold	Mount Pleasant Controlled
1		780673	Freehold	Mount Pleasant Controlled
2		780673	Freehold	Mount Pleasant Controlled
7		784436	Freehold	Privately Owned Land
1		791576	Freehold	Mount Pleasant Controlled
2		791576	Freehold	Mount Pleasant Controlled
3		791576	Freehold	Mount Pleasant Controlled
2		801249	Freehold	Mount Pleasant Controlled
4		801249	Freehold	Mount Pleasant Controlled
5	28	801249	Freehold	Mount Pleasant Controlled
50		809718	Freehold	Mount Pleasant Controlled
51		809718	Freehold	Mount Pleasant Controlled
6		821183	Freehold	Mount Pleasant Controlled
7		821183	Freehold	Mount Pleasant Controlled

Table A-1 (Continued)
Land Ownership Surrounding MPO

Lot	Section	DP	Tenure	Land Ownership
22		870608	Freehold	Privately Owned Land
1		904885	Crown	The State of New South Wales
1		905281	Freehold	Mount Pleasant Controlled
1		906668	Freehold	Mount Pleasant Controlled
1		911212	Freehold	Privately Owned Land
1		915913	Freehold	Mount Pleasant Controlled
2		915913	Freehold	Mount Pleasant Controlled
1		944232	Freehold	Mount Pleasant Controlled
2		997931	Freehold	Bengalla Controlled
1		998239	Freehold	Mount Pleasant Controlled
2		998239	Freehold	Mount Pleasant Controlled
3		998239	Freehold	Mount Pleasant Controlled
3		998477	Freehold	Mount Pleasant Controlled
22		1041946	Freehold	Mount Pleasant Controlled
23		1041946	Freehold	Mount Pleasant Controlled
11		1051153	Freehold	Privately Owned Land
25		1053537	Freehold	Mount Pleasant Controlled
1		1072667	Freehold	Bengalla Controlled
8		1072668	Road	Bengalla Controlled
9		1072668	Road	Bengalla Controlled
10		1072668	Road	Bengalla Controlled
11		1072668	Road	Bengalla Controlled
12		1072668	Road	Bengalla Controlled
16		1072668	Freehold	-
17		1072668	Road	Bengalla Controlled
18		1072668	Freehold	-
19		1072668	Road	Bengalla Controlled
20		1072668	Freehold	Bengalla Controlled
22		1072668	Freehold	-
24		1072668	Freehold	-
25		1072668	Freehold	-
26		1072668	Freehold	-
27		1072668	Freehold	-
35		1076510	Freehold	Mount Pleasant Controlled
1		1080962	Freehold	Mount Pleasant Controlled
1		1081385	Freehold	Mount Pleasant Controlled
2		1081385	Freehold	Mount Pleasant Controlled
147		1083411	Freehold	Mount Pleasant Controlled
1		1100374	Freehold	Mount Pleasant Controlled
36		1108421	Freehold	Mount Pleasant Controlled
12		1112792	Freehold	Mount Pleasant Controlled

Table A-1 (Continued)
Land Ownership Surrounding MPO

Lot	Section	DP	Tenure	Land Ownership
13		1112792	Freehold	Mount Pleasant Controlled
14		1112792	Freehold	Mount Pleasant Controlled
15		1112792	Freehold	Mount Pleasant Controlled
16		1112792	Freehold	Mount Pleasant Controlled
144		1120266	Freehold	Mount Pleasant Controlled
145		1120266	Freehold	Mount Pleasant Controlled
1		1129338	State Rail Authority (Crown)	The State of New South Wales
1		1137590	Freehold	Mount Pleasant Controlled
7304		1146786	Crown	The State of New South Wales
100		1148907	Road	Bengalla Controlled
101		1148907	Freehold	Bengalla Controlled
102		1148907	Freehold	Bengalla Controlled
103		1148907	Freehold	Bengalla Controlled
104		1148907	Freehold	Bengalla Controlled
105		1148907	Freehold	Bengalla Controlled
106		1148907	Freehold	Bengalla Controlled
1031		1164040	State Rail Authority (Crown)	The State of New South Wales
3		1170997	State Rail Authority (Crown)	The State of New South Wales
4		1170997	State Rail Authority (Crown)	The State of New South Wales
5		1170997	State Rail Authority (Crown)	The State of New South Wales
7		1170997	Freehold	Bengalla Controlled
8		1170997	Freehold	Bengalla Controlled
100		1177385	Freehold	Muswellbrook Shire Council
3		1183514	Freehold	Privately Owned Land
10		1184928	Freehold	Mount Pleasant Controlled
11		1184928	Freehold	Bengalla Controlled
1		1199733	Freehold	Mount Pleasant Controlled
3		1199733	Freehold	Mount Pleasant Controlled
4		1199733	Freehold	Mount Pleasant Controlled
5		1199733	Freehold	Mount Pleasant Controlled
6		1199733	Freehold	Mount Pleasant Controlled
7		1199733	Freehold	Mount Pleasant Controlled
8		1199733	Freehold	Mount Pleasant Controlled
9		1199733	Freehold	Mount Pleasant Controlled
10		1199733	Freehold	Mount Pleasant Controlled

Table A-1 (Continued)
Land Ownership Surrounding MPO

Lot	Section	DP	Tenure	Land Ownership
90		1215947	Crown	The State of New South Wales
2		1234475	Freehold	Mount Pleasant Controlled
3		1234475	Freehold	Mount Pleasant Controlled
4		1234475	Freehold	Mount Pleasant Controlled
5		1234475	Freehold	Mount Pleasant Controlled
6		1234475	Freehold	Mount Pleasant Controlled
7		1234475	Freehold	Mount Pleasant Controlled
1006		1235827	Freehold	Mount Pleasant Controlled
1007		1235827	Freehold	Bengalla Controlled
1008		1235827	Freehold	Bengalla Controlled
1009		1235827	Freehold	Bengalla Controlled

ATTACHMENT 1

TIME EXTENSION APPROVAL TO SURRENDER DEVELOPMENT CONSENT DA 92/97

Department of Planning and Environment

Our ref: SSD-10418-PA-41

Christian Lauritzen
General Manager Resource Development
Mach Energy Australia Pty Ltd
PO Box 407
Newcastle, NSW, 2300

06/01/2025

Subject: Time Extension Request to Surrender the Development Consent Mount Plesant Open Cut Coal Mine (DA 92/97)

Dear Mr. Lauritzen

I refer to your request seeking an extension of time to surrender the development consent for the Mount Pleasant Open Cut Mine (DA92/97) in accordance with Condition A14 and Condition A15 Schedule 2 of the consent.

The Department notes in your letter dated 29 November 2024 that The Denman, Aberdeen, Muswellbrook, and Scone Healthy Environment Group Inc. has subsequently lodged a notice of appeal with the NSW Court of Appeal on 18 November 2024. As hearing dates have not yet been set, this will delay the outcome of the appeal.

I understand that MACH Energy is required to comply with Condition A14 and Condition A15, Schedule 2 until such time as DA 92/97 is surrendered. Accordingly, the Secretary has granted an extension of time, from 12 February 2025 to 12 February 2026.

If you wish to discuss the matter further, please contact Charissa Pillay on 02 99955944.

Yours sincerely

Stephen O'Donoghue
Director
Resource Assessments
As nominee of the Secretary

ATTACHMENT 2

REHABILITATION RISK ASSESSMENT

MACHEnergy

Rehabilitation Risk Assessment – Mount Pleasant Operations, 10 September 2024

Name	Company / Position	Signature
Mariah Lane	MACH Energy, Environmental Advisor	
Andrew Reid	MACH Energy, Environmental Superintendent	
Blake Shackleton	MACH Energy, Graduate Environmental Advisor	
Peter York	Thiess, Environment and Community Superintendent	
Brodie Morrison	Thiess, Environment and Community Advisor	

Element/Aspect	Risk Description	Cause/Trigger	Existing Control – Document	Existing Controls and Processes	Risk Control Effectiveness	Risk Likelihood Rating	Risk Consequence Rating	Risk Classification	RMP Section
General									
Insufficient skills and experience in rehabilitation design and execution	A failure to engage appropriately skilled employees/contractors or subject matter experts, leads to poor rehabilitation design and execution, inadequate rehabilitation monitoring programs, analyses and/or response to deteriorating conditions.	Rehabilitation execution ITP processes indicates poor rehabilitation execution (i.e. not in accordance with approved designs).	RMP - Rehabilitation Management Plan and Forward Program Rehabilitation Procedure (internal)	- Employing personnel with qualifications, skills and experience which meet MACH Energy's set position/role descriptions and requirements. - Conducting performance reviews. - Conducting ITP check processes of rehabilitation campaigns. - Conducting internal and external audits against RMP - Rehabilitation Management Plan and Forward Program requirements. - Maintaining sufficient budget to conduct rehabilitation activities in accordance with RMP - Rehabilitation Management Plan and Forward Program and also maintain budget to employ and retain personnel; - Procurement policy and procedures in place	Satisfactory	# # # # # # # # # # # # #	D	L	Sections 7
Insufficient funding or prioritisation	Insufficient funding for or prioritisation of rehabilitation activities.	Poor planning or direction to mining services provider.	RMP - Rehabilitation Management Plan and Forward Program Rehabilitation Procedure (internal) ITP Process	Employing personnel with qualifications, skills and experience which meet MACH Energy's set position/role descriptions and requirements. - Conducting performance reviews. - Conducting ITP check processes of rehabilitation campaigns. - Conducting internal and external audits against Rehabilitation Management Plan and Forward Program requirements. – Maintaining sufficient budget to conduct rehabilitation activities in accordance with RMP - Procurement policy and procedures in place	Satisfactory	1	D	L	NA
Land Clearance Phase									
Soil stripping	Ineffective stripping of topsoil and subsoil, mixing of poor quality soils.	- Lack of communication of soil stripping procedures to equipment operator by MPO manager.	RMP - Rehabilitation Management Plan and Forward Program Ground distrubance permit procedure, Topsoil Management Procedure Biodiversity Management Plan (BioMP)	- Training of machinery operator to identify/differentiate change in soil profile. - ITP process with Environment Team as required - Field Inspections as required - Topsoil Management Procedure ME-EMS-PRO-09 - Regular topsoil inventory	Satisfactory	1	C	L	Section 6.2.1
Biological Resource	Loss off biological resources from salvage practices i.e. Loss of endemic flora and fauna species	Lack of area survey understanding and improper land clearing technique.	RMP - Rehabilitation Management Plan and Forward Program Ground disturbance permit procedure, Flora and Fauna Procedure Biodiversity Management Plan (BioMP)	-Ecological survey and mapping by suitably qualified people of entire project area - Seed harvesting prior to stripping - Review of ecological areas during GDP process - Appropriate training of machinery operator - ITP process with Environment Team as required - Field Inspections as required - Flora and Fauna Procedure ME-EMS-PRO-05 - Vegetation Clearance Protocol (VCP)	Satisfactory	2	D	L	
Flora or fauna management	Impact to protected species.	Improper land clearing techniques.	RMP - Rehabilitation Management Plan and Forward Program Ground disturbance permit procedure, Flora and Fauna Procedure Biodiversity Management Plan (BioMP)	-Ecological survey and mapping by suitably qualified people of entire project area - Suitably qualified personnel present during habitat removal - Review of ecological areas during GDP process - Appropriate training of machinery operator - ITP process with Environment Team as required - Field Inspections as required - Flora and Fauna Procedure ME-EMS-PRO-05 - Vegetation Clearance Protocol (VCP)	Satisfactory	2	D	L	
Rehabilitation Phase – Active Mining									
Fines Emplacement Area (FEA) instability	Failure of the Fines Emplacement Area embankment could potentially lead to release of fines material from the site	**TARP Trigger Condition Amber:** Geotechnical monitoring results indicates a small area of FEA embankment is compromised (e.g. slumped) or small/minor expression of water/seepage at toe of embankment observed. **TARP Trigger Condition Red:** Geotechnical monitoring results indicates a significant area of FEA embankment is compromised (e.g. slumped) or significant expression of water/seepage at toe of embankment observed.	High Risk Activity Notification. FEA Operations and Maintenance Manual.	- FEA is to be designed in accordance with NSW Dams Safety Guidelines. – ITP check process conducted to confirm FEA embankments are constructed in accordance with DSC design. - Daily site inspections. - Attendance at Dams Safety Training. - Internal and External Audits. **TARP Response Condition Amber:** MPO geotechnical and relevant mine design personnel to investigate possible causes and determine appropriate course of action. Implement determined action. **TARP Response Condition Red:** Suitably qualified person/consultant to be engaged to conduct geotechnical assessment of FEA with input from relevant MPO geotechnical and mine design personnel, and provide recommendations for options for remediation. Remediate as soon as possible.	Satisfactory	4	E	H	Section 10
FEA rehabilitation capping	Failure of FEA rehabilitation capping and/or revegetation.	**TARP Trigger Condition Amber:** Monitoring of FEA revegetation indicates revegetation performance of a small area is stagnating. **TARP Trigger Condition Red:** Monitoring of FEA revegetation indicates a significant area of revegetation has failed or revegetation performance is on an ongoing declining trend.	RMP - Rehabilitation Management Plan and Forward Program	- Investigate emerging technologies **TARP Response Condition Amber:** Relevant MPO Environment and mine design personnel to investigate possible causes and determine appropriate course of action, if required. Implement determined action, if necessary. **TARP Response Condition Red:** Suitably qualified person/consultant to be engaged to conduct assessment of FEA rehabilitation performance/capping design and FEA drainage design with input from relevant MPO Environment and mine design personnel. Assessment to propose recommendations for remediation. Remediate as soon as possible.	Satisfactory	2	D	L	Section 10
Geochemistry of exposed surfaces of overburden emplacements	Poor geochemistry of exposed surfaces of overburden emplacements leading to off-site contamination and/or revegetation failure	– Annual rehabilitation monitoring results or visual rehabilitation inspections indicate an area of revegetation failure. – Surface water monitoring programme results indicate water quality not in compliance with relevant criteria	MPO PAF Procedure. Surface Water Management Plan Monitoring Program. RMP - Rehabilitation Management Plan and Forward Program RMP - Rehabilitation Management Plan and Forward Program Rehabilitation Monitoring Program.	MPO PAF Procedure which includes placing PAF material within overburden emplacements and encapsulating with 10 m of inert/buffering materials i.e. encapsulating with 10 m of inert/buffering materials i.e. not placing PAF material near emplacement surface). – Overburden emplacement design and construction of overburden emplacements in accordance with design. – Knowledge of site geochemistry – Analysing water quality monitoring results from sediment collection facilities to detect any poor quality results. – Implementation of SWMP investigation procedure should water quality results exceed parameter trigger levels.	Satisfactory	2	D	L	Section 6.2.1
Spontaneous combustion	Spontaneous combustion incident results in failure of an area of rehabilitation.	**TARP Trigger Condition Amber:** Isolated incident of spontaneous combustion in rehabilitation area. **TARP Trigger Condition Red:** Repeated or widespread incidences of spontaneous combustion in rehabilitation areas.	Spontaneous Combustion Management Plan. RMP - Rehabilitation Management Plan and Forward Program	**TARP Response Condition Amber:** Initiate MPO Spontaneous Combustion Management Plan. Investigate reason for incident including a review of site records for the area including whether placement occurred at required depth (i.e. 5 m from emplacement surface). Review to determine requirement for rehabilitation remediation. Implement remediation if necessary. **TARP Response Condition Red:** Implement MPO Spontaneous Combustion Management Plan excavation procedures, re-cap and rehabilitate area. Investigate reason for incident including a review of site records for the area including whether placement occurred at required depth (i.e. 5 m from emplacement surface). Determine if an increase to capping depth for carbonaceous material is required.	Satisfactory	2	D	L	Sections 6.2.1 and 10
Rehabilitation Phase - Decommissioning Phase									
Waste, chemicals, structures not removed during mine decommissioning	Chemicals, lubricants and constructed (not landform) structures (including demolition activities) which remain at mine completion lead to water quality and public/fauna safety issues from the site	Findings of Land Contamination Assessment (undertaken during mine decommissioning phase) indicates residual areas of contamination requiring remediation.	MOP/RMP (at the time of decommissioning). MPO Waste Management Plan.	It is anticipated that at the time of decommissioning, an MPO Decommissioning Plan (separate from the MPO Mine Closure Plan) would be developed and implemented. The Plan would include completion criteria for decommissioning of all MPO plant, equipment, buildings/structures not required in the final landform. It is anticipated that the MPO General Manager would be responsible for implementation of the plan. The Plan would include a completion criteria assessment and verification process to confirm the decommissioning process has been completed in accordance with completion criteria.	Not yet applicable	2	D	L	
Heritage Impacts	Impacts on heritage items (e.g. re-placement of cultural heritage items into rehabilitation areas).	Loss, damage, or improper placement of heritage items.	RMP - Rehabilitation Management Plan Historic Heritage Management Plan Aboriginal Heritage Management Plan	– Heritage survey and mapping by suitably qualified people of entire project area - Appropriate training of site personnel - ITP process with Environment Team as required - Field Inspections as required -Keeping place with safe and secure storage -Database and inventory management -Fencing and exclusion	Not yet applicable	2	D	L	Section 6.2.1
Rehabilitation Phase – Landform Establishment Phase									
Landform design - geomorphic landform model	Incorrect geomorphic landform model and/or drainage design leads to unstable landform.	ITP check process (undertaken by mine planning personnel) of geomorphic landform model indicates the model is not in accordance with design.	RMP - Rehabilitation Management Plan and Forward Program ITP process. Natural landform design model and software.	- Correct specifications to ensure geomorphic landform model is in accordance with design; - Third party independent review and internal review; - Rehabilitation Monitoring; - Siberia modelling; - Calibration of model; - Use of task specific software. - UoN Rehab Erosion Trial	Satisfactory	3	D	M	Section 10
Landform design - construction of geomorphic landform	Landform and drainage structures not in accordance with geomorphic design.	- design change not communicated to equipment operators **TARP Trigger Condition Amber:** ITP check process identifies that constructed final landform marginally deviates from the design. **TARP Trigger Condition Red:** ITP check process identifies that constructed final landform significantly deviates from the design, and the landform is unlikely to function as designed.	RMP - Rehabilitation Management Plan and Forward Program ITP process.	- Survey checks weekly, sign-off and drone flights; - ITP Process (Industry Best Practice); – Bulk shaping dozers are fitted with GPS. **TARP Response Condition Amber:** Identified area outside of design is reworked to ensure alignment with design prior to ITP being signed off. **TARP Response Condition Red:** Identified area outside of design is reworked to ensure alignment with design prior to ITP being signed off. Re-train operator/contractor in design requirements, if determined to be necessary.	Satisfactory	2	D	L	Section 4 and 10

Unstable overburden emplacements	Instability due to construction of landform not in accordance with geomorphic design leading to failure (slumping/slip) of an area of overburden emplacement and revegetation failure, and mobilised sediment from the final landform.	Rehabilitation monitoring results or visual rehabilitation inspections indicate an area of slumping, slip or erosion and/or drainage structure failure. **TARP Trigger Condition Amber:** Monitoring indicates some minor slumping/slip or movement of rehabilitation area. **TARP Trigger Condition Red:** Monitoring indicates some significant slumping/slip or movement of rehabilitation area.	Erosion and Sediment Control Standard (internal). MPO Erosion and Sediment Control Management Plan. MPO Water Management Plan. RMP - Rehabilitation Management Plan and Forward Program	- ITP process is undertaken at the landform design stage to check the emplacement has been designed in accordance with geomorphic design specifications.- -Another ITP process is undertaken after construction of the emplacement to verify constructed in accordance with design. - Various monitoring programs and inspection procedures are in place to identify instability or erosion incidence, including monthly site-wide drone surveys, annual ortho-imagery and more frequent LiDAR surveys if required, as well as the MPO surface water monitoring program (which includes sediment dams) and rehabilitation monitoring program (which includes visual inspection monitoring process). **TARP Response Condition Amber:** Monitor and assess stability of area. Undertake reprofiling and revegetate area if required. **TARP Response Condition Red:** Undertake a review of landform design. Confirm if any changes to landform design specifications required. Remediate area including reprofiling and revegetation.	Satisfactory	2	D	L	Section 10
Unstable or failure of water management drains/structures	Instability or failure of water management drain/structure due to construction of structure not in accordance with geomorphic design leading to failure of a rehabilitation area, and mobilised sediment from the final landform.	Rehabilitation monitoring results or visual rehabilitation inspections indicate drainage structure failure. TARP Trigger Condition Amber: Drainage feature/structure exhibits some minor issues but functioning as designed and does not threaten to cause rehabilitation failure. TARP Trigger Condition Red: Drainage feature/structure not functioning as designed and is threatening or causing rehabilitation failure.	Erosion and Sediment Control Standard (internal). MPO Erosion and Sediment Control Management Plan. MPO Water Management Plan. MPO MOP/RMP.	-ITP process is undertaken at the landform design stage to check the water management structure has been designed in accordance with geomorphic design specifications. -Another ITP process is undertaken after construction of the drainage structure to verify constructed in accordance with design. -Various monitoring programs and inspection procedures are in place to identify instability or erosion incidence, including monthly site-wide drone surveys, annual ortho-imagery and more frequent LiDAR surveys if required, as well as the MPO surface water monitoring program (which includes sediment dams) and rehabilitation monitoring program (which include visual inspection monitoring process). **TARP Response Condition Amber:** A suitably trained and experienced person within mine planning dept. to inspect drainage feature/structure and assess appropriate action, if required. Implement action determined, if necessary. **TARP Response Condition Red:** A suitably trained and experienced person within mine planning dept. to inspect drainage feature/structure and assess appropriate action for remediation. Implement action determined for remediation of the feature/structure.	Satisfactory	1	C	L	Section 10
Erosion	Unpredicted or increased rate of erosion beyond design limits causing failure of an area of rehabilitation	Rehabilitation monitoring results or visual rehabilitation inspections indicate an area of erosion causing failure of an area of rehabilitation. **TARP Trigger Condition Amber:** Monitoring indicates minor gully or tunnel erosion present and/or active rilling > 300 mm but < 600 mm deep. **TARP Trigger Condition Red:** Monitoring indicates significant gully or tunnel erosion present and/or active rilling > 600 mm deep.	RMP - Rehabilitation Management Plan and Forward Program Rehabilitation Monitoring Manual (internal). Erosion and SedimentControl Plan.	- Another ITP process is undertaken after construction of the drainage structure to verify constructed in accordance with design - Various monitoring programs and inspection procedures are in place to identify instability or erosion incidence, including monthly site-wide drone surveys, annual ortho-imagery and more frequent LiDAR surveys if required, as well as the MPO surface water monitoring program (which includes sediment dams) and rehabilitation monitoring program (which include visual inspection monitoring process). **TARP Response Condition Amber:** Assess options to remediate erosion, including consideration of slope and material type, and determine appropriate action. Implement action if determined necessary. **TARP Response Condition Red:** Implement MPO Erosion and Sediment Control Plan. Undertake a review of landform drainage design, landform slope and material type. Review to include recommendations for remediation. Remediate area as per review recommendation.	Satisfactory	1	C	L	
Capping Material	Inadequate volume of suitable capping material available to cap the FEA.	Poor selection and management of capping material resulting in insufficient amount when decommissioning tailings area.	RMP - Rehabilitation Management Plan and Forward Program FEA OMM and closure study Rehabilitation Monitoring Manual (internal). Topsoil Management Procedure	-Closure planning underway identifying material types, thickness and engineering treatments. -First rehabilitation and closure strategy completed in 2021. -Stage 3 lift Rehabilitation and Closure Strategy scheduled for 2025. -FEA borrow works scheduled for 2025. Material volumes and types identified in detailed design.	Not yet applicable	2	C	M	Section 6.2.3
FEA Drainage	Settlement of FEA creates drainage issues.	Development of final landform designs does not consider drainage.	RMP - Rehabilitation Management Plan and Forward Program FEA OMM and closure study	Preliminary landform designs considering erosion stability, suitable drainage design to limit the length of overland flow and vegetative cover.	Not yet applicable	2	C	M	Section 6.2.3

Element/Aspect	Risk Descripti	Cause/Trigger	Existing Control - Document	Existing Controls and Processes	Risk Control Effectiveness	Risk Likelihood Rating	Risk Consequence Rating	Risk Classification	RMP Section
Rehabilitation Phase – Growth Medium Development Phase									
Soil	Poor soil structure/geochemistry leads to failure to establish required vegetation communities subsequently leads to failure to rehabilitate the MPO to committed standards.	Soil testing results undertaken during annual rehabilitation monitoring programme indicates soil/growth medium properties not suitable for long-term plant growth. Annual rehabilitation monitoring results or visual rehabilitation inspections indicate an area of revegetation failure..	RMP - Rehabilitation Management Plan and Forward Program Rehabilitation Monitoring Manual (internal). Rehabilitation Strategy	- Soil stripping and management procedures described in RMP - Rehabilitation Management Plan and Forward Program (including stripping and storage of topsoil and subsoil separately). Implementing 'Rehabilitation Trigger Action Response Plan' (Table 9-1 of MOP/RMP - Rehabilitation Management Plan and Forward Program) procedures for Condition Amber and Condition Red events, including additional soil amelioration options in consultation with a suitably qualified person and implementing actions recommended and a review of rehabilitation records for the area, including the source of soil used for rehabilitation area, and soil stockpiling management activities. - Consult a suitably qualified person to determine recommended action to remediate and re-plant area if necessary. Implement actions recommended.	Satisfactory	2	D	L	Section 6.2.1
Soil	Inadequate or insufficient topsoil to create/enhance the desired ecological communities in mine rehabilitation areas.	**TARP Trigger Condition Amber:** Soil Register indicates a minor deficiency of soil resources for life of mine, but sufficient resources available for rehabilitation activities over **RMP - Rehabilitation Management Plan and Forward Program** term. **TARP Trigger Condition Red:** Soil Register indicates a deficiency of soil resources significant enough to delay rehabilitation activities for RMP - Rehabilitation Management Plan and Forward Program term.	RMP - Rehabilitation Management Plan and Forward Program	'- Implement Rehabilitation Trigger Action Response Plan' (MOP/RMP - Rehabilitation Management Plan and Forward Program) procedures for Condition Amber and Condition Red events, including soil stripping and soil management procedure, soil inventory survey, review of soil stripping depths and amelioration of subsoil stocks, and/or re-application depths.	Satisfactory	2	D	L	Section 6.2.1
Habitat Resource	Inadequate volume of suitable habitat features/material available for landform construction.	Improper salvaging and land clearing techniques causing damage and/or loss of habitat features.	RMP - Rehabilitation Management Plan and Forward Program Ground disturbance permit procedure, Flora and Fauna Procedure Biodiversity Management Plan (BioMP)	– Ecological survey and mapping by suitably qualified people of entire project area - Review of ecological areas during GDP process - Appropriate training of machinery operator - ITP process with Environment Team as required - Field Inspections as required - Flora and Fauna Procedure ME-EMS-PRO-05 - Vegetation Clearance Protocol (VCP) - Review of landform requirements against current resources within mine path.	Satisfactory	2	D	L	Section 6.2
Soil stockpiles - weed presence	Weed presence or infestation of soil stockpile leads to decreased quality of soil seed bank and increased presence of weeds in rehabilitation areas.	**TARP Trigger Condition Amber:** Long-term soil stockpile observed during visual inspection or monitoring to have a weed infestation (up to 50% of stockpile area) that has potential to threaten viability of the soil if not controlled. **TARP Trigger Condition Red:** Long-term soil stockpile observed during visual inspection or monitoring to have a significant weed infestation (>50% of stockpile area) that is threatening the viability of the soil.	RMP - Rehabilitation Management Plan and Forward Program Weed Management Procedure (internal). Weed Action Plan (internal).	- Budgeting for weed spraying; - weed mapping; - ongoing review of soil stockpile weed control methods and frequency and appropriateness or suitability of herbicides used. - Review soil source, and determine if changes to weed control program required and subsequent monitoring until weeds controlled.	Satisfactory	2	C	M	Sections 6.2.6 and 10
Growth Medium	Loss of quality in growth medium (erosion, sediment loss, geochemical factors etc.) due to potential delays in revegetation;	Reduced soil quality and erosion from lack of vegetation growth and drainage features.	RMP - Rehabilitation Management Plan and Forward Program Rehabilitation Monitoring Manual (internal). Erosion and Sediment Control Plan.	- Implement Rehabilitation Trigger Action Response Plan' (MOP/RMP - Rehabilitation Management Plan and Forward Program) procedures for Condition Amber and Condition Red events, including soil stripping and soil management procedure, soil inventory survey, review of soil stripping depths and amelioration of subsoil stocks, and/or re-application depths. -Consult a suitably qualified person to determine recommended action to remediate and re-plant area if necessary. Implement actions recommended.	Satisfactory	1	C	L	Section 6.2.1

Element/Aspect	Risk Descripti	Cause/Trigger	Existing Control - Document	Existing Controls and Processes	Risk Control Effectiveness	Risk Likelihood Rating	Risk Consequence Rating	Risk Classification	RMP Section
Rehabilitation Phase – Ecosystem and Land Use Establishment Phase and Ecosystem and Land Use Sustainability Phase									
Landform revegetation failure - drought	Failure of revegetation due to sustained drought leads to a failure to rehabilitate the site to committed standards.	**TARP Trigger Condition Amber:** Monitoring results indicate that ongoing drought conditions are likely affecting revegetation performance, but results continue to be trending towards completion criteria, yet on a slower trajectory. **TARP Trigger Condition Red:** Monitoring results indicates widespread revegetation failure as a result of drought conditions.	RMP - Rehabilitation Management Plan and Forward Program	- Additional tubestock planting or seeding or other management actions including whether watering is required. Assess potential water source/supply options and trials. - Engagement of a suitably qualified person to inspect drought affected rehabilitation area and recommend appropriate management actions including whether re planting/ re seeding is a feasible option considering drought conditions. '- Implemention of 'Rehabilitation Trigger Action Response Plan' (MOP/RMP - Rehabilitation Management Plan and Forward Program) procedures for Condition Amber and Condition Red events,	Satisfactory	2	C	M	Section 10
Landform revegetation failure - frost/storm/flood/ pest invasion event	Failure of revegetation due to frost/storm/flood/pest infestation leads to a failure to rehabilitate the site to committed standards.	**TARP Trigger Condition Amber:** Damage to a small area of agricultural land and/or native woodland/grassland rehabilitation due to a frost/storm/flood/pest invasion event. **TARP Trigger Condition Red:** A significant area (>50% of rehabilitation stage area) of damage to agricultural land or native woodland/grassland rehabilitation due to a frost/storm/flood/pest invasion event.	RMP - Rehabilitation Management Plan and Forward Program	'- Implemention of 'Rehabilitation Trigger Action Response Plan' (MOP/RMP - Rehabilitation Management Plan and Forward Program) procedures for Condition Amber and Condition Red events; - Improve trajectory without intervention. - Additional tubestock planting or seeding to replace revegetation loss or implement other management actions to remediate the area. - Replace revegetation loss by re- planting or re-seeding. - Pest Management Processes; - Flood mitigation/drainage structures. - Engagement of a suitably qualified person to inspect affected rehabilitation area and recommend appropriate management actions including whether re planting/ re seeding is a feasible option considering conditions.	Satisfactory	2	C	M	Section 10

Landform revegetation failure - weed presence	Failure of revegetation due to weed infestation leads to a failure to rehabilitate the site to committed standards.	**TARP Trigger Condition Amber:** Weeds present a risk to rehabilitation establishment or progression. **TARP Trigger Condition Red:** Weeds are posing a significant threat to establishment of rehabilitation or rehabilitation progression.	RMP - Rehabilitation Management Plan and Forward Program	'- Implemention of 'Rehabilitation Trigger Action Response Plan' (MOP/RMP - Rehabilitation Management Plan and Forward Program) procedures for Condition Amber and Condition Red events; - Budgeting for weed spraying; - weed mapping; - Rehabilitation Monitoring; - Dendra Weed Mapping; - ongoing review of soil stockpile weed control methods and frequency and appropriateness or suitability of herbicides used. - Review soil source, and determine if changes to weed control program required and subsequent monitoring until weeds controlled. - Implemention of weed control measures to reduce threat, including follow up weed control if required; Determine requirement for other management actions, including requirement for remediation (e.g. re- seeding/re-planting) of rehabilitation area. - Implemention of weed control measures at rehabilitation area and at topsoil source, if identified as likely source of weed issue, as soon as suitable conditions permit. Remediate (re-plant, re-seed) as soon as suitable conditions permit. - Revegetation planting and seeding ratios, and weed control practices on soil stockpiles or proposed soil stripping areas; - Native plant establishment in consultation with suitably qualified person.	Satisfactory	2	C	M	Section 10
Fauna habitat feature presence	Failure to establish required habitats leads to a subsequent inability for species to be reintroduced on the site	**TARP Trigger Condition Amber:** Various fauna habitat features including stags, logs, rock piles have been incorporated in rehabilitation areas that are representative of habitat capable of supporting relevant threatened fauna species, or is equivalent to relevant analogue site. **TARP Trigger Condition Red:** ITP check process indicates that inadequate fauna habitat features including stags, logs, rock piles have been incorporated in rehabilitation areas (at the set rates defined in Section 7.2.4 of MOP/RMP - Rehabilitation Management Plan and Forward Program and are not representative of habitat capable of supporting relevant threatened fauna species, or are not equivalent to relevant analogue site.	RMP - Rehabilitation Management Plan and Forward Program Rehabilitation Procedure (internal)	- Habitat features have been installed as per set rate (as defined in Section 7.2.4 of MOP/RMP - Rehabilitation Management Plan and Forward Program). - Regular inspection of habitat resources; - Additional and more varied habitat features; - ITP check process to verify installation as per set rate. - Reviews of existing habitat features.	Satisfactory	2	D	L	Section 10
Bushfire	High fuel loads in rehabilitation areas leads to increased risk of bushfire or bushfire event impacts rehabilitation areas.	**TARP Trigger Condition Amber:** Fuel loads in rehabilitation areas are at a level that have the potential to risk rehabilitation. **TARP Trigger Condition Red:** A fire on site damages rehabilitation.	MPO Bushfire Management Plan (internal). RMP - Rehabilitation Management Plan and Forward Program	- Implemention of Bushfire Management Plan procedures; - Maintenance of fire breaks, auditing of fire fighting equipment, and trials for mosaic or cool burning to reduce fuel loads. - Inspection of water sources and assessment of adequate availability of water. - Additional tubestock planting or seeding to replace revegetation loss; - Implemention of management actions to remediate the area including re-plant/re-seed affected area with those species that do not naturally regenerate over a 2 year period post fire - Implemention of 'Rehabilitation Trigger Action Response Plan' (MOP/RMP - Rehabilitation Management Plan and Forward Program) procedures for Condition Amber and Condition Red events.	Satisfactory	2	D	L	Section 6.2.6 and 10
Contaminated surface water - during operations phase	Contamination of off-site surface waters with sediment or saline/acidic waters due to a storm or flooding event or inadequate quality of rehabilitation.	As per Section 6 'Surface Water Impact Trigger Levels' of the SWMP, an investigation is triggered when: – a water quality indicator at a downstream receiving water monitoring location is above (or outside the range) of trigger investigation level for three consecutive sampling events; and – a water quality indicator at a downstream water monitoring location is above (or below in event of a trigger of the lower pH limit) the corresponding upstream monitoring location (where such a monitoring location exists) sampled on the same day.	Water Management Plan	- Dam water sampling; - Drone flights of toe drains reporting on sediment build-up; - Surface Water Investigation in accordance with 'Surface Water Quality Response Protocol' as described in Section 3.1 of the MPO Surface and Ground Water Response Plan (SGWRP); - Implemention of response measures identified by investigation, if required.	Satisfactory	3	D	M	Section 6.2
Surface water retained on-site post-mining in approved water management areas/dams.	Water quality in retained water management areas/dams during post- mining phase remains unfit for relevant post-mining land use (i.e. agriculture or native ecosystem).	**TARP Trigger Condition Amber:** Water quality monitoring during post-mining phase indicates that water retained on-site is not yet fit for relevant post-mining land use (i.e. agriculture or native ecosystem), yet does not pose a risk to achieving completion criteria. **TARP Trigger Condition Red:** Water quality monitoring during post mining phase indicates that water retained on-site is not fit for relevant post-mining land use (i.e. agriculture or native ecosystem), and requires remediation to achieve completion criteria.	Water Management Plan	- Implemention of 'Rehabilitation Trigger Action Response Plan' (RMP - Rehabilitation Management Plan and Forward Program) procedures for Condition Amber and Condition Red events.	Not yet applicable	3	D	M	Section 10
Surface water discharged from site post-mining.	Water quality discharged from site during post-mining phase is not yet comparable to surrounding analogue sites and suitable for receiving water, aquatic ecology and riparian vegetation.	**TARP Trigger Condition Amber:** Water quality monitoring during post-mining phase indicates that water discharged from site is not yet comparable to surrounding analogue sites and suitable for receiving waters, aquatic ecology and riparian vegetation, but does not pose a risk to achieving completion criteria. **TARP Trigger Condition Red:** Water quality monitoring during post mining phase indicates that water discharged from site continues to show a declining trend in comparison to surrounding analogue sites and is not suitable for receiving waters, aquatic ecology and riparian vegetation and on-site intervention is required to achieve completion criteria.	Water Management Plan	- Implemention of 'Rehabilitation Trigger Action Response Plan' (MOP/RMP - Rehabilitation Management Plan and Forward Program) procedures for Condition Amber and Condition Red events.	Not yet applicable	3	D	M	Section 10
Contaminated groundwater	Groundwater released from site (dominantly through water pressure from waters in the final void and within the overburden emplacement or migrated hydrocarbons from workshops etc.) leading to degradation of groundwater quality for surrounding users and being expressed in surface intersecting aquifers.	As per Section 7 'Groundwater Impact Trigger Levels' of the GWMP, an investigation is triggered when: – A groundwater level measurement at a relevant alluvial monitoring bore falls below the trigger value specified within Table 10 of the GWMP. – A monitoring bore records an EC or pH value above (or outside the range of) the trigger values specified in Table 12 of the GWMP at three successive monitoring rounds.	Water Management Plan	- Ongoing Groundwater Investigations in accordance with 'Groundwater Level Response Protocol' or 'Groundwater Quality Response Protocol' as described in Section 3.2 of the SGWRP; - Implementation of response measures identified by investigation, if required.	Satisfactory	2	D	L	Section 10
Rehabilitation completion criteria	Not implementing rehabilitation in accordance with MPO rehabilitation requirements leading to inability to achieve landform and biodiversity completion criteria .	**TARP Trigger Condition Amber:** Monitoring results indicate native woodland/grassland rehabilitation area is on a stagnant trajectory towards achieving the species composition, vegetation structure and density and non-native plant cover completion criteria. **TARP Trigger Condition Red:** Monitoring results indicate native woodland/grassland rehabilitation area is on an ongoing declining trajectory away from achieving the species composition, vegetation structure and density and non-native plant cover completion criteria.	RMP - Rehabilitation Management Plan and Forward Program Rehabilitation Procedure (internal)	- Annual Rehabilitation Monitoring; - Florabank guidelines for native seed, native species lists for the relevant target PCT and species ratios; - Ability of revegetation area to improve trajectory without intervention. - Additional tubestock planting or patch seeding to achieve required target species richness, over-storey and mid-storey cover and native ground cover percentages or to reduce non-native plant cover percentage; - Additional tubestock planting or seeding to replace revegetation loss or implement other management actions to remediate the area. - Engagement of a suitably qualified person to review native species list for the relevant target PCT, species ratios and monitoring results and inspect rehabilitation area. - Implemention of recommended actions; - Specialist reputation.	Satisfactory	2	D	L	Section 4
Revegetation methods	Inappropriate topsoiling, planting and/or direct seeding techniques resulting in a failure of rehabilitation.	**TARP Trigger Condition Amber:** Monitoring results and/or initial rehabilitation inspection observations indicate poor plant establishment and some patches of where plant mortality has occurred. **TARP Trigger Condition Red:** Monitoring results and/or initial rehabilitation inspection observations indicate poor plant establishment and wide-spread (>50% of rehabilitation area) plant mortality has occurred.	RMP - Rehabilitation Management Plan and Forward Program Rehabilitation Procedure (internal)	- Implemention of 'Rehabilitation Trigger Action Response Plan' (MOP/RMP - Rehabilitation Management Plan and Forward Program) procedures for Condition Amber and Condition Red events - Additional tubestock planting or seeding to replace revegetation loss; - Rehabilitation training package including step by step guide for tubestock planting methods.	Requires improvement	2	D	L	Secction 6.2.1
Revegetation species	Inadequate or insufficient (incorrect species mix/quality) seed/seedlings for rehabilitation works.	**TARP Trigger Condition Amber:** A number of key native revegetation species (e.g. species typical of White Box EEC) are not available for proposed rehabilitation activities over RMP - Rehabilitation Management Plan and Forward Program term from MPO Seed Harvesting Facility or from nursery supplier, however the majority of rehabilitation activities can be undertaken. **TARP Trigger Condition Red:** Due to unavailability of key native revegetation species (either from MPO Seed Harvesting Facility or from nursery supplier), other native species are required to be planted with key species planted once available.	RMP - Rehabilitation Management Plan and Forward Program Rehabilitation Procedure (internal)	**TARP Response Condition Amber:** Investigate options available to source required seed/seedling stocks of key species to meet rehabilitation requirements e.g. instruct existing nursery supplier to source or grow more stock, or engage alternate nursery supplier Consider requirement for additional tubestock planting or seeding to replace revegetation loss or implement other management actions to remediate the area. **TARP Response Condition Red:** Undertake a review of long-term revegetation species supply plan, including an assessment of likely seed supply volume from MPO seed collection campaigns, and capability of existing nursery supplier to supply volumes required. Investigate other alternate nursery suppliers available. Review timing for rehabilitation activities over RMP - Rehabilitation Management Plan and Forward Program term. Implement MACH Owned Nursery to harvest and propagate seed/seedlings for site specific requirements.	Satisfactory	3	D	M	Section 6.2.5
Agricultural Land rehabilitation areas	Perennial pasture establishment on Agricultural Land rehabilitation areas is not comparable to with representative grazed analogue site.	**TARP Trigger Condition Amber:** Monitoring indicates perennial pasture establishment for a small area is on a stagnant trajectory compared with analogue grazing sites as determined by a suitably qualified person. **TARP Trigger Condition Red:** Monitoring indicates perennial pasture establishment for a significant area (>50% of rehabilitation stage area) is on a declining trajectory compared with analogue grazing sites as determined by a suitably qualified person.	RMP - Rehabilitation Management Plan and Forward Program Rehabilitation Monitoring Manual (internal)	- Agricultural Land Monitoring Program in RMP - Rehabilitation Management Plan and Forward Program. – Not yet applicable as no agricultural land rehabilitation areas have been established at the MPO. - Once Agricultural Land rehabilitation areas are established and grazing conducted, the following controls would be implemented: **TARP Response Condition Amber:** Review grazing practices, weed presence and remediation requirements. Determine and implement appropriate course of action, e.g. reduce head of cattle to reduce grazing pressure, requirement for re seeding, or other management/intervention measures. **TARP Response Condition Red:** Review grazing practices, revegetation seeding ratios, weed presence and remediation requirements. Determine and implement appropriate course of action. Remove cattle, and re seed as soon as practicable (subject to suitable conditions) to minimise potential for weed incursion and erosion.	Not yet applicable	1	C	L	Section 10

Agricultural Land rehabilitation areas	Agricultural land rehabilitation area has not achieved its relevant Land Capability Class.	**TARP Trigger Condition Amber:** Monitoring indicates a small area of Agricultural land is on a stagnant trajectory towards meeting its relevant Land Capability Class. **TARP Trigger Condition Red:** Monitoring indicates a significant area (>50% of rehabilitation stage area) of Agricultural land is on a declining trajectory towards meeting its relevant Land Capability Class.	RMP - Rehabilitation Management Plan and Forward Program Rehabilitation Monitoring Manual (internal)	- Agricultural Land Monitoring Program in RMP - Rehabilitation Management Plan and Forward Program. - Not yet applicable as no agricultural land rehabilitation areas have been established at the MPO. - Once Agricultural Land rehabilitation areas are established, the following controls would be implemented: **TARP Response Condition Amber:** Review grazing practices, weed presence and remediation requirements. Determine and implement appropriate course of action, e.g. reduce head of cattle to reduce grazing pressure, requirement for re seeding, or other management/intervention measures. **TARP Response Condition Red:** Review grazing practices, revegetation seeding ratios, weed presence and remediation requirements. Determine and implement appropriate course of action. Remove cattle, and re seed as soon as practicable (subject to suitable conditions) to minimise potential for weed incursion and erosion.	Not yet applicable	1	C	L	Section 6.2.5 and 10
Land management	Incompatible neighbouring land owner practices (including interactions with the Bengalla Mine) leading to failure of rehabilitation and revegetation works.	**TARP Trigger Condition Amber:** Some key land management practices (e.g. weed control, pest control or inappropriate fencing) by neighbouring landowners (including the Bengalla Mine and adjoining private landholders) are impacting short-term rehabilitation performance at the MPO and may affect the establishment of wildlife corridors in the long term. **TARP Trigger Condition Red:** Land management practices (e.g. weed control pest control or inappropriate fencing) by neighbouring landowners (including the Bengalla Mine and adjoining private landholders) are incompatible with MPO land management practices and are impacting rehabilitation performance at the MPO and do not facilitate wildlife movement.	Biodiversity Management Plan. RMP - Rehabilitation Management Plan and Forward Program	- Weed control, pest control and planting; - Communication of MPO rehabilitation and land use objectives, including wildlife corridor goals, with neighbouring landowners (including key mine management team at Bengalla Mine if necessary), and with the MPO CCC and relevant regulatory authorities if necessary. - Communication of MPO land management practices including timing and practices and propose implementation collaboration; - Cumulative Framework Committee MACH, BMC and MAC	Satisfactory	2	D	L	Section 10
Acid forming material	Evidence of acid forming material leading to failure of an area of rehabilitation.	**TARP Trigger Condition Amber:** Rehabilitation monitoring (soil test) results and/or surface water monitoring results indicate acid forming material is close to the outer surface of overburden emplacement, resulting in a small/isolated area of revegetation failure. **TARP Trigger Condition Red:** Rehabilitation monitoring (soil test) results and/or surface water monitoring results indicate acid forming material is close to the outer surface of overburden emplacement, resulting in a widespread area (>50% of rehabilitation stage area) of revegetation failure.	Water Management Plan. MPO PAF Procedure.	- Scheduled PAF material extraction and that dumping is separately managed and monitored by the OCE; - All coal reject is treated as PAF deposited in-pit, irrespective of seam and source; - Fine coal reject is to be placed in the fine coal reject cells/systems only; - Coal reject transport and in-pit deposition is separately managed and monitored by the OCE; - All waste coal (e.g. oxidised coal) is treated as PAF, irrespective of seam source; - Geotechnical planning and monitoring in compliance to the Mt Pleasant Principal Mining Hazard Management Plan (2018). - Final landform surface conformance and ITP signoff systems.	Satisfactory	2	C	M	Section 6.2.1 and 10
Unstable pit or final void	Geotechnical monitoring results indicate instability of active pit or final void (post- closure) which leads to a degradation of site safety with potential impacts on public safety and inability to meet final void completion criteria.	Geotechnical stability monitoring of active pits (during operational phase) and of final void (during post-closure phase) indicates an area of stability failure (e.g. wall slip). **TARP Trigger Condition Amber:** Geotechnical monitoring results of final void post-mining indicates a marginal change to a Factor of Safety rating for a final void high wall or low wall, however the change does not pose a threat to the long-term stability of the final void. **TARP Trigger Condition Red:** Geotechnical monitoring results of final void post-mining indicates a significant change to a Factor of Safety rating for a final void high wall or low wall, and could pose a threat to the long-term stability of the final void.	Geotechnical analysis (internal).	- MACH Energy/Theiss mine planning team designing pit/void in accordance with relevant geotechnical standards. - MPO Principal Mining Engineer completes/signs off ITP process to verify pit/void design. - Daily active pit inspections undertaken by MPO Open Cut Examiner. - **TARP Response Condition Amber:** Suitably qualified person/s and key MPO geotechnical and mine design personnel to review trend of monitoring results and determine whether any management actions required. - **TARP Response Condition Red:** Engage suitably qualified person/consultant to conduct Geotechnical Assessment, including options for amending final void design. Implement recommended course of action as soon as possible.	Satisfactory	# # # # # # # # # # # # # # # # #	D	L	Section 6.2.3
Final void water balance	Final void monitoring results indicate final void system is inconsistent with final void water balance modelling.	**TARP Trigger Condition Amber:** Final void monitoring results indicate some minor inconsistencies with final void water balance modelling predictions, e.g. groundwater inflows or surface water runoff inflows marginally above predictions, and are continuing to trend marginally above predictions. **TARP Trigger Condition Red:** Final void monitoring results indicate significant inconsistencies with final void water balance modelling predictions, e.g. groundwater inflows or surface water runoff inflows significantly above predictions, and are continuing to trend above predictions, and may result in overtopping of final void.	MPO EIS and Mod 4 EA. Water Management Plan.	- MPO water monitoring program for final void. - **TARP Response Condition Amber:** Suitably qualified person to undertake a review of final void water monitoring results and final void water balance, and determine possible reasons for results, and if any ameliorative/management actions are required. - **TARP Response Condition Red:** Suitably qualified person/s and key MPO mine design personnel to undertake a review of final void design and MPO final landforms (including final void catchment) and determine options for amending final void design and/or design of other final landforms to prevent final void overtopping. Implement recommended course of action as soon as possible.	Not yet applicable	# # # # # # # # # # # # # # # # #	D	M	Section 10
Seed Predation	Insect and bird predation of seed.	Loss of seed resulting in limited vegetation grotwth due to predation from insects.	RMP - Rehabilitation Management Plan and Forward Program Rehabilitation Monitoring Manual	- Annual Rehabilitation Monitoring; - Chemical treated seed prior to dispersal to prevent predation.	Satisfactory	# # # # #	C	M	Section 6.2.4
Seed Supply	Inadequate seed supply of required species for ecosystem establishment.	Inability to source seed to meet planting and rehabilitation criteria requirements.	RMP - Rehabilitation Management Plan and Forward Program Rehabilitation Monitoring Manual	**TARP Response Condition Amber:** Investigate options available to source required seed/seedling stocks of key species to meet rehabilitation requirements e.g. instruct existing nursery supplier to source or grow more stock, or engage alternate nursery supplier Consider requirement for additional tubestock planting or seeding to replace revegetation loss or implement other management actions to remediate the area. **TARP Response Condition Red:** Undertake a review of long-term revegetation species supply plan, including an assessment of likely seed supply volume from MPO seed collection campaigns, and capability of existing nursery supplier to supply volumes required. Investigate other alternate nursery suppliers available. Review timing for rehabilitation activities over RMP - Rehabilitation Management Plan and Forward Program term. Seed harvesting on prior to land clearing phase. Implement MACH Owned Nursery to harvest and propagate seed/seedlings for site specific requirements for site specific requirements.	Satisfactory	# # # # # # # # # # # # # # # # #	D	L	Section 6.2.5
Seed Quality	Poor seed quality and handling resulting in poor propagation and growth.	**TARP Trigger Condition Amber:** Monitoring results and/or initial rehabilitation inspection observations indicate poor plant establishment and some patches of where plant mortality has occurred. **TARP Trigger Condition Red:** Monitoring results and/or initial rehabilitation inspection observations indicate poor plant establishment and wide-spread (>50% of rehabilitation area) plant mortality has occurred.	RMP - Rehabilitation Management Plan and Forward Program Rehabilitation Monitoring Manual	**TARP Response Condition Amber:** Investigate options available to source required seed/seedling stocks of key species to meet rehabilitation requirements e.g. instruct existing nursery supplier to source or grow more stock, or engage alternate nursery supplier Consider requirement for additional tubestock planting or seeding to replace revegetation loss or implement other management actions to remediate the area. **TARP Response Condition Red:** Undertake a review of long-term revegetation species supply plan, including an assessment of likely seed supply volume from MPO seed collection campaigns, and capability of existing nursery supplier to supply volumes required. Investigate other alternate nursery suppliers available. Review timing for rehabilitation activities over RMP - Rehabilitation Management Plan and Forward Program term. Seed harvesting on prior to land clearing phase. Implement MACH Owned Nursery to harvest and propagate seed/seedlings for site specific requirements for site specific requirements. -Seed germination testing of harvested seed at MPO Nursery	Satisfactory	# # # # # # # # # # # # # # # # #	D	L	Section 6.2.5
Adverse Weather	Nagative impacts of seasonal and or adverse weather conditions affecting timing and development.	Increase of adverse weather resulting in inability to complete rehabilitation phases.	RMP - Rehabilitation Management Plan and Forward Program ITP Process	- Employing personnel with qualifications, skills and experience which meet MACH Energy's set position/role descriptions and requirements. - Conducting ITP check processes of rehabilitation campaigns. - Conducting internal and external audits against RMP - Rehabilitation Management Plan and Forward Program requirements. - Maintaining sufficient budget to conduct rehabilitation activities in accordance with RMP - Rehabilitation Management Plan and Forward Program - Procurement policy and procedures in place - forecasting models and long-term rainfall predictions - Scheduling works to occur in ideal periods (i.e. construction in dryer months planting in wetter months) - Scheduling planned completion dates well in advance of reporting requirements - Progressive rehab following closely behind mine operations - Flexibility for season delays in schedule.	Satisfactory	# # # # # # # # # # # # # # # # #	C	L	