Forward Program – 2024 to 2026

Mount Thorley Warkworth

DOCUMENT CONTROL

Version	Date	Revision Description	Author	Approver
1.0	30/03/2024	FP document prepared to satisfy new Standard Conditions on Mining Leases	Bill Baxter Environmental Specialist - Rehabilitation	Gary Mulhearn Environment & Community Manager

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DEFINITIONS / ABBREVIATIONS

AGS – Abbey Green South
BCD - Biodiversity and Conservation Division (part of NSW Department of Climate Change, Energy, the Environment and Water)
CCC – Community Consultative Committee
CCL – Consolidated Coal Lease
CL – Coal Lease
CR – Centre Ramp
DPE – NSW Department of Planning and Environment
DPHI – NSW Department of Planning, Housing and Infrastructure
GDP – Ground Disturbance Permit
LP – Loders Pit
ML – Mining Lease
MTO - Mount Thorley Operations
MTW - Mount Thorley Warkworth Coal Mine (combined operations)
NOOP – North Out-of-Pit Dam
RMP – Rehabilitation Management Plan
ROM – Run of Mine
TSF – Tailings Storage Facility
TWMS – Total Waste Management System
WML - Warkworth Mining Limited

Name of mine:	Mount Thorley Warkworth	
Forward Program Period:	**START DATE:**	**END DATE:**
	1 January 2024	31 December 2026
Forward Program revision dates and version numbers:	Version 1.0 30 March 2024	
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)	Mt Thorley Operations Pty Ltd Warkworth Mining Limited Mount Thorley Coal Loading Ltd	
Date of Submission	30 MARCH 2024	

1.0 THREE YEAR FORECAST – SURFACE DISTURBANCE ACTIVITIES

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 Operations 2014 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 DESCRIPTION OF SURFACE DISTURBANCE ACTIVITIES

1.2.1 Exploration Activities

MTW will continue to undertake exploration drilling to assess coal reserves. An Exploration Report is sent to Resources Regulator annually which outlines the status at site.

All exploration drilling activities are reviewed prior to commencement as part of MTW's Ground Disturbance Permit (GDP) process. Planned borehole locations and access tracks are assessed for environmental, cultural heritage, approval and mining title issues and necessary constraints and conditions are placed on drilling locations for each borehole location.

All boreholes are surveyed and if not required for monitoring purposes are cement sealed on completion. All casing is removed where practicable. However, in isolated holes, this may not be possible requiring the casing to be cut off below ground level. Borehole sites are then rehabilitated to an appropriate standard, as dictated by the GDP.

1.2.2 Construction Activities

Planned construction activities over the next three years will include:

Year 1 - 2024

- Completion of construction of new workshop at Warkworth to accommodate ultra-class haul trucks (as approved by SSD-6464 Mod 2 granted on 27 May 2022).
- Construction of water management infrastructure ahead of mining in West Pit.
- Completion of construction of North Out of Pit (NOOP) Dam to increase mine water storage capacity, including installation of pumping infrastructure.
- Infrastructure upgrades to increase HRSTS capacity from Mount Thorley.

Year 2 - 2025

- Construction of water management infrastructure ahead of mining in West and North Pits.

- Construction of infrastructure to allow for mine water transfers to Lemington Underground Void storage as approved in SSD-6464 Mod 2.

Year 3 – 2026

- To be advised - updates will occur in future Forward Programs.

1.2.3 Mining Schedule

The proposed mining method within MTW is the same as that currently employed.

Pit progression will continue in a westerly direction in both North and West Pit at Warkworth. Mining is completed in Warkworth's South Pit and the South Pit void is planned to be backfilled with overburden. Currently, this void is being used as a mine water storage so dumping can only occur on the northern edge of the South Pit void outside the footprint of the water storage until the water is removed. The construction of the North Out-of-Pit (NOOP) Dam and construction of infrastructure to allow water to be transferred to the Lemington Underground Void will provide additional mine water storage. Once this additional storage capacity is available it will allow the South Pit void to be dewatered and backfilled with overburden. Dewatering of the South Pit void is planned to occur during the Forward Program period.

A small amount of coal will be mined from the highwall of Loders Pit at Mount Thorley during this Forward Program period. Access for mining of this coal will be provided as the southern end of Loders pit is filled with overburden and reaches the height of this coal in the highwall.

Describe the areas identified for emplacements, the sequencing of emplacements, construction, and management

Mining Domain 4 covers MTW's Overburden Emplacement Areas. Overburden is produced and disposed of within mined out sections of the open cut to create a final landform or designated out of pit emplacement area. Overburden material may be transferred to different areas at the site to assist in the creation of the final landform. The placement of overburden occurs with the mine plans for the various MTW pits.

Mining progression in Warkworth's West and North Pits will provide overburden for continued construction of rehabilitation areas in North and West Pit overburden emplacements. Overburden from West Pit will also be transferred to Mount Thorley to continue construction of rehabilitation areas in Mount Thorley. The southern end of Loders Pit will also be backfilled to construct the Loders Pit Tailings Storage Facility (TSF) in the Northern section of the Loders Pit void. The height of backfilling in the southern end is required to stay above the height of tailings being deposited in the Loders Pit TSF.

The excavation of the NOOP dam is planned to be completed during 2024. The remaining material to be excavated contains carbonaceous material so will be dumped in pit areas that will provide sufficient cover of inert material. Dumping of spoil on Tailings Dam 1 will be completed during 2024 to allow rehabilitation of this area.

Capping of Tailings Dam 2 is planned to continue during the Forward Program period but will be dependent on geotechnical stability being suitable for the equipment undertaking the capping activities.

1.2.4 Infrastructure and Tailings Facilities

There are six tailings emplacements within the MTW mining area. These are:

- Tailings Dam No. 1, within CCL 753, currently nil activity for tailings emplacement. Capping and rehabilitation originally completed 2015. Partial disturbance of rehabilitated area in 2022 to allow dumping of NOOP excavation material. Rehabilitation of disturbed area to be completed in 2024.
- Tailings Dam No. 2, within CCL 753, currently nil activity for tailings emplacement. Closure of the Redbank Power Station has resulted in cessation of ash disposal on Tailings Dam 2. Partial capping has been undertaken on Tailings Dam 2. Capping will continue with approximately 15ha planned to be rehabilitated during the Forward Program period.
- Centre Ramp Tailings Storage Facility (CR TSF), within CL 219, currently active.
- Ministrip Tailings Storage Facility, within CL 219, currently nil activity for tailings emplacement. Capping is planned to commence during the Forward Program period.
- Abbey Green South Tailings Storage Facility (AGS TSF), within CL 219, currently active.
- Eastern Tailings Dam, within CL 219, currently nil activity for tailings emplacement. Interim capping completed in 2023 with area now being used as a laydown/stockpile area.
- Loders Pit Tailings Storage Facility (LP TSF), within CL 219, currently active.

1.2.5 Waste Management

Waste disposal and materials handling operations over the next three years.

The handling and disposal of industrial and putrescible wastes generated from MTW is in accordance with the MTW Total Waste Management System (TWMS), local ordinances, and regulatory guidelines.

The site contains a specialised oil and grease storage facility which is a part of the fuel storage facility that meets Australian Standards. A licensed waste hydrocarbon disposal company removes and recycles all waste hydrocarbons produced onsite.

A licensed contractor removes recyclable wastes from site to a licenced recycling facility. Non-recyclable wastes are disposed of at a licenced waste facility.

The TWMS includes waste monitoring, particularly the recording of waste types, weight, and cost. These statistics are summarised and reported in the Annual Review, enabling MTW to assess waste management over long-term periods and identify opportunities to mitigate waste and contamination risks to rehabilitation

1.3 KEY PRODUCTION MILESTONES

Table 1: Key Production Milestones (Three Year Forecast)

Material	Unit	Year 1 (2024)	Year 2 (2025)	Year 3 (2026)
Stripped Topsoil	(m3)	79,230	73,057	39,347
Rock / Overburden (Prime + Rehandle)	(m3)	107,690,777	106,556,187	113,532,897
Ore (Run of Mine (ROM))	(Mt)	16.73	17.25	17.56
Reject Material (Includes coarse rejects, tailings and any other wastes resulting from beneficiation)	(Mt)	5.37	5.42	5.59
Product	(Mt)	11.10	11.84	11.96

2.0 THREE-YEAR REHABILITATION FORECAST

Spatial depiction of progressive rehabilitation shown on **Figures 1 to 3** (Plans 2A to 2C).

2.1 REHABILITATION PLANNING SCHEDULE

Mining and rehabilitation will continue at MTW, with the majority of work completed at the North Pit, West Pit and Loders Pit areas. Mining will progress towards the west, with rehabilitation to occur behind this, as shown in the staged plans. The site undertakes a mining design process to maximise progressive rehabilitation.

Relevant stakeholder consultation that will be carried out over the next three years

Consultation with DPHI, Water NSW, Biodiversity and Conservation Division (BCD), Singleton Council, MTW Community Consultative Committee (CCC) and Department of Climate Change, Energy, the Environment and Water (DCCEEW) will occur with updates to the Rehabilitation Management Plan (RMP), as required by state and federal planning approvals. MTW will liaise with Resources Regulator and other relevant stakeholders on proposed rehabilitation performance criteria and changes to the Final Landform and Rehabilitation Plan.

As rehabilitation progresses, MTW will continue to consult with all relevant stakeholders regarding rehabilitation. Updates relating to rehabilitation will be outlined to the CCC.

Provide an overview of rehabilitation studies, risk assessments that will be carried out over the next three years

Risk associated with rehabilitation progression have been identified during a rehabilitation risk assessment undertaken for MTW in June 2022. Details of these risks and how they are managed are provided in the MTW Rehabilitation Management Plan (2022).

MTW are planning to undertake the following during the Forward Program period:

- conduct studies to reduce the area of Loders Pit TSF. The aim of this study is to reduce the capping requirement on this facility at closure.
- Conduct an analysis of the final landform stability using a landform evolution model. The study will require the collection of erosion field parameters to facilitate erosion model development.

- Implementation of a water quality monitoring program in rehabilitation areas to assess the suitability of rehabilitation runoff compared to background water quality in local watercourses.
- Review seed mixes used to ensure that appropriate species and rates are being applied to new rehabilitation areas.

2.2 REHABILITATION MAINTENANCE AND CORRECTIVE ACTIONS

MTW propose to undertake maintenance and corrective action activities including:

- Weed and feral animal control within rehabilitation;
- Erosion control works;
- Maintenance fertilising;
- Re-seeding; and
- Repair of fence lines, access tracks and other general related land management activities.

Rehabilitation monitoring and inspections will help define the types of maintenance activities for the site.

2.3 REHABILITATION SCHEDULE

MTW's progressive rehabilitation schedule is provided in **Figure 1 to 3** (Plans 2A – 2C). Mining continues to progress towards the west with rehabilitation occurring behind this.

Year 1 - 2024

- Continuation of rehabilitation of overburden emplacements in North Pit, West Pit, South Pit and Loders Pit. Dumping on the capped surface on Tailings Dam 1 to allow rehabilitation of disturbed areas.
- Continuation of capping activities on Tailings Dam 2, dependent on geotechnical stability.

Year 2 - 2025

- Continuation of rehabilitation of overburden emplacements in North Pit, South Pit and Loders Pit.
- Completion of rehabilitation in Tailings Dam 1 area.
- Continuation of capping activities on Tailings Dam 2, dependent on geotechnical stability.

Year 3 – 2026

- Continuation of rehabilitation of overburden emplacements in North Pit, West Pit and South Pit.
- Continuation of capping activities on Tailings Dam 2, with rehabilitation on completed areas.
- Progressive rehabilitation in Loders Pit is constrained by the footprint of the temporary stockpile of capping material for the Loders Pit TSF.

2.4 SUBSIDENCE REMEDIATION FOR UNDERGROUND OPERATIONS

There are no underground workings in the project approval areas.

2.5 REHABILITATION RESEARCH AND TRIALS

MTW will undertake the following trials in the Forward Program period:

- trials to test the suitability of different compost types for use on topsoil and mine spoil growth mediums.
- trials to test the success of pre-treatments to improve germination of Bursaria spinosa in rehabilitation, typical MTW growth mediums will be included in the germination trials.
- Trials to test methods for native vegetation establishment on areas dominated by exotic grasses. Trials likely to investigate use of topsoil scalping and fire treatments. Further information on these trials will be included in the next Forward Program when a scope of works has been finalised.

Further details on the outcomes of the trials will be reported in the Annual Rehabilitation Report, through the Resources Regulator's Portal.

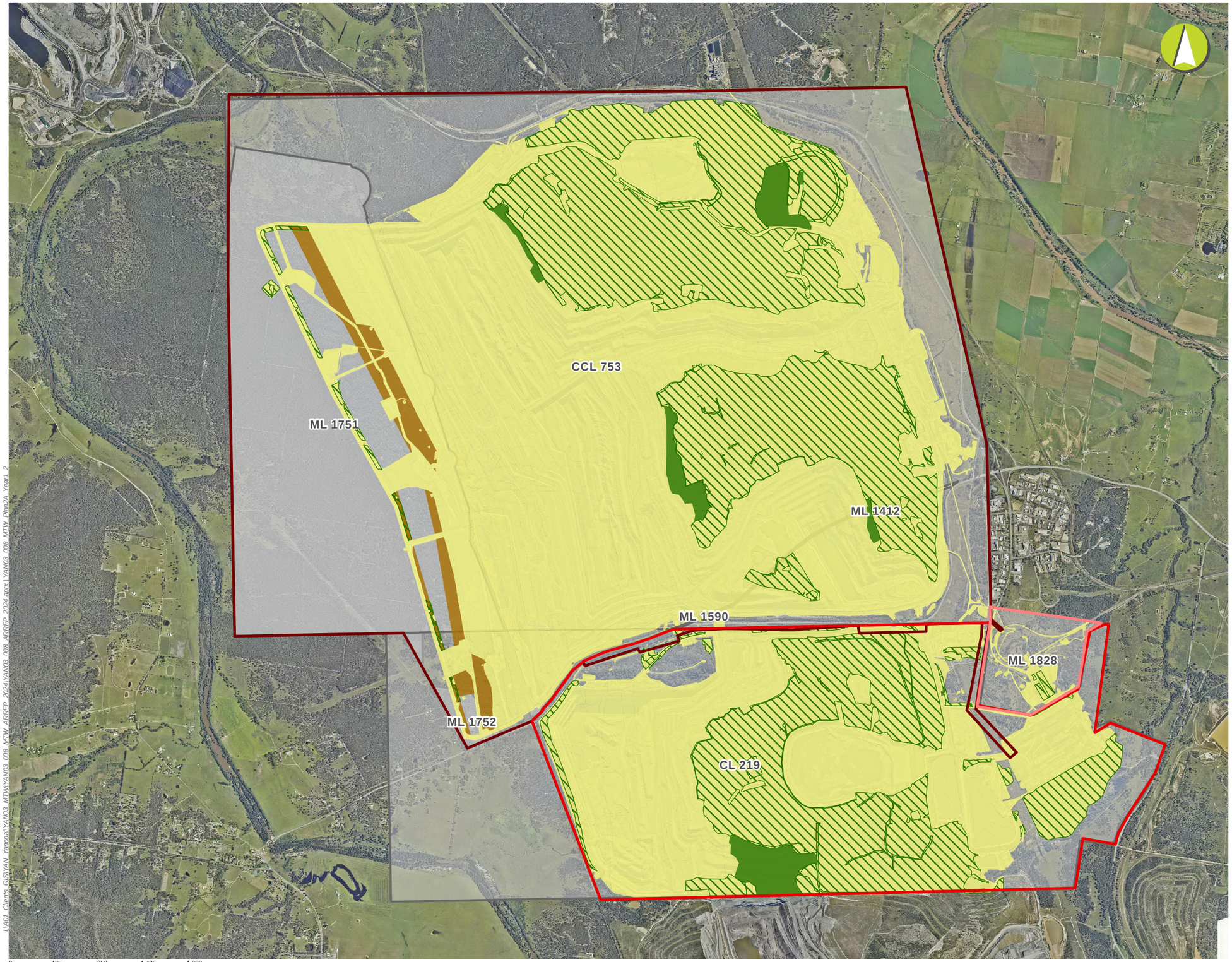
Table 2: List of Active Rehabilitation Research and Trials (Three Year Forecast)

No.	Project/Trial Name	Objective of Project/Trial	Methodology	Expected Date of Completion	Completion Date Update	Status	Status Update	On Track	On track update
1	Bursaria spinosa Germination Trial	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	30/06/2024	Ongoing	Ongoing	Yes	Yes
2	Compost Type Trial (Spoil/Compost Application)	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	30/06/2024	Ongoing	Ongoing	Yes	Yes

Table 3: List of Inactive Rehabilitation Research and Trials (Three Year Forecast)

No.	Project/Trial Name	Objective of Project/Trial	Methodology	Expected Date of Completion	Status	On Track
1	Bursaria spinosa Germination Trial	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	Complete	Yes

Figure 1: Plan 2A: Mining and Rehabilitation - Year 1 (2024)



LEGEND

Project Approval Number
- SSD 6464 - Warkworth
- SSD 6465 - Mount Thorley
- ML 1828 - Mount Thorley Coal Loader

Current Authorisations
- Relevant Minerals Title

Forecast Area Type - Year 1 (2024)
- Forecast Disturbance (2024)
- Forecast Land Prepared for Rehabilitation (2024)
- Rehabilitation to be Disturbed
- Previous Disturbance
- Previous Rehabilitation

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Source: Project Approval Boundary, rehabilitation, disturbance and Current Authorisations from Yancoal (2023).
Aerial imagery from Yancoal (2023) and ArcGIS Online (capture date unknown).

Mount Thorley Warkworth Complex

Mining and Rehabilitation
Year 1 - 2024
PLAN 2A

Mine name	Mount Thorley Warkworth Complex
Plan name	Mount Thorley Warkworth FP
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)	28/03/2024

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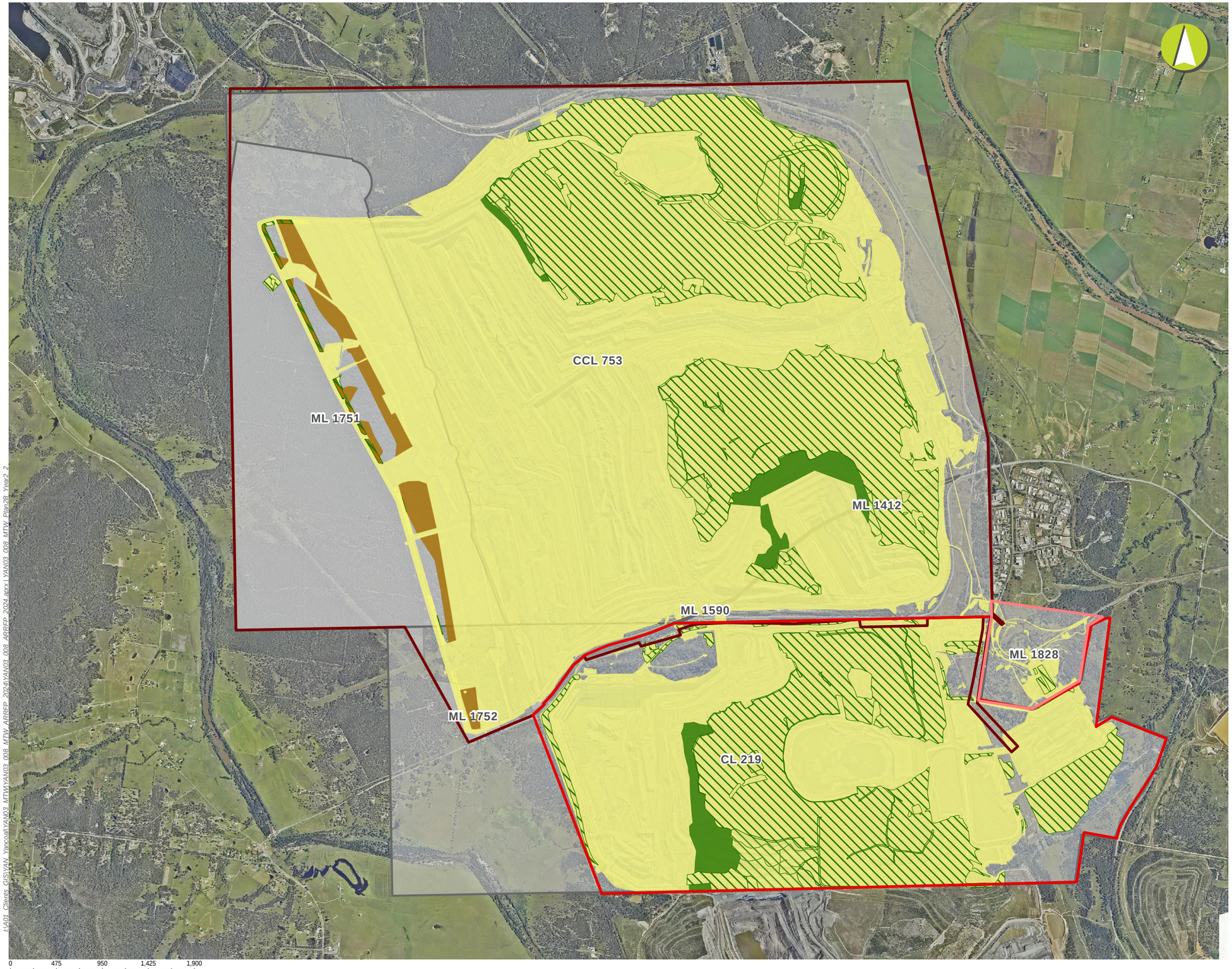
Figure 2: Plan 2B: Mining and rehabilitation - Year 2 (2025)



LEGEND

Project Approval Number
- SSD 6464 - Warkworth
- SSD 6465 - Mount Thorley
- ML 1828 - Mount Thorley Coal Loader

Current Authorisations
- Relevant Minerals Title

Forecast Area Type - Year 2 (2025)
- Forecast Disturbance (2025)
- Forecast Land Prepared for Rehabilitation (2025)
- Rehabilitation to be Disturbed
- Previous Rehabilitation
- Previous Disturbance

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Source: Project Approval Boundary, rehabilitation, disturbance and Current Authorisations from Yancoal (2023).
Aerial imagery from Yancoal (2023) and ArcGIS Online (capture date unknown).

Mount Thorley Warkworth Complex

Mining and Rehabilitation
Year 2 - 2025
PLAN 2B

Mine name	Mount Thorley Warkworth Complex
Plan name	Mount Thorley Warkworth FP
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)	28/03/2024

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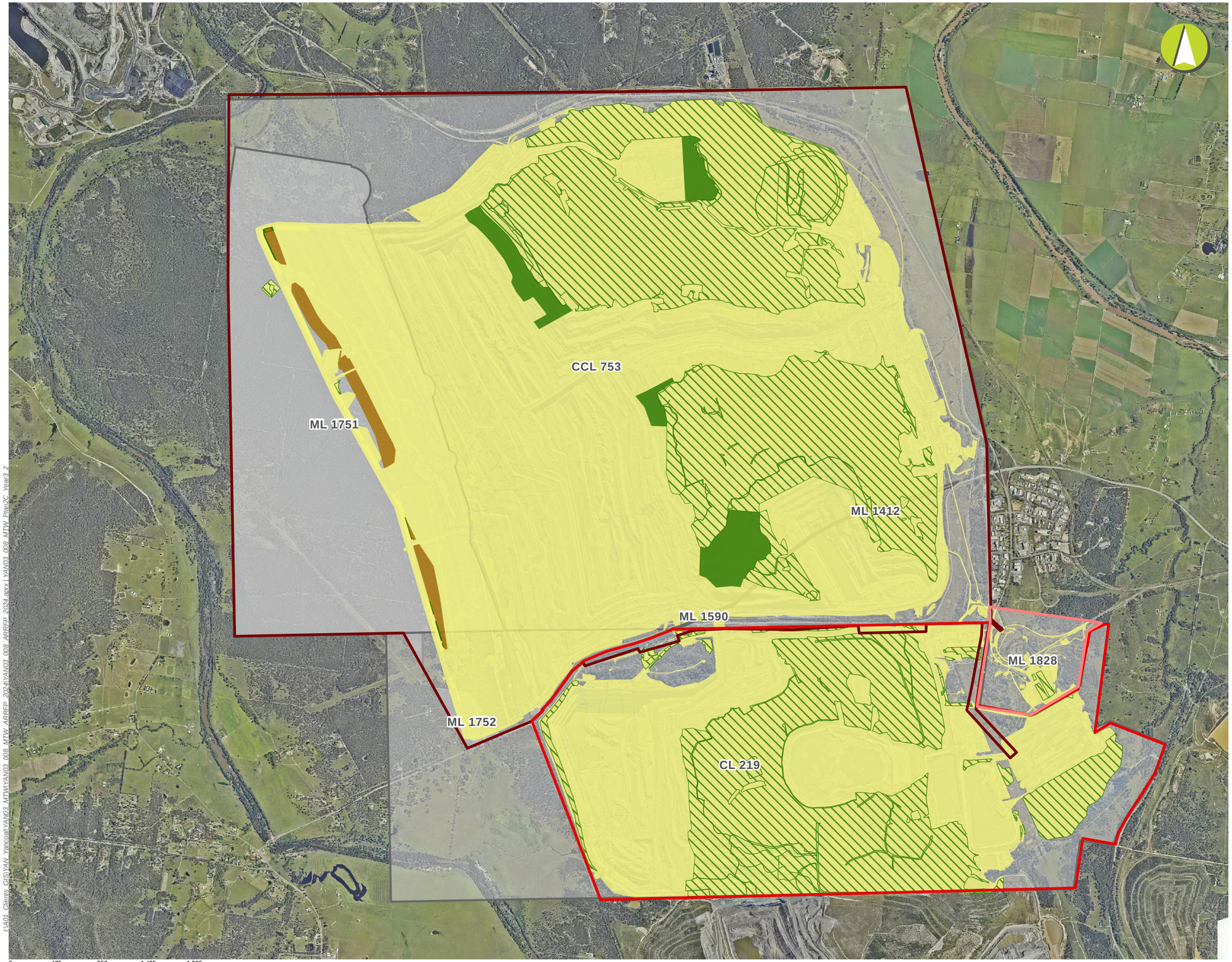
Figure 3: Plan 2C: Mining and Rehabilitation - Year 3 (2026)



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LEGEND

Project Approval Number
- SSD 6464 - Warkworth
- SSD 6465 - Mount Thorley
- ML 1828 - Mount Thorley Coal Loader

Current Authorisations
- Relevant Minerals Title

Forecast Area Type - Year 3 (2026)
- Forecast Disturbance (2026)
- Forecast Land Prepared for Rehabilitation (2026)
- Rehabilitation to be Disturbed
- Previous Rehabilitation
- Previous Disturbance

Mount Thorley Warkworth Complex

Mining and Rehabilitation
Year 3 - 2026
PLAN 2C

Mine name	Mount Thorley Warkworth Complex
Plan name	Mount Thorley Warkworth FP
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)	28/03/2024

Sheet Size : A3

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Source: Project Approval Boundary, rehabilitation, disturbance and Current Authorisations from Yancoal (2023).
Aerial imagery from Yancoal (2023) and ArcGIS Online (capture date unknown).

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3.0 **PROGRESSIVE MINING AND REHABILITATION STATISTICS**

Table 4: Predicted Cumulative Disturbance and Rehabilitation Progression

	Item	Year 1 (2024)	Year 2 (2025)	Year 3 (2026)
A	Total disturbance footprint – surface disturbance (Ha)	4,244.43	4,317.38	4,356.72
B	Total active disturbance (Ha)	2,744.00	2,729.01	2,679.34
C	Rehabilitation – land preparation (Ha)	81.19	169.12	258.14
D	Ecosystem and land use establishment (Ha)	0	0	0

Note: the figures presented in Table 4 are outputs from the Mine Rehabilitation (GIS) Portal.

Table 5: Progressive Rehabilitation Key Performance Indicators

	Item	Year 1 (2024)	Year 2 (2025)	Year 3 (2026)
O	Total new active disturbance area during reporting period (Ha)	78.67	72.95	39.34
P	Total new area of land proposed for active rehabilitation during the reporting period (Ha)	81.19	87.93	89.02
Q	Annual Rehabilitation to disturbance ratio (Ha)	1.03	1.21	2.26

Note: the figures presented in Table 5 are outputs from the Mine Rehabilitation (GIS) Portal.