



**NSW
Resources
Regulator**

FWP0001065

WAMBO COMPLEX FORWARD PROGRAM

Wednesday 9 March 2022 to Saturday 8 March 2025

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Summary

DETAIL

Mine	Wambo Complex
Reference	FWP0001065
Forward program commencement date	Wednesday 9 March 2022
Forward program end date	Saturday 8 March 2025
Forward program revision (if applicable)	
Contact	James Benson
Mining leases	CL 397 (1973), ML 1594 (1992), ML 1572 (1992), CL 374 (1973), ML 1824 (1992), CCL 743 (1973), CL 365 (1973), ML 1806 (1992), ML 1402 (1992)
Project location	Wambo Coal Pty Limited
Date of submission	Tuesday 2 August 2022

Important

The department may make the information in your program and any supporting information available for inspection by members of the public, including by publication on its website or by displaying the information at any of its offices. If you consider any part of your program to be confidential, please communicate this to the department via the message function on this submission within the NSW Resources Regulator Portal.

Three-year forecast – surface disturbance activities

Project description

The Mine is situated approximately 15 km west of Singleton, NSW. The Mine is owned and operated by Wambo Coal Pty Ltd (WCPL), a subsidiary of Peabody Energy Australia Pty Ltd (Peabody).

Development Consent (DA 305-7-2003) commenced in 2004, and allows for the following mining and process operations at the Mine:

- Underground mining operations in the approved North Wambo Underground Mine (completed).
- Underground mining operations in the approved South Bates Underground Mine (completed).
- Underground mining operations in the approved South Bates Extension Underground Mine (in progress).
- Underground mining operations in the approved South Wambo Underground Mine (future operation).
- Ongoing operation of the CHPP and processing of coal from the underground mining operation and the United Wambo Open Cut Coal Mine, with up to 14.7 Mtpa of ROM coal processed at the CHPP in any calendar year.

Under DA 305-7-2003, underground mining operations are approved until 31 August 2042.

Description of surface disturbance activities

Exploration activities

The Exploration Drilling Program will continue to update gas and coal quality data for WCPL. In general, all land preparation required will be in accordance with the Surface Disturbance Permit process.

Disturbance relating to exploration is always minimised but may consist of slashing and removal of flora from access tracks and drill pad areas. Earth works may comprise the levelling of drill pads where a slope is present and installation of in ground sumps where above ground

sumps are not feasible. Small scale earth moving machinery, water carts and track/tyred drill rigs will be utilised during site commissioning, operation and decommissioning.

On average, WCPL proposes to drill 20 boreholes each year during the Forward Program term.

Decommissioning and sealing of boreholes and site rehabilitation will be conducted in accordance with the Wambo Coal Exploration Rehabilitation Management Plan (WA-ENV-MNP-514). Decommissioning of exploration sites consists of the disposal of all waste from site, sealing of boreholes to the surface and removal of drill casings from 1 metre (m) below the surface. Drill sites are stabilised, decompacted, topsoil replaced and seed applied as necessary to facilitate the sites' return to its former land use.

Construction activities

During the Forward Program term, WCPL will construct a replacement ventilation shaft for the South Bates Underground Mine, approximately 150 m north-west of the existing ventilation shaft within the approved surface development area.

Mining schedule

Mining development method and sequencing and general mine features.

Mining during this Forward Program term will be consistent with Phase 2 operations covered under Development Consent (DA 305-7-2003).

The Mine operates seven days a week, 24 hours a day on a rotating shift basis. The extraction of Longwall 22 at the SBUE Mine is currently underway and will be completed in approximately December 2022. The schedule and extraction of Longwall 23 will commence March 2023 and is anticipated to be completed in September 2023. Longwall 24 is estimated to commence in October 2023 which is anticipated to be completed in April 2024.

Following completion of the SBUE Mine, extraction will commence at the South Wambo Underground Mine in accordance with the relevant extraction plan.

Areas identified for emplacements, the sequencing of emplacements, construction, and management.

No rock/overburden management will be undertaken by WCPL during the Forward Program.

Coarse rejects produced by the CHPP are hauled back to the United Wambo Open Cut Mine mining operations and dispersed throughout the mine waste rock emplacements to manage its geochemical characteristics.

Coarse rejects and/or waste rock material may also be used as progressive covering of consolidated tailings disposal areas to be incorporated, encapsulated and/or capped within open cut voids. This allows flexibility in the mining sequence when the ROM and product stockpiles are at capacity. The final capping of inert overburden material will be to a minimum depth of cover of 2 m (or greater subject to final capping requirements), prior to final profiling and rehabilitation, to restrict oxygen and water ingress to the underlying tailings and prevent salts from rising to the soil surface.

Processing infrastructure activities and the location of tailings facilities and schedule for emplacement

Tailings produced by the CHPP are pumped as a slurry to approved purpose-built tailings dams constructed within extracted United Wambo Open Cut Mine voids from where supernatant waters will be recovered to the mine water management system for dust suppression or reuse in the CHPP.

Tailings disposal in the North East Tailings Dam ceased in 2004. Active tailings disposal is currently being undertaken in the Homestead In-Pit Tailings Dam and the Hunter Pit Tailings Dam.

Commencing in 2024, tailings will be disposed in the South Bates Sump Tailings Dam.

Once tailings disposal areas have reached capacity and have been allowed to consolidate, decommissioning will commence with a progressive covering of coarse rejects and/or waste rock material using a combination of encapsulation and incorporation when the surface of the tailings dam is deemed trafficable and safe.

WCPL is responsible for the decommissioning, landform establishment and subsequent rehabilitation phases of the South Bates Sump Tailings Dam and the decommissioning and initial capping of Homestead In-Pit Tailings Dam.

Waste disposal and materials handling operations.

Waste management at the Mine is undertaken by a licensed waste management company under the basic principles of the Total Waste Management System. During the Forward Program term, the following activities will be undertaken:

- waste streams are identified and the quantities generated are monitored;
- waste management measures are identified to minimise waste generation; and
- waste generated is appropriately stored, handled and disposed of.

Routine inspections of the Remnant Woodland Enhancement Areas and revegetation areas will include monitoring of potential waste management issues, including illegal dumping of waste, and removal of waste if/when required.

Key production milestones

MATERIAL	UNIT	YEAR 1	YEAR 2	YEAR 3
Stripped topsoil <small>(if applicable)</small>	(m ³)	2,320	0	0
Rock/overburden	(m ³)	0	0	0
Ore	(Mt)	2.72	1.86	1.89
Reject material¹	(Mt)	0.41	0.36	0.38
Product	(Mt)	1.74	1.26	1.26

¹ This includes coarse rejects, tailings and any other wastes resulting from beneficiation.

Three-year rehabilitation forecast

Rehabilitation planning schedule

Rehabilitation planning schedule

As the majority of the disturbed surface area (e.g. Infrastructure Areas) will be required for the life of the Mine, no rehabilitation planning activities are expected to be undertaken during the Forward Program term.

Stakeholder consultation

Ongoing consultation during this Forward Program term will continue including regular discussions with the Community Consultative Committee (through the quarterly meetings), Singleton Shire Council, surrounding landowners, Registered Aboriginal Parties, United Wambo, the Department of Planning and Environment, and the NSW Resources Regulator. WCPL will utilise the outcomes of ongoing consultation with relevant authorities, stakeholders and the results of rehabilitation trials to refine mining and rehabilitation activities.

Rehabilitation studies, risk assessments and/or design work

Risks associated with rehabilitation were identified during the most recent rehabilitation risk assessment undertaken in July 2020, which is detailed in the Mine's Rehabilitation Management Plan (RMP). No risk assessments and/or design work associated with finalising rehabilitation methodologies relating to establishment of the final landform, surface water management, final void management and tailings dam decommissioning are proposed within this Forward Program term.

Rehabilitation research and trials

RRT NUMBER	PROJECT/TRIAL NAME	OBJECTIVE OF TRIAL/PROJECT	METHODOLOGY	EXPECTED DATE OF COMPLETION	STATUS
RRT0001030	Subsidence Rehabilitation Trials	Monitor previous subsidence remediation works to inform future works.	The current methodology used based on existing trial results includes the digging out of subsidence cracks and potholes to a depth of 2 m, before installing geofabric and backfilling with gypsum ameliorated fill material. Trial areas are inspected biannually with results reviewed to determine the most successful rehabilitation methodology.	1 Aug 2026	Ongoing

Rehabilitation maintenance and corrective actions

Rehabilitation is monitored on a regular basis to ensure vegetation in the rehabilitation areas is establishing and to determine the need for any maintenance and/or contingency measures (e.g. supplementary plantings, weed or erosion control). The monitoring also aims to demonstrate the effectiveness of the rehabilitation techniques and track the progression towards achieving the rehabilitation performance and completion criteria, as per Section 4.1 of the Mine's RMP.

Maintenance of rehabilitation activities undertaken include:

- Visual monitoring.
- Ecosystem Function Analysis, including:
 - LFA;
 - vegetation dynamics; and
 - habitat complexity.
- Subsidence inspections.
- Biometric Vegetation Assessment.
- Mining Closure Monitoring.

Amendments to the monitoring programs during the post-closure phase, following identification of any rehabilitation performance issues or knowledge gaps in the Annual Rehabilitation Report, will be reflected in the relevant environmental management plan revisions as well as future iterations of the ARRF. It is expected that the residual monitoring programs will be undertaken for approximately 10 years following mine closure.

Rehabilitation schedule

Rehabilitation works proposed over the Forward Program term will likely include:

- Continuation of subsidence remediation works in the vicinity of South Bates and SBUE Mines.
- Continuation of North Wambo Creek Diversion remediation works, as guided by the North Wambo Creek Diversion Rehabilitation and Maintenance Plan.

- Continuation of historical exploration works rehabilitation program.

In previously rehabilitated areas, ongoing maintenance activities will include controlling weeds and pests, repairing landforms, re-seeding and application of maintenance fertilisers as required.

Subsidence remediation for underground operations

Minor cracks that develop are not expected to require remediation as geomorphologic processes will result in natural filling of these cracks over time.

Remediation of typical surface cracks (generally in the order of 25-50 millimetres (mm), but up to approximately 150 mm) will be undertaken using conventional earthmoving equipment and will include:

- Infilling of surface cracks with soil or other suitable materials.
- Locally re grading and re compacting the surface.

Areas of surface cracking will be stabilised using erosion protection measures (e.g. vegetation seeding and planting and/or brush matting). Drainage works and rehabilitation of subsidence troughs (i.e. areas of induced ponding) will be conducted as necessary, and may include stabilisation of banks subject to soil slumping.

If surface crack remediation works are required in remnant vegetation areas, compact mobile equipment will be utilised, where practicable, to minimise damage to surrounding vegetation.

Progressive mining and rehabilitation statistics

Three-yearly forecast cumulative disturbance and rehabilitation progression

FORECAST	UNIT	YEAR 1	YEAR 2	YEAR 3
A Total surface disturbance footprint	(ha)	6,946.08	7,112.15	7,278.21
B Total active disturbance	(ha)	6,318.37	6,484.44	6,650.5
C Land prepared for rehabilitation	(ha)	121.06	201.75	282.44
D Ecosystem and land use establishment	(ha)	50.79	89.42	128.05

Rehabilitation key performance indicators (KPIs)

FORECAST	UNIT	YEAR 1	YEAR 2	YEAR 3
O Total new active disturbance area	(ha)	166.07	166.07	166.07
P Area proposed for active rehabilitation	(ha)	119.32	119.32	119.32
Q Annual rehabilitation to disturbance ratio		0.72	0.72	0.72

Attachment 1 – Reporting Definitions

REPORTING CATEGORY	DEFINITION
<p>A Total disturbance footprint – surface disturbance</p>	<p>All areas within a mining lease that either have at some point in time or continue to pose a rehabilitation liability due to surface disturbance activities.</p> <p>The total disturbance footprint is the sum of the total active disturbance, decommissioning, landform establishment, growth medium development, ecosystem and land use establishment, ecosystem and land use development and rehabilitation completion (see definitions below).</p> <p>Underground mining operations should not include the footprint of underground mining areas/subsidence management areas in the total disturbance footprint.</p>
<p>B Total active disturbance</p>	<p>Includes on-lease exploration areas, stripped areas ahead of mining, infrastructure areas, water management infrastructure, sewage treatment facilities, topsoil stockpile areas, access tracks and haul roads, active mining areas, waste rock emplacements (active/unshaped/in or out-of-pit), tailings dams (active/unshaped/uncapped) and temporary stabilised areas (e.g. areas sown with temporary cover crops for dust mitigation and temporary rehabilitation).</p>
<p>C Rehabilitation – land preparation</p>	<p>Includes the sum of all disturbed land within a mining lease that have commenced any, or all, of the following phases of rehabilitation – decommissioning, landform establishment and growth medium development.</p> <p>Refer to the glossary of terms in this document for the definition of these phases of rehabilitation.</p>
<p>D Ecosystem and land use establishment</p>	<p>Includes the area which has been seeded/planted with the target vegetation species for the intended final land use. However, vegetation has not matured to a stage where it can be demonstrated that it will be sustainable for the long term and or require only a maintenance regime consistent with target reference/analogue sites.</p> <p>Typically, rehabilitation areas would be in this phase for at least two years (and usually more) before rehabilitation can be classified as being in the ecosystem and land use development phase. This phase does not apply to infrastructure areas that are being retained as part of final land use for the site.</p>

REPORTING CATEGORY	DEFINITION
O	The area of any new active disturbance that will be created during the next three years, as defined under definition A1 (definition A1 Table 5).
P	The sum of any new rehabilitation to be commenced in the next three years. These areas may be in the phases “Rehabilitation - Land Preparation” or the “Ecosystem & Land Use Establishment” (definitions C & D in Table 5).
Q	The rehabilitation to disturbance ratio (S / R) indicates how many hectares of new rehabilitation are undertaken for each hectare of land disturbed during the three years. A ratio of 1/1 indicates that the area of new rehabilitation and disturbance in that period are the same.

Attachment 2 – Definitions

WORD	DEFINITION
Active	In the context of rehabilitation, land associated with mining domains is considered ‘active’ for the period following disturbance until the commencement of rehabilitation.
Active mining phase of rehabilitation	In the context of rehabilitation, the active mining phase of rehabilitation constitutes the rehabilitation activities undertaken during mining operations such as salvaging and managing soil resources, salvaging habitat resources, and native seed collection. This phase also includes management actions taken during operations to manage risks to rehabilitation and enhance rehabilitation outcomes such as selective handling of waste rock and management of tailings emplacements.
Analogue site	In the context of rehabilitation, an analogue site is a ‘reference site’ that represents an example of the defining characteristics (such as vegetation composition and structure or agricultural productivity) of the final land use. Characteristics of analogue sites can be assessed to develop the rehabilitation objectives and completion criteria for final land use domains.
Annual rehabilitation report and forward program	As described in the Mining Regulation 2016.
Annual reporting period	As defined in the Mining Regulation 2016.
Closure	A whole-of-mine-life process, which typically culminates in the relinquishment of the mining lease. It includes decommissioning and rehabilitation to achieve the approved final land use(s).
Decommissioning	The process of removing mining infrastructure and removing contaminants and hazardous materials.
Decommissioning Phase of Rehabilitation	Activities associated with the removal of mining infrastructure and removal and/or remediation of contaminants and hazardous materials. In the context of the rehabilitation management plan this phase of rehabilitation may also include studies and assessments associated with decommissioning and demolition of infrastructure or works carried out to make safe or ‘fit for purpose’ built infrastructure to be retained for future use(s) following lease relinquishment.

WORD	DEFINITION
Department	The Department of Regional NSW.
Disturbance	See Surface Disturbance.
Disturbance area	<p>An area that has been disturbed and that requires rehabilitation.</p> <p>This may include areas such as on-licence exploration areas, stripped areas ahead of mining, infrastructure areas, water management infrastructure, sewage treatment facilities, topsoil stockpile areas, access tracks and haul roads, active mining areas, waste emplacements (active/unshaped/in or out-of-pit), tailings dams (active/unshaped/uncapped), and areas requiring rehabilitation that are temporarily stabilised (i.e. managed to minimise dust generation and/or erosion).</p>
Domain	<p>An area (or areas) of the land that has been disturbed by mining and has a specific operational use (mining domain) or specific final land use (final land use domain). Land within a domain typically has similar geochemical and/or geophysical characteristics and therefore requires specific rehabilitation activities to achieve the associated final land use.</p>
Ecosystem and Land Use Development	<p>This phase of rehabilitation consists of the activities to manage maturing rehabilitation areas on a trajectory to achieving the approved rehabilitation objectives and completion criteria.</p> <p>For vegetated land uses this phase may include processes to develop characteristics of functional self-sustaining ecosystems, such as nutrient recycling, vegetation flowering and reproduction, and increasing habitat complexity, and development of a productive, self-sustaining soil profile.</p> <p>This phase of rehabilitation may include specific vegetation management strategies and maintenance such as tree thinning, supplementary plantings and weed management.</p>
Ecosystem and Land Use Establishment	<p>This phase of rehabilitation consists of the processes to establish the approved final land use following construction of the final landform.</p> <p>For vegetated land uses this rehabilitation phase includes establishing the desired vegetation community and implementing land management activities such as weed control. This phase of rehabilitation may also include habitat augmentation such as installation of nest boxes.</p>
Exploration	Has the same meaning as that term under the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.

WORD	DEFINITION
Final landform and rehabilitation plan	As defined in the Mining Regulation 2016.
Final land use	As defined in the Mining Regulation 2016.
Form and way	Means the form and way approved by the Secretary. Approved form and way documents are available on the Department’s website.
Growth Medium Development	<p>This phase of rehabilitation consists of activities required to establish the physical, chemical and biological components of the substrate required to establish the desired vegetation community (including short lived pioneer species).</p> <p>This phase may include spreading the prepared landform with topsoil and/or subsoil and/or soil substitutes, applying soil ameliorants to enhance the physical, chemical and biological characteristics of the growth media, and actions to minimise loss of growth media due to erosion.</p>
Habitat	Has the same meaning as that term under the <i>Biodiversity Conservation Act 2016</i> and the <i>Fisheries Management Act 1994</i> (as relevant).
Indicator	An attribute of the biophysical environment (e.g. pH, topsoil depth, biomass) that can be used to approximate the progression of a biophysical process. It can be measured and audited to demonstrate (and track) the progress of an aspect of rehabilitation towards a desired completion criterion (i.e. defined end point). It may be aligned to an established protocol and used to evaluate changes in a system.
Land	As defined in the <i>Mining Act 1992</i> .
Landform Establishment	<p>This phase of rehabilitation consists of the processes and activities required to construct the final landform.</p> <p>In addition to profiling the surface of rehabilitation areas to the approved final landform profile this phase may include works to construct surface water drainage features, encapsulate problematic materials such as tailings, and prepare a substrate with the desired physical and chemical characteristics (e.g. rock raking or ameliorating sodic materials).</p>
Large mine	As defined in the Mining Regulation 2016.
Lease holder	The holder of a mining lease.

WORD	DEFINITION
Life of mine	The timeframe of how long a mine is approved to mine, from commencement to closure.
Mine rehabilitation portal	<p>Means the NSW Resources Regulator’s online portal that lease holders must use (via a registered account) to:</p> <ul style="list-style-type: none"> ■ upload rehabilitation geographical information system (GIS) spatial data ■ develop rehabilitation GIS spatial data (using online tracing functions) ■ generate rehabilitation plans and rehabilitation statistics using the map viewer and Rehabilitation Key Performance Indicator functionalities. <p>Data submitted to the mine rehabilitation portal is collated in a centralised geodatabase for use by the NSW Resources Regulator to regulate rehabilitation performance of lease holders.</p>
Mining area	As defined in the <i>Mining Act 1992</i> .
Mining domain	A land management unit with a discrete operational function (e.g. overburden emplacement), and therefore similar geophysical characteristics, that will require specific rehabilitation treatments to achieve the final land use(s).
Mining land	As defined in the <i>Mining Act 1992</i> .
Native vegetation	Has the same meaning as that term under section 60B of the <i>Local Land Services Act 2013</i> .
Overburden	Material overlying coal or a mineral deposit.
Performance indicator	An attribute of the biophysical environment (for example pH, slope, topsoil depth, biomass) that can be used to demonstrate achievement of a rehabilitation objective. It can be measured and audited to demonstrate (and track) the progress of an aspect of rehabilitation towards a desired completion criterion, that is, a defined end point. It may be aligned to an established protocol and used to evaluate changes in a system.

WORD	DEFINITION
Phases of rehabilitation	The stages and sequences of actions required to rehabilitate disturbed land to achieve the final land use. The phases of rehabilitation are: <ul style="list-style-type: none"> ■ active mining ■ decommissioning ■ landform Establishment ■ growth medium development ■ ecosystem and land use establishment ■ ecosystem and land use development.
Progressive rehabilitation	The progress of rehabilitation towards achieving the approved rehabilitation completion criteria. This may be described in terms of domains, phases, performance indicators and rehabilitation completion criteria.
Rehabilitation Completion	The final phase of rehabilitation when a rehabilitation area has achieved the approved rehabilitation objectives and rehabilitation completion criteria for the final land use. Rehabilitation areas may be classified as complete when the NSW Resources Regulator has determined in writing that the relevant rehabilitation obligations have been fulfilled following submission of <i>Form ESF2 Rehabilitation completion and/or review of rehabilitation cost estimate</i> application by the lease holder.
Rehabilitation Completion criteria	As defined in the Mining Regulation 2016.
Rehabilitation cost estimate	As defined in the Mining Regulation 2016.
Rehabilitation management plan	As defined in the Mining Regulation 2016.
Rehabilitation objectives	As defined in the Mining Regulation 2016.
Rehabilitation risk assessment	As defined in the Mining Regulation 2016.
Rehabilitation schedule	The defined timeframes for progressive rehabilitation set out in the forward program.

WORD	DEFINITION
Relevant stakeholders	Means any persons or bodies who may be affected by the mining operations, including rehabilitation, carried out on the lease land, and includes: <ul style="list-style-type: none"> ■ the relevant development consent authority ■ the local council ■ the relevant landholder(s) ■ community consultative committee (if required under the development consent) or equivalent consultative group ■ affected land holder(s) ■ government agencies relevant to the final land use ■ affected infrastructure authorities (electricity, telecommunications, water, pipeline, road, rail authorities) ■ local Aboriginal communities, and ■ any other person or body determined by the Minister to be a relevant stakeholder in relation to a mining lease.
Risk	The effect of uncertainty on objectives. It is measured in terms of consequences and likelihood (AS/NZS ISO 31000:2009).
Secretary	The Secretary of the Department.
Security deposit	An amount that a mining lease holder is required to provide and maintain under a mining lease condition, to secure funding for the fulfilment of obligations under the lease (including obligations that may arise in the future).
Surface disturbance	Includes activities that disturb the surface of the mining area, including mining operations, ancillary mining activities and exploration.
Tailings	A combination of the fine-grained solid material remaining after the recoverable metals and minerals have been extracted from the mined ore, and any process water ² .
Waste	Has the same meaning as that term under the <i>Protection of the Environment Operations Act 1997</i> .

² Commonwealth of Australia (DITR), 2007. *Tailings Management*.

Attachment 3 – Plans

WAM-09-15_FP 2022_Plan 2A.pdf

WAM-09-15_FP 2022_Plan 2B.pdf

WAM-09-15_FP 2022_Plan 2C.pdf

Forward Program (LARGE MINE) v2.1