Annual Rehabilitation Report - 2024

Mount Thorley Warkworth

DOCUMENT CONTROL

Version	Date	Revision Description	Author	Approver
1.0	31/03/2025	ARR document prepared to satisfy Standard Conditions on Mining Leases	Bill Baxter Environmental Specialist - Rehabilitation	Gary Mulhearn Environment & Community Manager
2.0	26/05/2025	Updated to match Portal KPI Reports	Bill Baxter Environmental Specialist - Rehabilitation	Gary Mulhearn Environment & Community Manager

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

DEFINITIONS / ABBREVIATIONS

BBAM - BioBanking Assessment Method
BCD – Biodiversity and Conservation Division
CCC – Community consultative Committee
CCL – Consolidated Coal Lease
CL – Coal Lease
DCCEEW (Federal) – Department of Climate Change, Energy, the Environment and Water (Australian Government)
DPE – NSW Department of Planning and Environment
EIS – Environmental Impact Statement
EL – Exploration Licence
EPBC - Environment Protection and Biodiversity Conservation Act
EPA – NSW Environment and Protection Authority
EPL – Environment Protection Licence
FLRP – Final Landform and Rehabilitation Plan
HTE – High Threat Exotics
ITP – Inspection Test Plan
LEM – Landform Evolution Model
ML – Mining Lease
MTO - Mount Thorley Operations
MTW - Mount Thorley Warkworth Coal Mine (combined operations)
RML - Radiation Management Licence
RMP – Rehabilitation Management Plan
ROBJ – Rehabilitation Objectives
RR – NSW Resources Regulator
TSF – Tailings Storage Facility
VENM - Virgin Excavated Natural Material
WML - Warkworth Mining Limited

Name of mine:	Mount Thorley Warkworth	
Annual Rehabilitation Report Period:	**START DATE:**	**END DATE:**
	1 January 2024	31 December 2024
Annual Rehabilitation Report revision dates and version numbers:	Version 2.0 - 26 May 2025	
Mining leases	**No**	**Expiry**
	CL 219	23 September 2044
	ML 1752	17 March 2038
	CCL 753	17 February 2034
	ML 1412	11 January 2038
	ML 1590	26 February 2028
	ML 1751	17 March 2038
	ML 1828	25 February 2043
Name of Lease holder(s)	Mount Thorley Operations Pty Ltd Warkworth Mining Limited Mount Thorley Coal Loading Ltd	
Date of Submission	21 MAY 2025	

1.0 MINING DETAILS

1.1 PROJECT DESCRIPTION

Mount Thorley Warkworth (MTW) is an integrated operation of two open cut mines, Warkworth Mining Limited (WML) and Mount Thorley Operations (MTO), managed by Coal & Allied (NSW) Pty Ltd, a wholly owned subsidiary of Yancoal Australia Limited (Yancoal). MTW is located 14 km south west of Singleton in the Hunter Valley region of New South Wales.

Development Consent for the Warkworth Continuation Project (SSD-6464) and Mount Thorley Continuation Project (SSD-6465) was granted on 26 November 2015. A modification to the Warkworth Continuation Project (SSD-6464 MOD2) was granted on 27 May 2022.

The Projects are described in detail in the Environmental Impact Statements and supporting documents (EMGA Mitchell McLennan, June 2014), and the Modification Report (SSD-6464 MOD 2, September 2021).

1.2 CURRENT DEVELOPMENT CONSENTS, LEASES, AND LICENCES

Environment Protection Licence (EPL): EPL 24, EPL 1976, EPL 1376.

Environment Protection and Biodiversity Conservation (EPBC) Act Approval: EPBC 2002/629, EPBC 2009/5081.

General Water Licences: WAL963, WAL10543, WAL18233, WAL18558, WAL19022, WAL39798, WAL40464, WAL40465, WAL43056, WAL43057, 20BL168821, 20BL171729, 20BL171841, 20BL171842, 20BL171843, 20BL171844, 20BL171845, 20BL171846, 20BL171847, 20BL171848, 20BL171849, 20BL171850, 20BL171891, 20BL171892, 20BL171893, 20BL171894, 20BL172272, 20BL172273, 20BL173065, 20BL173276.

Development Consents: SSD-6464, SSD-6465, DA 177/94.

Radiation Management License: RML 5061110, RML 5061122.

Prospecting and Coal Mining: CL 219, (Part) ML 1547 (Sublease), ML 1752, EL7712, EL 8824, CCL 753, ML 1412, ML1590, ML 1751, ML 1828.

Store Explosives License: XSTR100160.

In 2024, a change to EPL 1976 (Mount Thorley) was approved to: 1) amend the EPL premises boundary back to the common mining lease boundary between MTO and Bulga Coal after completion of cross mining lease dumping into a small area of Bulga Coal mining lease; and 2) relocate one Dustrak PM10 air quality monitor from Bulga Mine land to MTO, so that Bulga Coal could continue their planned overburden dumping operations where the monitor was located.

1.3 LAND OWNERSHIP AND LAND USE

Listed below are the ownership/subdivision changes for land related to MTW that occurred during the reporting period.

Southern Biodiversity Area - no ownership change. New lots created as a result of subdivision.

- 1-2//1294001 Coal & Allied Operations Pty Limited. These lots are made up of part 1//129806, 2//129806, 118//755267, 119//755267, 128//755267, 135//755267, 142//755267, 1//48592, 1//129808, 4//783484, 5//783484, 108//755267, 122//755267, 143//755267, 145//755267, 195//755267
- 3//1294001 Coal & Allied Operations Pty Limited (part formerly 3-4//783484 - Coal & Allied Operations Pty Limited; part formerly 1//592598 - Coal & Allied Operations Pty Limited 51%)
- 4//1294001 Coal & Allied Operations Pty Limited 51% (part formerly 1//592598 - Coal & Allied Operations Pty Limited 51%; parts formerly in Auto Consol 6747-86, Auto Consol 2653-177, 1//48592, 3//783484 & 4//783484 - Coal & Allied Operations Pty Limited)

Acquisition (Property K in MTO Development Consent SSD-6465 - landowner triggered acquisition upon request):

- 5//10022 – Mount Thorley Operations Pty Limited

2.0 COMPLAINTS

No complaints related to rehabilitation received in 2024.

3.0 STAKEHOLDER CONSULTATION

Table 1: Stakeholder Consultation 2024

Date	Stakeholder	Consultation Forms	Matters	Actions
February 2024	Community Consultative Committee (CCC)	CCC Meeting Document Circulated	Rehabilitation and disturbance forecasts for 2024 and YTD progress Updated RMP, with approved ROBJ and FLRP included, circulated to CCC for consultation.	MTW provided information on the change in dump heights between the current consent and the previous approval.
May 2024	Community Consultative Committee	CCC Meeting	YTD progress against rehabilitation and disturbance targets for 2024.	No actions required
May 2024	DDCCEEW (Federal)	Document Circulated	Updated RMP, with approved ROBJ and FLRP	No actions required

Date	Stakeholder	Consultation Forms	Matters	Actions
			included, circulated for consultation and approval.	
August 2024	Community Consultative Committee	CCC Meeting	YTD progress against rehabilitation and disturbance targets for 2024.	No actions required
November 2024	Community Consultative Committee	CCC Meeting	YTD progress against rehabilitation and disturbance targets for 2024.	No actions required

4.0 SURFACE DISTURBANCE AND REHABILITATION ACTIVITIES

Surface disturbance activities included:

- Progression of mining in North Pit and West Pit areas, including associated water management infrastructure (64.9ha)
- Disturbance in Mount Thorley to allow construction of warehouse storage igloo (0.3ha)
- Rehabilitation disturbance at Mount Thorley Coal Loader to extend laydown area for pump maintenance (0.2ha)

The disturbance in this reporting period was 65.4ha. This is less than the 78.7ha of disturbance that was forecast in the Forward Program due to disturbance ahead of mining in West Pit and North Pit being delayed.

Rehabilitation activities included:

- Rehabilitation of overburden emplacements in Mount Thorley (38.4ha), Centre Dump (CD) (24.4ha), and South Pit (16.0ha).
- Rehabilitation of Tailings Dam 1 (13.7ha)
- Sowing of area to target land use seed mixes in Mount Thorley (2.8ha). Area reported in Growth Medium Development phase since 2018.
- Reclassification of access tracks within rehabilitation areas in Mount Thorley (5.3ha).

The rehabilitation (Ecosystem and Land Use Establishment) undertaken in this reporting period was 100.6ha.

The 2014 Environmental Impact Statements for the Warkworth Continuation Project and the Mt Thorley Continuation Project modelled MTW's conceptual progress with mining and rehabilitation in indicative mine plans at different stages over the course of MTW executing it's operations. These documents modelled a total of 1,607.8 ha of rehabilitation completion by the end of 2023. At the end of the 2024

reporting period there had been 1,470.0 hectares of rehabilitation completed across Warkworth and Mount Thorley, which is 137.8ha less than predicted in the indicative EIS forecast for the end of 2023.

Rehabilitation Planning Activities

The MTW Final Landform and Rehabilitation Plan (FLRP) was submitted to the Resources Regulator (RR) in August 2023, and was approved by RR on 8 December 2023 (FLRP0001145). The final landform of MTW has been designed using a geomorphological landform design approach based on alluvial analogues. The landform design work was undertaken using an external specialist consultant (WSP Australia) and an erosional risk analysis has been conducted to determine areas that require rock lining for erosion protection.

The landform design work included the sizing and positioning of a temporary stockpile of capping material for the Loders Pit Tailings Storage Facility (TSF). The Loders Pit TSF will be used for tailings deposition through to the closure of MTW. Sufficient material will be needed to be stockpiled adjacent to this facility during the operational phase of the mine to facilitate capping at closure. Further studies have been undertaken to reduce the amount of capping material required to be stockpiled. A plan showing the interim landform with the temporary capping stockpile will be presented in a future update to the MTW RMP.

Drainage designs have been developed to facilitate staged offsite release of stabilised rehabilitation catchments from the southwest corner of Mount Thorley. Water release from rehabilitation catchments will be contingent upon MTW demonstrating that the water quality of runoff from rehabilitation areas is consistent with the natural watercourses that the rehabilitation catchments will report to.

A monitoring network has been designed to collect water quality information for runoff from rehabilitation catchments. Water quality monitoring points in rehabilitation areas have been in operation for a limited number of sites since 2021. The upgraded monitoring network will provide information across most of the areas of existing rehabilitation. Funds have been included in the 2025 capital budget to cover installation of the upgraded monitoring network.

Surface soils from 12.7ha of stripping area ahead of mining in North Pit were assessed and classified in accordance with the NSW EPA requirements for classifying excavated materials as Virgin Excavated Natural Material (VENM). The stripped soil is proposed for off-site re-use in revegetation activities at MTW's Northern Biodiversity Area.

Subsidence Repair Undertaken

As MTW is an open cut operation, subsidence has been regarded as a negligible risk. Regardless, mine subsidence was examined and risk-ranked in the Rehabilitation Management Plan (RMP) Risk Assessment. No subsidence incidents have been recorded at MTW. As such this RMP does not introduce measures and methods to address subsidence impacts to rehabilitation during the active phase of mining.

Rehabilitation Management and Maintenance Activities

The following weed management activities were conducted across rehabilitation areas at MTW:

- Weed wiping of *Acacia saligna* shrubs and various exotic grasses (22.5ha);
- Manual removal (mulching and pulling out using tractor bucket) of *Acacia saligna* shrubs (82.0ha)
- Selective spraying (backpack) of various exotic grasses and broadleaf weeds (166.4ha); and

- Manual removal (Cut and Paint) of *Acacia saligna* shrubs (110.0ha)

Some rehabilitation areas susceptible to surface ponding which resulted in poor germination results (0.8ha) were re-aerated and re-seeded with native seed mixes designed for wet areas.

Two 1080 ground baiting programmes utilising meat baits were undertaken during autumn and spring to target wild dogs and foxes. The program consisted of approximately 55 bait sites across MTW, including rehabilitation areas.

A feral pig trapping and baiting programme was carried out across MTW in winter that resulted in 83 feral pigs being controlled.

Rehabilitation Actions

Design of temporary capping material stockpile for Loders Pit TSF was undertaken following investigations to reduce the amount of capping material required for the closure of the Loders Pit TSF. Recommendation from Targeted Assessment Program – Landform Establishment (May 2021).

Importation of rock for use on rock-lined drains in Geofluv landform areas. Recommendation from Targeted Assessment Program – Landform Establishment (May 2021).

SIBERIA modelling was undertaken by an external consultancy to investigate long term stability of the highwall in West Pit/North Pit and Loders Pit. Spoil samples for weathered materials at MTW were used for testing to determine weathering parameters. This information will be taken into account when determining the Landform Evolution Model (LEM) parameters that will be used to model landform stability in future work. Recommendation from Targeted Assessment Program – Landform Establishment (May 2021).

Draft Inspection Test Plans (ITP's) were developed which will form part of the Quality Assurance/Quality Control record system for rehabilitation activities at MTW. Recommendation from Targeted Assessment Program – Soils and Materials Management (June 2020); Landform Establishment (May 2021); and Revegetation (August 2024).

Introduction of ArcGIS and training of key staff in ArcGIS Pro to facilitate on site checking of topofactor values for as-built landforms. Recommendation from Targeted Assessment Program – Landform Establishment (May 2021).

Rehabilitation Areas That Have Achieved the Final Land Use

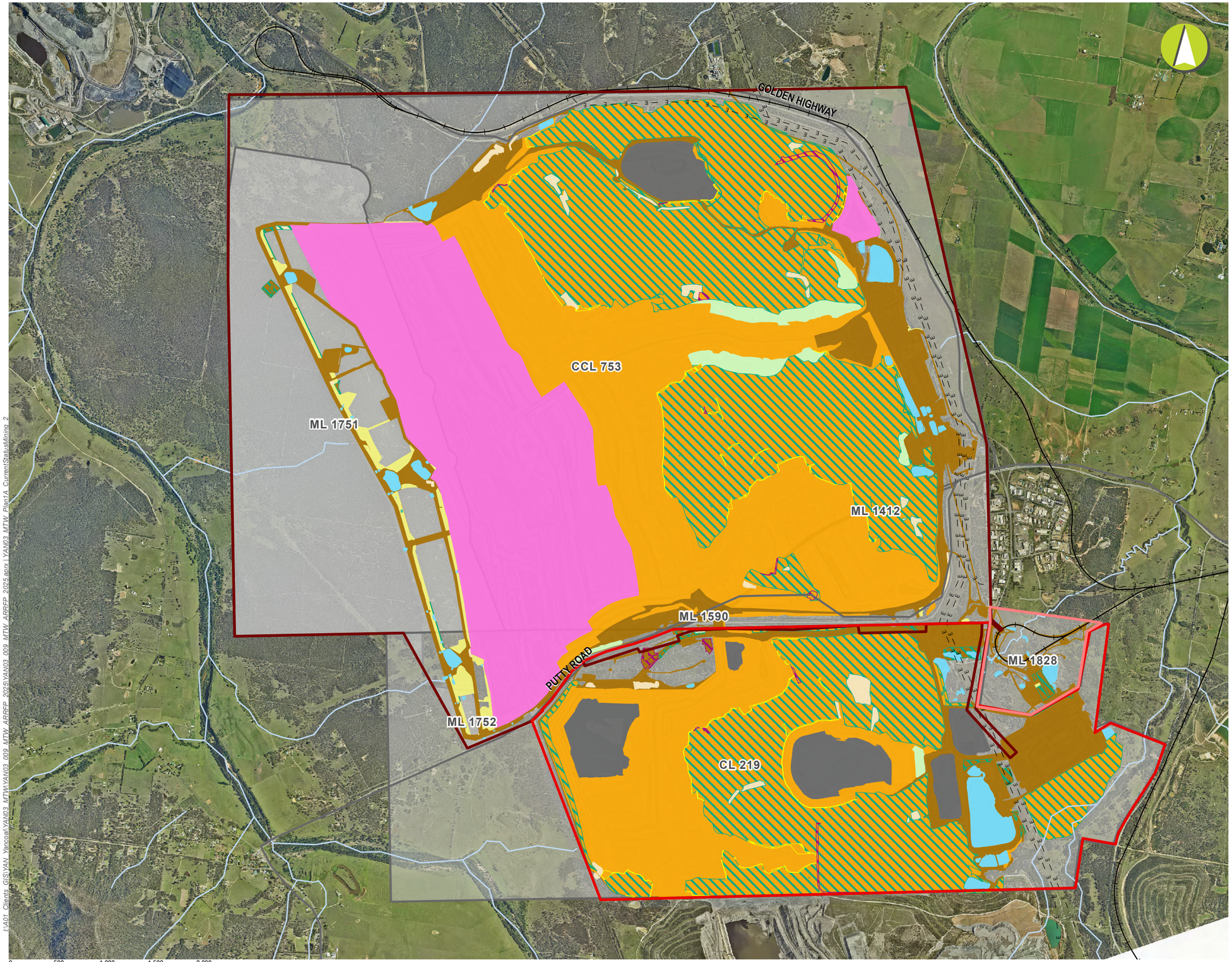
No areas achieved final land use during the 2024 reporting period.

Key Production Milestones

Table 2: Key Production Milestones Calendar Year 2024

Material	Unit	Year 1 2024 Forward Program	This report
Stripped topsoil	m3	79,230	65,400
Rock / Overburden	m3	107,690,777	111,344,762
Ore	Mt	16.73	17.24
Reject Material (Includes coarse rejects, tailings and any other wastes resulting from beneficiation)	Mt	5.37	5.41
Product	Mt	11.10	11.22

Figure 1: Plan 1A - Current Status of Mining and Rehabilitation



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LEGEND

Project Approval Number
- SSD 6464 - Warkworth
- SSD 6465 - Mount Thorley
- ML 1828 - Mount Thorley Coal Loader
- Railway
- Major Road
- Waterways
- Electricity Transmission Line

Current Authorisations
- Relevant Mining Title

Rehabilitation Phase
- Landform Establishment
- Growth Media Development
- Ecosystem and Land Use Establishment

Mining Domain Type
- Domain 1: Infrastructure Area
- Domain 2: Tailings Storage Facility
- Domain 3: Water Management Area
- Domain 4: Overburden Emplacement Area
- Domain 5: Active Mining Area (Open cut void)
- Domain 8a: Other - Topsoil Stockpile
- Domain 8b: Other - Topsoil Stripped
- Domain 8c: Other - Temporary Rehabilitation

Mount Thorley Warkworth Complex

Current Status Mining and Rehabilitation
PLAN 1A

Mine name	Mount Thorley Warkworth Complex
Plan name	Mount Thorley Warkworth ARR
Year of anticipated relinquishment	To be determined closer to closure
Data theme submission ID No.	TBD
Spatial Reference	GDA2020 MGA Zone 56
Plan date (date created)	24/03/2025

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MT THORLEY WARKWORTH

Source: Project Approval Boundary, rehabilitation, disturbance, watercourses and Current Authorisations from Yancoal (2024). Aerial imagery from Yancoal (2024).

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Figure 2: Plan 1B - Current Landform Contours

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Scale: 1:40,000

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LEGEND

Project Approval Number

- SSD 6464 - Warkworth
- SSD 6465 - Mount Thorley
- ML 1828 - Mount Thorley Coal Loader
- Current Landform Contours (5m)
- Railway
- Major Road
- Major Waterways
- Electricity Transmission Line

Current Authorisations

- Relevant Minerals Title

Source: Project Approval Boundary, rehabilitation, disturbance, watercourses and Current Authorisations from Yancoal (2024). Aerial imagery from Yancoal (2024).

Mount Thorley Warkworth Complex

Current Landform Contours
PLAN 1B

Mine name	Mount Thorley Warkworth Complex
Plan name	Mount Thorley Warkworth ARR
Year of anticipated relinquishment	To be determined closer to closure
Data theme submission ID No.	TBD
Spatial Reference	GDA2020 MGA Zone 56
Plan date (date created)	24/03/2025

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Disturbance and Rehabilitation Statistics

Table 3: Current Disturbance and Rehabilitation Progression Calendar Year 2024

	Annual Reporting Period	This report
A	Total disturbance footprint – surface disturbance	4,219.51
B	Total active disturbance (Ha)	2,722.15
C	Rehabilitation – land preparation (Ha)	27.37
D	Ecosystem and land use establishment (Ha)	1,470.00
E	Ecosystem and land use development (Ha)	0
F	Rehabilitation completion (Ha)	0

Table 4: Rehabilitation key Performance Indicators (KPI's) Calendar Year 2024

	Annual Reporting Period	This report
G	Total active disturbance during reporting period (Ha)	53.75
H	Area of land proposed for active rehabilitation during reporting period (Ha)	78.12
I	Established rehabilitation (Ha)	0
J	Annual rehabilitation to disturbance ratio	1.45
K	Ecosystem and land use development (Ha) % Rehabilitation land to total mine footprint	0

Table 5: Progressive Achievement of Established Rehabilitation Calendar Year 2024

	Annual Reporting Period	This report
L	Established rehabilitation for agricultural final land uses (%)	0
M	Established rehabilitation for native ecosystem final land uses (%)	0
N	Established rehabilitation for other/ non-vegetated final land uses (%)	0

4.1 VARIATION TO THE REHABILITATION SCHEDULE

Identify the components of the most recent forward program that were not achieved.

The rehabilitation forecast in the 2024 Forward Program was 81.2ha and the amount of rehabilitation progressing to Ecosystem and Land Use Establishment phase during the reporting period was 100.6ha.

The disturbance forecast in the 2024 Forward Program was 78.7ha and the amount of disturbance undertaken during the reporting period was 65.4ha. This included 11.8ha of rehabilitation disturbance.

The quantity of rehabilitation was greater than the forecast amount, with additional rehabilitation in the South Pit/CD areas offsetting less rehabilitation in the Tailings Dam 1 and North Pit areas.

The reduced amount of disturbance compared to the Forward Program forecast was due to disturbance ahead of mining being delayed in West Pit and North Pit.

Key factors that have delayed the progressive rehabilitation.

Finalisation of the rehabilitation of Tailings Dam 1 was not able to be completed during the reporting period due to inundation of the paddock-dumped material making it too difficult for bulk shape dozers to access. The delay to the Tailings Dam 1 rehabilitation was able to be offset by additional rehabilitation in South Pit/CD areas. Rehabilitation of Tailings Dam 1 is planned to be completed during 2025.

Outline actions to minimise disturbance and undertake progressive rehabilitation.

Dump scheduling has been undertaken by Medium Term Planning team to identify the timing of dump releases for the Forward Program period. Carryover of dump release and bulk shaped areas is planned each year to provide rehabilitation crews with consistent work through the year.
New disturbance is planned by Medium Term Planning team to minimise disturbance while supporting mine progression. Disturbance in West and North pit that was forecast to be disturbed in 2024 was delayed to avoid having areas cleared too far ahead of pre-stripping activities.

5.0 REHABILITATION MONITORING AND RESEARCH FINDINGS

5.1 REHABILITATION MONITORING

No rehabilitation monitoring was conducted at MTW during 2024 due to revised rehabilitation Performance Criteria still being developed. MTW is investigating the alignment of Performance Criteria with other companies in the Hunter Valley to enable sharing of monitoring data for reference sites in target vegetation communities. The revised Performance Criteria will be updated in the RMP and will form the basis of the rehabilitation monitoring that will be undertaken in 2025.

A total of 77 rehabilitation inspections were undertaken during 2024 to determine maintenance requirements related to vegetation establishment, weed management, water management and other management (i.e. disturbance, rubbish, vertebrate pest management etc.). These inspections were used to guide rehabilitation maintenance activities undertaken during 2024.

5.2 STATUS OF PERFORMANCE AGAINST REHABILITATION OBJECTIVES AND REHABILITATION COMPLETION CRITERIA

Previous monitoring methods incorporated and addressed the requirements specified in MTW RMP (2022). This included: a combination of plot-based monitoring in accordance with the NSW BioBanking Assessment Method (BBAM) (to assess native vegetation) together with walkover inspections of rehabilitation areas to detect potential issues occurring at the broader scale; Landscape Functional Analysis; soil assessment (chemical/nutrition and microbial); and native canopy development.

Are all rehabilitation areas in the Landform Establishment phase or higher represented in the monitoring program

New rehabilitation areas completed since 2022 have not been included in the monitoring program due to monitoring being suspended while ROBJ's and Performance Criteria are being revised. However, these new areas have been covered by the rehabilitation inspection program to determine rehabilitation maintenance requirements.

Include an appraisal of whether rehabilitation is moving towards achieving the proposed rehabilitation objectives, rehabilitation completion criteria and final landform and rehabilitation plan

Ecological monitoring reports from 2022 indicate that recent rehabilitation at the Northern area at MTW is progressing towards the target vegetation communities, with no evidence of disease or die-back recorded. Species richness was recorded as moderate to low in the Central rehabilitation area, with MTW to increase rehabilitation efforts in this area to achieve the target vegetation communities required.

Most of the Southern area provided moderate to high native species richness with one site exceeding the benchmark value providing evidence of good potential resilience through a diversity of native species and good native ground cover. One site provided the lowest native species richness score, due to the area being established within 12 months. This site is likely to improve over time with appropriate weed control. The canopy cover was low at all sites which is expected in early-stage rehabilitation.

A total of 229 plant species were recorded across all monitoring sites in 2022, including 175 native species and 54 weed species. The most speciose family was Poaceae (grasses) with 53 species recorded, followed by Fabaceae (including subf. Faboideae (peaflowers) and subf. Mimosoideae (wattles)) with 33 species and Asteraceae with 31 species.

Please select the best description of the appraisal

Regulator Portal Options	MTW Selection
Rehabilitation is moving towards achieving the final land use as soon as reasonably practicable.	
There are performance issues preventing rehabilitation moving towards achieving the final land use as soon as reasonably practicable.	X

Summarise the findings of the Rehabilitation Monitoring Program

A total of 43 flora monitoring sites were assessed between the Northern, Central and Southern Rehabilitation Areas. The rehabilitation sites in the northern area generally provided evidence of good resilience through high diversity of native species and good native ground cover in many of the areas surveyed. This is a good indicator of the ability of the sites monitored in 2022 to progress towards the target vegetation community.

The central area provided moderate native ground cover (grasses, shrubs and other) for most sites. This shows good potential resilience following control of invasive grass species.

All sites provided poor native canopy cover; however, tree species were recorded between two and seven species at each plot. This indicates that a canopy is likely to establish over time at most sites. The mid-layer (shrubs) are developing in the southern area with seven sites achieving a higher shrub cover than the average of the reference sites. The shrub layer cover is likely to improve over time with appropriate weed control.

Based on collected monitoring results and observations, management recommendations have been suggested to improve the condition of rehabilitation areas and ensure they are trending towards the defined final land use objectives.

Identify any performance issues

The rehabilitation monitoring report (2022) outlines the following:

- Appropriate weed management of invasive grassland species and appropriate cover in shrub and canopy layer will allow site to progress towards target vegetation community;
- High Threat Exotic (HTE) weed species pose a significant threat to the development of the target vegetation community.
- Thinning should be undertaken surrounding NPN202001 due to the dense cover of spotted gum.
- Create a fallen timber corridor through the rehabilitation areas, this will provide refuge and potential habitat for mammals, reptiles, and frogs across the rehabilitation area.
- Review the seed mix used to ensure that appropriate species and rates are being applied to new rehabilitation area.

5.3 OUTCOMES OF REHABILITATION RESEARCH AND TRIALS

Table 6: List of Active Rehabilitation Research and Trials

No.	Project/Trial Name	Objective of Trial Project	Methodology	Expected Date of Completion
3	Transition to Native Trees/Shrub Using Selective Grass Herbicide (RRT0001149)	Transition areas that are dominated with exotic grasses to native vegetation.	Utilise selective grass herbicides to control exotic grasses, follow up sowing with native tree/shrub seed mixes to increase native vegetation establishment.	31/12/2027
4	Compost Type Trial (Spoil/Compost Application) (RRT0001150)	Rehabilitation trials to test if different types of compost result in improved native vegetation establishment in spoil/compost applications.	Application of 2 types of compost: Bettergrow (with Biosolids) and LOOP Biomix to a rehabilitation area with mine spoil as growth medium. Trial areas seeded with diverse native seed mix and monitored to detect differences in native vegetation establishment.	31/12/2027

Table 7: List of Inactive Rehabilitation Research and Trials

No.	Project/Trial Name	Objective of Trial Project	Methodology	Expected Date of Completion
1	Bursaria spinosa Germination trial (RRT0001088)	Germination testing: 1) if freezing pre-treatment of seed improves germination rates; and 2) if germination rates in MTW topsoil's and spoils are comparable to seed raising mix.	Subject seed to freezing temps pre-treatment and run a germination trial with the following treatments: Provenance 1(Hunter Valley) control/seed raising mix; Prov. 1 freeze treatment/seed raising mix; Prov. 1 freeze treatment/typical MTW topsoil; Prov. 1 freeze treatment/typical MTW spoil/ameliorant. Provenance 2(Coonabarabran) control/seed raising mix; Prov. 2 freeze treatment/seed raising mix; Prov 2 freeze treatment/typical MTW topsoil; Prov. 2 freeze treatment/typical MTW spoil/ameliorant.	30/11/2023

No.	Project/Trial Name	Objective of Trial Project	Methodology	Expected Date of Completion
2	Compost Type Trial (Spoil/Compost Application) (RRT0001089)	Rehabilitation trials to test if different types of compost result in improved native vegetation establishment in spoil/compost applications	Application of 3 types of compost: Remondis (coarse), Remondis (with fines), Bettergrow (with Biosolids) to a rehabilitation area with mine spoil as growth medium. Trial areas seeded with diverse native seed mix and monitored to detect differences in native vegetation establishment.	30/06/2024

Provide details about how the outcomes of completed trials and research have been used to influence rehabilitation planning and methodologies and/or continuously improve rehabilitation techniques

Trial RRT0001088 demonstrated that freezing pre-treatment improved the germination of Bursaria spinosa. Freezing pre-treatment is therefore recommended for this species. However, germination of Bursaria spinosa only occurred in the seed raising mix. No germination was observed in the MTW topsoil or spoil growth mediums that were provided for use in the trial. This indicates that there are further impediments to germination in the MTW rehabilitation environment that require further investigation.

In the spoil growth medium that the compost trial (RRT0001089) was conducted in, native vegetation establishment was improved in the plots that utilised higher nutrient composts (i.e. Remondis (with fines) and Bettergrow (with Biosolids)). MTW has adopted the use of high nutrient composts in spoil/compost areas where mine spoil rather than topsoil is used as the growth medium. A follow-up trial (RRT0001150) of two different types of high nutrient compost will be conducted in a future spoil/compost rehabilitation area.